

# Higher Education in the World 7

## Humanities and Higher Education: Synergies between Science, Technology and Humanities

**Abridged version**

Complete open-content report available  
at [www.guninetwork.org](http://www.guninetwork.org)



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Catalan Association of Public Universities (ACUP)

# List of Abbreviations

ACM	Association for Computing Machinery	MESA	Mainstreaming Environment and Sustainability in African Universities Programme
ACU	Association of Commonwealth Universities	MoU	Memorandum of Understanding
ACUP	Association of Catalan Public Universities	MSCA	Marie Skłodowska-Curie Actions
AECHE	Arab-Euro Conference on Higher Education	MSES	Mediterranean Strategy on Education for Sustainable Development
AI	Artificial Intelligence	MT	Machine Translation
AMRUT	Atal Mission for Rejuvenation and Urban Transformation	NEETs	Not in Employment, Education or Training
C3	Center for Complexity Sciences	NGO	Non-Governmental Organization
CBPR	Community Based Participatory Research	NSF	National Science Foundation
CE	Community Engagement	OECD	Organisation for Economic Cooperation and Development
CHCI	Consortium of Humanities Centers and Institutes	PERMSEA	Strategic Plan for the Overhaul and Improvement of Andorra's Education System
CONACYT	Mexican National Council of Science and Technology	PRIA	Participatory Research in Asia
CoPs	Communities of Practice	PRIMA	Partnership for Research and Innovation in the Mediterranean Area
CPN	Center for the Promotion of Science	R&I	Research & Innovation
CRES	Regional Conference on Higher Education in Latin America and the Caribbean	RCUK	Research Councils United Kingdom
CSIC	Spanish National Research Council	REF	Research Excellence Framework
CSO	Civil Society Organization	RIA	Research Impact Assessment
DUT	Durban University of Technology	RMEI	Network of Mediterranean Engineering Schools
ECRS	Early Career Researchers	RRI	Responsible Research and Innovation
EE	Environmental Education	RTDI	Research, Technology Development and Innovation
EMI	English-Medium Instruction	SAQA	South African Qualifications Authority
ERC	European Research Council	SBM-U	Swachh Bharat Mission – Urban
ESD	Education for Sustainable Development	SDGs	Sustainable Development Goals
ESTEAM	Ethics, Science, Technology, Engineering, Arts, Mathematics	SSH	Social Science and Humanities
EU	European Union	STEAM	Science, Technology, Engineering, Arts, Mathematics
FAIR	Findable, Accessible, Interoperable, Reusable	STEM	Science, Technology, Engineering, Mathematics
FP	Framework Programme	TARGET	Taking a Reflexive Approach to Gender Equality for Institutional Transformation in Mare Nostrum
FTAA	Free Trade Area of the Americas	TEACHENER	Integrating Social Sciences and Humanities into Teaching about Energy
GUNi	Global University Network for Innovation	TVET	Technical Vocational Education and Training
HE	Higher Education	UAB	Autonomous University of Barcelona
HEIs	Higher Education Institutions	UB	University of Barcelona
HEIW	Higher Education in the World Report	UdG	University of Girona
ICOM	International Council of Museums	UdL	University of Lleida
ICT	Information and Communication Technology	UEMF	Euro-Mediterranean University of Fes
IEEE	Institute of Electrical and Electronics Engineers	UfM	Union for the Mediterranean
IESALC	International Higher Education Institute for Latin America and the Caribbean		
IUM	International Islamic University Malaysia		
ILO	International Labour Organization		
IMEDEA	Mediterranean Institute of Advanced Studies		
K4C	Knowledge for Change		
KPI	Key Performance Indicator		



UIB	University of the Balearic Islands
UIC	International University of Catalonia
UMAC	University Museums and Collections
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNIMED	Mediterranean Universities Union
UOC	Open University of Catalonia
UoTs	Colleges and Universities of Technology
UPC	Polytechnic University of Catalonia
UPF	Pompeu Fabra University
URV	Rovira i Virgili University

# About the Authors

**Dzulkifli Abd Razak** is the Rector of the International Islamic University Malaysia. He is the former president of the International Association of Universities (IAU), a UNESCO-based organization located in Paris. He was also the Chair of the Board of Directors for Islamic Science University Malaysia (USIM), and held the chair of Islamic Leadership at USIM from 2014-16. He is an honorary professor at the University of Nottingham. He also chairs the steering council of the Right Livelihood College Global Secretariat based at the University of Bonn, Germany, and the Malaysian Productivity Centre Panel for Productivity Culture. He was the 5<sup>th</sup> vice-chancellor of Universiti Sains Malaysia (USM) from 2000 to 2011. He was awarded an Emeritus Professorship by the USM in honour of his immense scholarship and contributions to the university.

**Paula Adam** is the Head of Research at the Agency for Health Quality and Assessment of Catalonia (AQuAS), co-founder and co-chair of the International School on Research Impact Assessment (ISRIA) and leader of the ISOR Group (Social Impact of Research). Dr Paula Adam (PhD) is an expert on the social impact of sciences and the assessment of research impact on society, with special emphasis and orientation on transformational changes and optimisation of sciences in view of a better orientation towards global social challenges. Most of her work is in the health sciences, but she has also experience in other scientific areas. Paula also coordinates a commission on the accreditation and assessment of Spanish health research institutes associated to the Carlos III Health Institute. Paula holds a PhD in Economics from the European University Institute in Florence, Italy.

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**Haruaki Deguchi** was invested as the fourth president of Ritsumeikan Asia Pacific University on January 1, 2018. He came to the university from a lengthy and successful career in business as cofounder of Lifenet Insurance, the first independent Japanese insurance company to be created for 74 years, where he served as President and Managing Director from the company's founding in 2006, until 2013 when he became Chairman and CEO. Previously, Mr. Deguchi enjoyed a career with Nippon Life Insurance that spanned nearly 35 years, including serving as president of the company's London-based subsidiary and general manager of the international business division. Mr. Deguchi has been appointed as a lecturer at Keio University and Waseda University, and has also served as an advisor to the Office of the President at the University of Tokyo. A historian and avid reader, Mr. Deguchi is also a prolific author and lecturer, having written more than 45 books, countless articles, and makes regular appearances on TV and in other media, including a monthly column for the Japan Times. He holds a degree from the Faculty of Law at Kyoto University.

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**Aurora Lechuga** is studying for a PhD in Pedagogy at the Autonomous University of Mexico (UNAM) at Ciudad Universitaria. He has masters and bachelor's degrees in Pedagogy from the same university. He has attended national and international conferences in Ecuador and Argentina on the subject of Artistic Education. He is currently conducting a research project on education for public universities of the arts in Latin America and the Caribbean, namely La Universidad Nacional de las Artes (UNA), Argentina, El Instituto Superior de Artes (ISA), Cuba, La Universidad de las Artes (Arte y Cultura), (UARTES) and La Universidad Nacional de Experimentación de las Artes (UNEARTE), Venezuela. The study forms part of the UNESCO Chair on "University and Regional Integration" Seminars directed by Dr. Axel Didriksson Takayanagui.

**Marta Llop** began her career as a Social Sciences teacher (1985-1990). She then went on to become Head of Andorra's Education Department (1990-2004), head of studies at Santa Coloma Secondary School in Andorra (2004-2014); and a teaching specialist under the PERMSEA strategic plan (2014-2018). In the current 2018-19 academic year, she is combining her work as a teaching specialist and head of studies. Author and/or coordinator of a number of education-related publications in the field of social sciences for Andorra's

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Honorary Fellow of the Royal Society of NZ in 2010 and awarded honorary doctorates by the State University of New York (SUNY) in 2012 and University of Aalborg in 2015. He has just published *The Chinese Dream: Educating the Future*. (<http://michaeladrianpeters.com/>)

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**Lee Sternberger** is Associate Provost in Academic Affairs and Executive Director of the Office of International Programs (OIP). She leads a campus-wide effort to internationalize university curricula, services and programs, and coordinates global and international activities across JMU's seven colleges. Dr. Sternberger earned her B.A. in Economics from the University of Missouri (Columbia), her M.S. and Ph.D. in Clinical Psychology from Washington State University, and an M.A. in Architectural History from the University of Virginia; she has

also completed post-graduate work at the Courtauld Institute of Art in London. Dr. Sternberger's interests are cross-disciplinary and international in nature.

**Rajesh Tandon** is a doctor and internationally acclaimed leader and practitioner of participatory research and development. He founded the Society for Participatory Research in Asia (PRIA), a voluntary organization providing support to grassroots initiatives in South Asia, and has continued to be its chief officer since 1982. In 2012, he was appointed co-chair of the UNESCO Chair on Community Based Research and Social Responsibility in Higher Education, which is an outcome of and supports UNESCO's global mission to play 'a key role in assisting countries to build knowledge societies'. Tandon has authored more than 100 articles, a dozen books and numerous training manuals on democratic governance, civic engagement, civil society, governance and management of NGOs, participatory research and people-centred development.

**Susanna Tesconi** is a lecturer at the Universitat Oberta de Catalunya and a member of the DARTS interdisciplinary research group on design, art, technology and society. With a bachelor's degree in Philosophy from the University of Pisa, PhD in Education from the Universitat Autònoma de Barcelona, she is a learning environments designer. Her work is inspired by the interaction between learning processes and technology with the aim of accompanying people in the development of their own devices, tools and environments. The practice of designing learning environments is integrated into her research focus on the potential of digital making as a tool for teacher training.

**Sandra Torlucci** is Vice-Chancellor of the National Arts University (UNA), where she has also served as Dean of the Dramatic Arts Department. Prior to this, she worked as Academic Secretary of the Master's Degree on Cultural Management (FFyL- UBA). She currently presides over the Commission on Institutional Relations of the National Inter-University Council and formed part of the CRES 2018 Organizing Committee. She works as a lecturer and researcher in the field of Semiotics and the Theory of Drama and Audiovisual Arts, activities she carries out at UNA, Buenos Aires University and the Cinema University, among other institutions. She is the director of research projects associated with performing arts and body configurations on stage, having produced a large number of essays and articles. She is also a scriptwriter, playwright and theatre director.

**Carme Torras** is a Research Professor at the Spanish Scientific Research Council (CSIC), and Head of the Perception and Manipulation group at the Robotics Institute in Barcelona. She received M.Sc. degrees in Mathematics and Computer Science from the University of Barcelona and the University of Massachusetts - Amherst, respectively, and a Ph.D. degree in Computer Science from the Polytechnic University of Catalonia (UPC). Prof. Torras has published five books and about three hundred papers in the areas of robot kinematics, computer vision, geometric reasoning, machine learning and manipulation planning. She has supervised 18 PhD theses and led 16 European projects, the latest being the Chist-Era project I-DRESS, the H2020 project IMAGINE, and her ERC Advanced Grant project CLOTHILDE – Cloth manipulation learning from demonstrations. She is a EurAI Fellow (2007), member of Academia Europaea (2010), and member of the Royal Academy of Sciences and Arts of Barcelona (2013). She has received the Dissemination Award from the Barcelona Science Museum, and the Narcís Monturiol Medal from the Government of Catalonia. Carme Torras is also a fiction writer and has published four novels in Catalan, for which she has been awarded several literary distinctions. Convinced that science fiction can help promote ethics in robotics and new technologies, one of her novels - winner of the Pedroló and Ictineu awards - has been translated into English with the title “The Vestigial Heart” (MIT Press, 2018) and published together with online materials to teach a course on Ethics in Social Robotics and AI. Further information at <http://www.iri.upc.edu/people/torras>

**Olga Torres-Hostench** (BA and PhD in Translation Studies) is a tenured lecturer at the Department of Translation, Interpreting and East Asian Studies at the Universitat Autònoma de Barcelona. She teaches on undergraduate, graduate, continuing education and online courses on multimedia translation and localization and English/Spanish/Catalan translation in the legal, technical, scientific and audiovisual fields. She is a member of the Tradumàtica Research Group, and her current research interests are focused on translation and technologies, machine translation postediting, and employability. She has contributed to several funded research projects such as LeViS: Learning via Subtitling; CLipFair (Learning via revoicing or captioning); EGPS (European Graduate Placement Scheme); TRACE (Assisted Translation, Quality and Evaluation); LAW10n Project on the translation of software licensing agreements; and the current ProjectA and ProjectA-U projects on Machine

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**Crystal Tremblay** is a social geographer and community-based scholar with interests in the areas of environmental sustainability, participatory resource governance and critical pedagogy. She specializes in using participatory video and arts-based methods for creative citizen engagement and the co-creation of knowledge leading to environmental and social equity. In her capacity as Special Advisor on Community Engaged Scholarship, she provides leadership and research in support of UVic’s community engagement portfolio. She has published widely on topics related to university community research partnerships, training in community-based research, social innovation and participatory policy in water and waste governance.

**Judith Urbano** received a PhD in Art History from the University of Barcelona with a dissertation on the life and work of the architect August Font Carreras (1845-1924). She has been the Dean of the Faculty of Humanities at the Universitat Internacional de Catalunya (UIC Barcelona) since 2016 and Director of the Research Group on History, Architecture and Design since 2013. Her expertise is in the fields of 19<sup>th</sup> Century Architecture (Historicism, Eclecticism and Art Nouveau), Catalan “Modernisme”, Avant-garde Movements and Women Artists. She has been curator of several exhibitions: Gaudí in Paris 1910 (2001), La Mansana de la Discòrdia (2015), La Casa Gralla (2016) and editor of its catalogues. She has written several books, chapters and articles on art history and architecture of the nineteenth and early twentieth centuries.

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**F. Xavier Vila** is Head of the Department of Catalan Philology and General Linguistics and director of the Sociolinguistics and Communication Research Centre (CUSC) at the Universitat de Barcelona. Specialised in sociolinguistics

and language policy, with a particular attention to the Catalan language area, he has directed numerous projects and worked as advisor for several institutions. Some of his recent publications are *Linguistic models in higher education in Catalonia: Origins, rationale, achievements and challenges* (2018); *Language Policy in Higher Education. The Case of Medium-Sized Language Communities* (2015); and *Survival and Development of Language Communities: Prospects and Challenges* (2013).

**Josep M. Vilalta** is Director of the Global University Network for Innovation (GUNI) and Executive Secretary of the Catalan Association of Public Universities (ACUP). Specialist in public management and public policies and in higher education and research management, he holds an experience of thirty years on different leading positions on public sector organizations as well as on different higher education institutions. He has promoted and participated in various projects and groups of experts of the Government of Catalonia and the Government of Spain, the European Commission, the OECD, UNESCO, and several countries in education and universities, political science and public policy management. He has published nearly a hundred papers for journals and publications, book chapters and books on public administration, public policy, education, universities and scientific research policy. He is member of the group of experts of the Spanish university policy think tank *Studia XXI*, member of the Advisory Boards of *Fundació iSocial* and *'El Diari de l'Educació'*. He is a regular contributor to different national and international publications and to the newspapers *ARA*, *NacióDigital* and *La Vanguardia*. He holds a Degree in Geography and History (UB), a Master in Public Management (UAB), a Master in Political and Social Theory (UPF) and a Postgraduate in Management of Higher Education (Open University/Universiteit Twente). He has been promoter and director of the Master of Management and University Policy at UPC and visiting professor in different institutions.

**Jaume-Elies Vilaseca** is a graduate in Fine Arts from the University of Barcelona. He is an Assistant Professor at several universities, a researcher at the University of Barcelona and a professional in the field of Communication and Audiovisual Media, focused on Image Post-production. He has participated in the visual effects of more than 50 films and has won several national and international awards, among them one Gaudí award (2013), four Goya awards (2009, 2004, 2002 and 2000), one Manfred Salzgeber award at the Berlinale (2000) and one Festival de Cinema Internacional de Sitges (2000).

**Richard Watermeyer** is a sociologist of higher education policy, practice and pedagogy. His new book, *'Competitive Accountability in Academic Life'* (Cheltenham: Edward Elgar) considers the deleterious effects of systematic manipulation of research governance technologies by academics and their institutions. He argues that competitive accountability produces performance based anxieties that are corruptive to the self-concept of academics as public intellectuals and which in turn engender counterfeit rationalisations of the public value of academic research. Richard is a Reader and Director of Research within the Department of Education at the University of Bath, UK.

**Peter J. Wells** is Chief of the Section for Higher Education at the UNESCO Headquarters in Paris, which is responsible for the overall coordination of the UNITWIN/UNESCO Chairs program. The Section's other activities include: promoting quality enhancement and assurance mechanisms for higher education institutions (HEIs) and systems; the internationalization of higher education programs through the mobility of students and researchers facilitated by the five UNESCO Regional Recognitions of HE Qualifications; and the widening of access to quality HE and increasing of lifelong learning opportunities at HEIs through systematic approaches to ICT enabled learning (including open and distance learning, the promotion of MOOCs and Open Education resources). Before taking on his role as Chief of Section at UNESCO, Wells was Director of Bucharest College (BPTC), Higher Education Programme Specialist at UNESCO, Academic supervisor at Higher Colleges of Technology, Lecturer at the Polish Open University, Special Education Consultant at the Council on Foreign Relations and Political Risk Analyst at Euler Hermes. Wells holds a BA in European Studies from the University of Leicester, an MSc in International Relations and Affairs from Florida State University and is a Doctor of Philosophy in Quality Enhancement in Tertiary Education from Lucian Blaga University of Sibiu.

**Sarah Marie Wiebe** is an Assistant Professor in the Department of Political Science at the University of Hawai'i, Mānoa with a scholarly focus on environmental sustainability and de-colonial, sustainable futures. She has published in journals including *Citizenship Studies* and *Studies in Social Justice*. Her book *Everyday Exposure: Indigenous Mobilization and Environmental Justice in Canada's Chemical Valley* (2016), published by UBC Press, won the Charles Taylor Book Award (2017) and examines policy responses to the impact of pollution on

the Aamjiwnaang First Nation's environmental health. Alongside Dr. Jennifer Lawrence (Virginia Tech), she is the Co-Editor of *Biopolitical Disaster*. Her teaching and research interests emphasize political ecology, participatory policy making and deliberative dialogue. As a collaborative researcher and filmmaker, she worked with indigenous communities on sustainability-themed films including "Indian Givers" and "To Fish as Formerly".

**Katie Wilson** is a Research Fellow in the Centre for Culture and Technology at Curtin University, Australia. Her research focuses on scholarly communication, open knowledge institutions, inclusion and diversity in universities and indigenous education.

**Madhura Yadav** is a Professor, Head & Director of the School of Architecture and Design at Manipal University, Jaipur. She is a Member of the Board of Studies in Architecture, Planning and Fashion Design. Her areas of interest are Sustainable Architecture and Urban Planning. Dr. Yadav has expertise in Sustainability in Cities and Buildings and has researched the Architecture-Ecology interface. She is a Life Member of the Council of Architecture, India.

**Anastasia Zabaniotou** is a Professor at the Chemical Engineering Department of the Faculty of Engineering, Aristotle University of Thessaloniki, Greece. She holds a Ph.D. and DEA from Ecole Centrale de Paris. She has worked for the European Commission in R&D policy and continues to contribute as expert. She is a board member of RMEI (Network of Mediterranean Engineering Schools). Her research activities are in the fields of Energy and Environment, Circular Economy and Sustainability. She is interested in multidisciplinary research. She is involved in activities concerning science and society, international Engineering Education, Mobility and SDGs. She is a founder member of the Aristotle University Center for Space, Environment, Technology, and Gender Equality. She is the coordinator within RMEI of the HORIZON2020 TARGET project 'Taking a Reflexive approach to Gender Equality for institutional Transformation' and leader of the RMEI Gender Equality working group.



# GUNi Presentation

## Global University Network for Innovation (GUNi): Twenty Years at the Service of Progress and Innovation in Higher Education around the World

The Global University Network for Innovation (GUNi) was created in 1999, one year after the first UNESCO World Conference on Higher Education in Paris. One of its main goals was to continue and facilitate the development of the agreements of that World Conference, at a time of clear expansion of higher education throughout the world. GUNi was promoted by UNESCO itself, by the United Nations University (UNU) and by the Polytechnic University of Catalonia (UPC). Five years ago, in 2014, through an agreement with UNESCO, the Catalan Association of Public Universities (ACUP) was granted its presidency and permanent secretariat. This year we are commemorating, with modesty and much shared responsibility, twenty years of one of the world's most active networks in analysis, debate and public policy in the field of higher education and university management. Twenty years in which our network has been growing in status around the world, under the approval and guidelines of UNESCO itself, driven decidedly by local institutions (in Barcelona, Catalonia and Spain as a whole) and in increasing interaction with GUNi regional offices in various regions of the world.

GUNi's main mission remains in full force (and is maybe now more necessary than ever), namely to strengthen the role of higher education in society, and help to renew its goals and policies worldwide from the perspective of public service, relevance and social responsibility.

GUNi's main goals are as follows:

- To encourage Higher Education Institutions to reorient their roles in order to broaden their social value and contribution, and strengthen their critical stance within society;
- To help bridge the gap between developed and developing countries in the field of higher education,

fostering capacity building and cooperation and in fully engagement with the 2030 Agenda;

- To promote the exchange of resources, innovative ideas and experiences, while allowing for collective reflection and co-production of globally relevant knowledge on emerging issues in higher education, innovation, social responsibility.

Today, GUNi has more than 220 members from 80 countries around the world, including higher education institutions, UNESCO Chairs, research centres and university networks related to innovation and social commitment.

Of the main activities that the network conducts on a year-to-year basis, we highlight five as listed below:

- World Higher Education reports, such as the one in your hands now, which have become key publications for analysis, debate and public policy on emerging issues in university politics around the world;
- Conferences, seminars and workshops, held on a regular basis both at its headquarters in Barcelona and in other cities and universities around the world;
- Projects promoted both internationally by the secretariat itself, and others attending to proposals from different members or regions in the world;
- The promotion of the different regional networks, attending to their specificities, problems and needs;
- Management and dissemination of knowledge in the field of policies and the management of higher education in the broadest sense, through the GUNi website, regular newsletters, social networks and other face-to-face or virtual methods.

Undoubtedly, today's world is facing a series of major planetary and social challenges of increasing complexity and dynamism: the climate crisis, the globalisation of economies and markets, social inequalities, poverty and migration, the crisis of democracy and public institutions, world governance, technological and digital change, highly changeable employment, and so on. We are therefore witnessing a real change of era. With regard to the world of education in general and specifically higher education, this context often implies

rethinking the social mission of universities, their core activities, their organisation (structures, personnel and talent, finances, operational management, autonomy and freedom, partnership and competition), their ability to respond, equality, social responsibility and the impact of their academic activity.

It is in this context that GUNi, twenty years after its creation, is strategically reappraising its role in the global change of era that we are witnessing, in order to become a global trendsetter as a network for analysis, debate and policy in the field of higher education and university management. For example, in 2016 GUNi set up a new strategic area based on the implementation of 2030 Agenda and the UN Sustainable Development Goals (SDGs) in the field of higher education and scientific research. GUNi is seeking to thereby become one of the world's benchmark networks in the deployment of the 2030 Agenda and the SDGs in terms of higher education and research. That is why it holds a biennial International Conference on the SDGs and higher education, has an International Group of Experts on the SDGs and higher education, and regularly drafts reports and studies in this field.

Another new strategic area is the social responsibility of higher education institutions in the new century, which have come to light in recent years in the form of activities and projects on responsible research and innovation (RRI), the challenge of climate change and the role of universities and research, and local-global tension in higher education. Finally, in relation to the Report that you are holding in your hands, GUNi advocates for in-depth reflection on classic academic disciplines, their organisation and their compartmentalisation and is hence proposing that interrelations and joint ventures between the sciences, technology and humanities need to be fostered in order to produce new forms of education, scientific research and collaboration with society.

Twenty years on, in full responsibility and based on all of the progress made thus far, at GUNi we feel strong enough to reinvent ourselves and intensify our role in analysis, debate and proposal at the service of progress and innovation in higher education around the world. We invite you to join us, with the firm intention of working together to forge greater progress, well-being and global justice in our societies.

**Josep M. Vilalta**  
GUNi Director

# UNESCO's Introduction

By their very nature, institutions of higher learning provide a space for the widest exploration of knowledge exchange and debate across every field of human enquiry. The universality of the university is thus still sacrosanct and fundamental to the mission and values of higher learning today and not inconsistent with the modern reforms and new pressures faced by the academic community.

Nevertheless, and arguably, in recent years higher education systems have experienced a surge in pressure to move away from some more traditional academic pursuits such as those of the humanities in favour of the more vocationally perceived fields of applied sciences, practical study programmes and technologies. In part, this has been driven by demands of the labour market and often in turn mirrored by a push from policy makers and the public funding of universities.

This trend has, however, begun to wane and there is an increasing appreciation that subject or field knowledge and competencies need to be balanced by a wider appreciation of the world we live in. Such an appreciation and understanding is afforded by the Humanities – in all of the field's domains as it cements the inter-disciplinarity of cognitive intelligence with emotional and cultural intelligence.

The United Nations Sustainable Development Goals (SDGs) demand an interdisciplinary approach to critically inclusive solutions. The natural sciences, the social sciences, and technological and engineering fields cannot work in isolation and must work in concert with the humanities to ensure that science and technology and STEM (Science, Technology, Engineering and Mathematics) teaching, learning and research are balanced by a humanism that encapsulates what these fields aim to achieve. While the STEM focus is increasingly being expanded to embrace a wider STEAM approach (where 'A' refers to the Arts), there is now a further move to project this to ESTEAM, with the 'E' referring to Ethics. This is not insignificant and speaks to the holistic mission of academia. Have we come full circle? Arguably this represents a return to an appreciation that higher learning is and always has been holistic and a space for preparing learners to be fully rounded individuals rather than pure specialists.

The so-called 'Liberal Arts' education has had little traction outside of the US. In many parts of the world there is no such concept where the doctrine of specific academic fields of study and research still prevail. This is however beginning to change. Employers and academia now recognize that the world needs inter-disciplinarians. Individuals who can relate to people; graduates of higher education who can relate to graduates from fields of expertise and knowledge outside of their own narrow fields.

Realizing the SDGs precisely demands this approach. UNESCO applauds the GUNi network for promoting this inclusive approach. This 7<sup>th</sup> edition of the Higher Education in the World Series: *Synergies between Science, Technology and Humanities* provides testament to the inter-disciplinary cooperation between disciplines, between higher education institutions, and between international systems as they approach the final decade of the Education 2030 Agenda.

**Peter J. Wells**  
Chief, Higher Education  
UNESCO



# Catalan Association of Public Universities' (ACUP) Introduction

Since their origins, universities have been concerned about global affairs. We have been so by advancing and transmitting knowledge, and by educating the people and professionals in our societies, and by doing so in a critical and analytically rigorous manner, often by raising the right questions rather than settling for easy answers that often fail to drive us forward.

The Catalan universities that belong to the Catalan Association of Public Universities (ACUP) have both historically and currently assumed such commitment to society, both locally and globally. Created in 2002, the ACUP groups the universities of Barcelona (UB), Autònoma de Barcelona (UAB), Politècnica de Catalunya (UPC), Pompeu Fabra (UPF), Girona (UdG), Lleida (UdL), Rovira i Virgili (URV) and Oberta de Catalunya (UOC). Its main purpose is to be the essential voice of the public universities in Catalonia and to unite their efforts, both at home and abroad, to promote joint initiatives, programmes and projects to improve the university system and to ensure that it is a driver of social, cultural, technological and economic development.

Since 2014, the ACUP has assumed the presidency and the secretariat of the Global University Network for Innovation (GUNi) and works in close collaboration with UNESCO and in accordance with the values that foster peace, justice, culture and education around the world. Today, GUNi groups more than 220 university institutions, UNESCO chairs and research centres worldwide and over the years it has grown into one of the most prestigious international networks for the analysis and debate of higher education in the world. It is the ACUP's honour to chair and promote GUNi, and in our daily work we take full responsibility for maintaining its rigor, its goals and its programmes.

As you know, one of GUNi's flagship projects is the biennial publication of the series of *Higher Education in the World Reports (HEIW)*, the seventh volume of which is in your hands now. On this occasion, we opted for an in-depth analysis of a fundamental aspect of human knowledge, namely, what we know as the humanities in the broadest sense. Through direct contributions from 130 experts from around the world, and coordinated by a local team and an international advisory board, the

HEIW7 is structured into 9 parts and 24 specific questions that study the situation of the humanities in higher education and the synergies between science, technology and humanities in the early 21<sup>st</sup> century. I would like to use this short introduction to most sincerely thank all of them for their contributions and for all their work over these two years.

We are not only convinced that the humanities are subjects that need to be preserved and/or promoted, but moreover that they are fundamental tools that should accompany and be embedded in all research and innovation in more scientific and technological branches of knowledge. The humanities are and have proved to be essential for human progress, and for making us freer and more committed to the common good. We hence believe that both knowledge itself and the challenges we are facing in this first third of the 21<sup>st</sup> century need to be addressed in a holistic and integrated manner, and by establishing the necessary synergies between science, technology and the humanities.

There are no certainties. All we have are questions that we must all ask in order to find the right answers together. It is from such a view, whereby this is not so much a point of arrival as it is a point of departure, that we hereby share the World Report of which you are also a part.

**Joan Elias**  
ACUP and GUNi President



# About the Report

The Global University Network for Innovation (GUNi) is pleased to present the 7<sup>th</sup> Higher Education in the World Report, entitled *Humanities and Higher Education: Generating Synergies between Science, Technology and Humanities* in a fully open-access online version together with an abridged version in paper format.

The Higher Education in the World Report is a collective project and it is the result of a global and regional analysis of higher education, with a specific subject chosen for each edition. The Report reflects on the key issues and challenges faced by higher education and its institutions at the beginning of the 21<sup>st</sup> century. It is currently published in English, but some other past editions have also been published in Spanish, Chinese and Portuguese. The general objectives of the Reports are:

- To reflect on key problems and challenges that higher education and its institutions are facing today;
- To contribute to the renewal of ideas, while generating visions and promoting reflection concerning the contribution of higher education and the knowledge society;
- To provide a toolbox for researchers, policymakers and practitioners.

To date, GUNi has published seven issues plus a summary version requested by UNESCO for the World Conference on Higher Education held in Paris in 2009. 19,000 copies have been distributed in 130 countries.

For the second time in its history, the HEIW Report is fully open access. The first five editions offered 30% of their content in open access format, while access to the whole report was only available by payment. The 6<sup>th</sup> edition presented a new 100% open content version with the aim of making it available to everybody, regardless of economic reach, in line with GUNi's objectives and values. The 7<sup>th</sup> edition follows the same format and anyone interested will be able to view it in full at [www.guninetwork.org](http://www.guninetwork.org).

Along with the full open content online version, GUNi is publishing an abridged version of the report in paper format, which contains a selection of the most relevant ideas from each of the authors' articles – offering a taste of the broader and more in-depth content available in the full report.

The 7<sup>th</sup> GUNi Higher Education in the World Report (HEIW7) is intended to present a comprehensive analysis of the interrelations and synergies between humanities, science and technology in higher education. This edition has been led by the GUNi Secretariat, a local editorial team and an international advisory board.

In the process of producing this Report, GUNi held the International Conference “*Humanities and Higher Education: Generating Synergies between Science, Technology and Humanities*” at the CosmoCaixa Science Museum in Barcelona on November 19<sup>th</sup> and 20<sup>th</sup>, 2018. The Conference was viewed as an essential step in the process of developing the report and its main objective was to foster worldwide debate on the current role of humanities in the social, academic and scientific areas and on their importance for promoting a more equitable, more responsible and more democratic society. The event gathered 160 attendees from 22 countries from diverse areas of knowledge and fields. Further information is available at: [www.guninetwork.org/activity/international-conference-humanities-and-higher-education](http://www.guninetwork.org/activity/international-conference-humanities-and-higher-education)

## Objectives

The Report aims to provide the academic community, policymakers and decision-makers within higher education and wider society with a comprehensive analysis of the interrelations between humanities, science and technology in higher education, as well as to offer some recommendations, guidelines and examples of good practices from different higher education communities, countries, regions and cultures.

Some of the specific aims of the Higher Education in the World Report 7 are to:

- Explore the relation between humanities, science and technology in different societies around the world and showcase examples of synergies in different higher education systems.
- Explore how humanities should address major current transformations regarding science and technology and their ethical challenges.

- Address the different roles higher education should play as a social agent and explore the possible relations between university and wider society.
- Map and understand the global challenges that are calling for a new paradigm in the relation between science, technology and humanities and explore the role that higher education should play in addressing them.
- Delve into the issue of the multiplicity of *knowledges* beyond the current Western paradigm of knowledge.
- Identify key skills and competences to be developed in the face of current changes to social, economic and labour systems, as well as exploring teaching methodologies, curricula and the concept of lifelong learning.
- Identify and understand current issues and trends in research in humanities, science and technology (socially responsible research, budgets, Open Science and Open Data) and discuss possible ways to move forward and enhance research practices and policies.
- Analyze the question of impact in terms of the current indicators and measures and their positive and negative influence on science, technology and humanities as well as proposing new options to address current practices and needs.
- Explore the issue of gender equality in terms of access to education, academic careers and the choice of studies.
- Analyze gender in science, technology and humanities in terms of ideological paradigms as well as exploring the way to embed the gender focus throughout the disciplines and beyond specific gender studies.
- Investigate environmental issues (in their broadest sense) in the Anthropocene in terms of knowledge, ethics and human experience as well as exploring the development and implementation of the SDGs in all fields of knowledge.
- Discuss engagement in its broadest scope, including democracy, equality and identity through the lens of humanities and the role of higher education in this process.
- Examine/consider the role and commitment of higher education systems in relation to the future of work, as well as its dignity and its quality.

## Structure

The Report is structured around 9 topics that seek to encompass the different epistemological, social, cultural, political, educational, environmental and institutional issues that are currently being posed in relation to the need to change education and research in order to integrate fields of knowledge.

Each topic includes questions on major issues that the different authors have used as the basis for their contributions, always striving to adopt a reflective and propositional approach. Practical cases and examples of institutions, programmes, research studies and projects that work in a transdisciplinary and innovative manner are also added to illustrate the most theoretical sections.

The Report has two special chapters: one dedicated to the achievement of the SDGs and another that offers a regional perspective from Latin America and the Caribbean. Special contributions from the Union for the Mediterranean (UfM) and La Caixa Foundation are also included.

In total, 130 authors from 30 countries have participated in the report.

The Report is a key part of GUNi's activity, which in this regard encourages the dynamic involvement of a wide range of actors, fosters cooperation between them and promotes debate and the creation and exchange of knowledge on higher education worldwide.

*The GUNi Secretariat would like to take this opportunity to thank everyone who was involved in the preparation and publication of this Report in any of its phases, and who have contributed ideas, suggestions and so much energy to ensure such a useful document for analysis, reflection and decision-making.*



# Editors' Introduction: Changes and Challenges that Require a Different Approach to the Relationship between Science, Technology and Humanities

David Bueno, Josep Casanovas, Marina Garcés, Josep M. Vilalta

## Conceptual Framework

The humanities are made up of a heterogeneous set of knowledge that is combined in order to study and reflect on the human condition in social, cultural and artistic terms. Although their exact definition is complex, debatable and widely discussed, they commonly include, among others, philosophy, language, literature, history, human geography, cultural anthropology, law, politics, religion and all forms of the arts (visual, musical and performing). The belief in the West is that they originated in Classical Greece for the study of the nature of people and their position in nature and society, but they have been developed in one way or another by all human cultures and societies since antiquity, as a product of the reflexive and rational capacity of human beings and their need to understand and organise the environment in which they live. The humanities have therefore been one of the key definers of the human condition.

However, we sense a growing concern about the perception of the usefulness and need for the humanities in today's society, especially in higher education systems. This perception is conditioning their future and in recent times has sparked numerous debates, publications and reports in different countries of our cultural environment. The views on the matter are contradictory, as if there was an underlying conflict that goes beyond differences of interpretation. That is why GUNI has proposed this report, with a view to integrating all possible perspectives. Unlike other reports, however, we did not want to solely address the issue of the humanities in an endogamic manner from the humanities themselves, since we believe that such analyses would not help us to progress and would only leave us stuck in the same situation. We have expressly sought to reflect the humanities' dynamic and synergetic relationship with the other fields of knowledge, especially

science and technology, and also with a very special focus on human 'cultures', in the plural, deliberately avoiding views from centralism and cultural neo-colonialism. We believe this is the only way to gain a clear picture of the current tensions and future challenges. We believe such an analysis is necessary (or better said, indispensable) in a society that is increasingly more globalised and inter-, multi-, pluri- and trans-culturalised. Such an analysis will always be incomplete, given the immense cultural, social and, by extension, humanistic diversity, but it is nevertheless broad enough to put forward suitable proposals to help build a dignified and dignifying society from the field of higher education. The two keywords that best describe the goals of this report are diagnosis and proposal, within the aforesaid parameters of the interrelation with science and technology as elements that are also inseparable from the human condition, and avoiding the worldviews of cultural neo-colonialism. These aspects are reflected in the range of authors of this report, through their cultures and areas of expertise, while also observing gender parity.

We are aware that many of the problems that affect the humanities are not exclusive to these disciplines. Hence the need to integrate perspectives and combine our efforts and reflections in order to reappraise today's challenges in terms of research, teaching, the socialisation of knowledge and social commitment within the global university system. Our goal is for this integration of perspectives, with all the differences and discrepancies that that may imply, to be the distinguishing feature of this report, reflecting the cross-cutting nature of all the authors who have made it possible.

Concern for the current and future state of the humanities often leads to positions that shift between two extremes: the catastrophic and the protectionist views, which are often exaggerated by exclusivist positions

among certain members of academia. There are sectors of society that foresee the end of the humanities in the imminent future. Others are committed to preserving them in a protectionist way, but there are others that are working for their reappraisal and transformation. Protectionist and often nostalgic views tend to focus on defending and preserving the institutional and academic space and the epistemological division whereby the knowledge that we have traditionally considered to pertain to the humanities is considered separate from other fields of knowledge. The catastrophic vision, on the other hand, puts the focus on what is being lost and warns of its ethical, political, social and cultural consequences, which directly affect social development, including the perception of society itself, relationships with other societies and the natural environment, and even between its members and with its own self. So, the end of humanism and hence of critical spirit is directly associated to the loss of democratic quality or to a democracy under threat, and to a present in which a rise in authoritarian, dogmatic and even post-human tendencies has been detected.

This report seeks to go beyond protectionist nostalgia and catastrophism, and clearly advocates reappraisal and transformation. We see the humanities as a series of dynamic and constantly changing activities that are part of the dispute and the production of meaning in our time, in reciprocal permeability with all other fields of knowledge, including, and very especially, science and technology.

We are witnessing profound changes in the modern world with clear implications for the future. These changes are presenting transcendental challenges in terms of thinking and rethinking the meaning and value of human experience, and even of what it means to be human, as individuals and in relation to other people and with nature, now and in the future, and so we need to reflect critically and rationally, including from human emotionality. The humanities, together with the sciences and technological innovations, must necessarily play their part as both drivers and critics within the framework of these transformations. We are basically referring to three types of changes:

1. Those related with **environmental and climate issues**, which radically put into question our relationship with the environment, in a single and shared biosphere, and that therefore affect what we mean by 'life', including its development and even survival. The western, scientific,

technological and humanist tradition, which was exported around the world during the European colonialist era, has traditionally tended to trace a very clear border between human beings and the rest of nature, based on the view that nature was 'created' for the use and enjoyment of people. The theocentrism of the Middle Ages produced anthropocentrism, but the human experience is actually closely linked to its surroundings and the reciprocal relations established therein, and this has since led to the emergence of ecocentrism. They are not the only cultural traditions to adopt that trend, but today's financial systems, not just capitalism but most especially liberalism and the neoliberalism, as well as state-based collectivist systems, have appropriated it and exported it practically all around the world.

However, the advances of recent decades in so many apparently diverse but all inter-linked fields, such as ecology, genetics, neuroscience, chemistry and physics, among others, and the growth of new philosophical and humanist schools of thought, especially but not only what are generically dubbed the 'environmental humanities', are producing a turning point in the conception of the relationship between people and nature. However, these new, heterogeneous conceptions are meeting major resistance from, on the one hand, social and cultural inertia due to customs and preconceptions and, on the other hand, the predominant political, economic and socio-cultural interests of the establishment. And also because of the biological imprint of the way the human brain works, which is more attentive to emotional inputs and responses than to rationality, making us more likely to make emotional rather than prudently calculated decisions, and which tend to be more grounded on individualistic or group immediacy and the pre-established actions of inherited customs than on long-term global reflection.

2. Those connected to the **scientific advances and technological developments** that are having such a fast-moving effect on our lives, especially but not only those raised by the implications of digital transformation and advances in biomedicine and healthcare. The first factor of change, the digital revolution, is and will be decisive in most aspects of our lives, in the short, medium and long term. Having now been assimilated as an indisputable and irreversible reality, this universal presence of highly interconnected data, processes and devices in constant feedback with each other, has only just begun and is already almost naturally ingrained in our younger generations. The repercussions in terms of

everyday operations, the way we communicate and our privacy, to mention only a few of the many factors that will all undoubtedly affect or possibly affect the very concept of human dignity and experience, are having an impact that is unpredictable at this moment in time. These issues require permanent debate, education and critical information and the adoption of measures to protect the people from the many derived threats, beyond the obvious benefits that can also be deduced.

Regarding the transformation or improvement of the living and survival conditions of human beings, partly also driven by the digital revolution, genomic research, personalised medicine and regenerative medicine, to cite just a few examples, there is need for a delicate and complex process of reflection on their scope, deployment and implications for ways of life, longevity, values, ethics and the definition of the very 'identity' of individuals, robots or cyborgs, with clear individual, social and planetary repercussions.

Finally, the connection of science and technology with the economy, and their implications for politics, the media, power mechanisms and the socialisation of knowledge itself and of new technologies, i.e. ultimately for human beings' capacity for self-determination, for democracy and for people's freedom, compels us to synergistically resituate other areas of knowledge, such as the social sciences and humanities, at the heart of discourse and decision-making.

3. Those associated with **cultural and social aspects of a global, postcolonial world**, which are highly interconnected but at the same time very fragmented and unequal. Humanism, as an ideological and cultural core of the humanities, is linked to the history of Eurocentric and patriarchal imperialism. Thus, the humanism that lies behind modern-day human sciences and political institutions is based on the way it is conceived by male, white, middle-class Europeans, and is imposed as hegemonic to every creed of human being, inside and outside of the geographic setting where it originated, and of which there have been many variants throughout the course of history in other geographic and cultural spheres. However, in recent years, academic thought has shifted towards a critical view of this hegemony, especially in countries linked to a colonial past, and this is something that we also wanted to reflect in this report. We offer a very rich and indispensable range of criticisms of humanism from the standpoints of gender, ethnicity, culture, politics, economic relations, and

more. The question that we need to ask today, however, needs to look beyond these essential positions: If humanism has become a kind of imperialism or has been exploited by imperialism, can this be stopped? And what would its 'being stopped' actually mean? Or do we have no choice but to rid ourselves completely of the whole humanist legacy as it has been conceived until now, as techno-capitalism has already started to do with its so-called 'fourth industrial revolution'?

However, we do not believe that the need for criticism of historic humanism and its universal models should erase our ability to associate ourselves with the shared background of human experience, which does not, in fact, date back to a single model. It is not a case of the Vitruvian Man or any other such abstraction, or of the cultural corpus of so-called dead white men. Human experience is our ability to share the fundamental experiences of life, which are transversal in all societies and cultures, such as death, love, friendship, commitment and collaboration and also individualism, fear, sense of dignity and justice, care, and so on. A propositional analysis like this must therefore be appraised and taken into account.

What paths do we have for exploring these proximities and developing the sense of human experience without projecting one model over another? More than being denied, humanism and European cultural legacy as a whole need to be put in their place, i.e. in one place among others in the common destiny of humanity. This also implies the need to explore each other's legacies. It is not a question of continuing with the idea of juxtaposing cultures that the multicultural model has already exhausted, as a way to neutralise diversity and its tensions and reciprocities. Instead, it is more a case of taking a receptive, attentive role, including not only cultural otherness but also the tension and antagonism between ways of life, within the shared framework of human rights.

These are not sectorial changes. They are major transformations that affect the very meaning of what we mean by 'human' in relation to society (or to societies) and the life of the planet as a whole. From these three clearly interrelated axes of change, we view the humanities not as a set of disciplines to preserve or conserve, but a set of utilitarian and applicable activities, which we must continue to cultivate through relevant research, with goals and models as necessary and appropriate for tackling new challenges. And this is in the good under-

standing that they are indispensable, for it is on them that the capacity to make sense and value out of human experience depends, especially in times of change, and this needs to be done in commitment to dignity, equality and the reciprocity of these values.

It is from this propositional approach, which is so attentive to our present and the challenges of the future, that we sought to engender diagnosis, debate and proposals that, far from conformism and catastrophism, or from nostalgic protectionism, addresses in terms of higher education the problems involved in the perception, transmission and application of current and medium-term research in the humanities. In producing this report, we have prioritised a problem-based approach over what might be deemed a thematic approach, because we believe that we can only move forward by addressing unresolved problems that we must take on board as shared problems. The main topics detailed below in this Introduction constitute a map of open-ended questions and problems on the basis of which we triggered the process of joint reflection that led to the production of the GUNi Report and that guided the organisation of its international conference and other work seminars. The fundamental aspects of the 7<sup>th</sup> GUNi Report *Humanities and Higher Education: Synergies between Science, Technology and Humanities* originated from open discussion of the following four core areas: epistemological, philosophical and cultural; political and economic; environmental and social, and educational and institutional.

## 1. Epistemological, Cultural and Philosophical Considerations

We are the heirs of a dualised and disciplined culture. Over the course of the last two centuries, probably driven by the particularities and specificities of the methods and objectives of scientific research and technological and humanistic development, we have split ‘scientific and technological’ activity apart from ‘humanistic’ activity, and we have organised education on the strict basis of this partition. For decades, several authors (C.P. Snow, I. Prigogine, I. Stengers, E.O. Wilson, F. Fernández Buey, etc.) have warned of the problems derived from this epistemological situation. Its effects are felt in all fields, as the humanities and the sciences tend to ignore (and

sometimes even reject) each other, and are consequently impoverished. If we want to make advances in an epistemology based on common problems and shared solutions in which all angles of human knowledge are involved, as opposed to disciplinary compartmentalisation, the first thing we need to address and discuss is the curricular and disciplinary organisation of our primary, secondary and higher education institutions. Different programmes for educational change are already under way, but they tend to focus more on didactic methodologies than on epistemological change, which is a more profound and hence also more complex affair. It is very hard to imagine an integrated university system, where problems are tackled from different practices and languages, if our starting point is a kind of education in which children’s familiarity with different types of language ends before the age of sixteen. When the general social perception is that the humanities ‘are of no use for anything’ or that the sciences are ‘too technical’ and ‘have no concern for society’s problems’, or that the arts imagined in their broad sense (visual, musical and performing) are ‘mere entertainment’, these are the symptoms of a division that neutralises every area of knowledge and produces highly restricted perspectives of their potential.

That is why we believe that treating the humanities in relation to science and technology means, first of all, imagining other configurations of the relationships between fields of knowledge. It is not a case of linking them as separate realities, but one of precisely questioning their strict Cartesian separation, and of working specifically to reverse the process from the foundations. This implies going beyond the paradigm of inter- and trans-disciplinarity. We believe that what we need to do today is not only to cross or join disciplines, but also redefine their separation. In other words, we must redraw the knowledge map, not to mix areas, but to allow and facilitate their indispensable synergies, and encourage them to flourish. Western culture has traditionally represented knowledge as a tree, with a trunk and different branches. We now have a set of branches that have difficulty meeting and speaking, or that simply do not know how to do so. What we need is a knowledge ecosystem where the connections between languages and knowledge, and between the questions and practices of knowledge, are living and dynamic, respectful and cooperative, without depending on new branches that only reach in a single direction.

This epistemological challenge, namely to turn academic disciplines into a living ecosystem of knowledge

without them losing their functional and research specificities, has many concrete implications, of which we have highlighted and presented for discussion the following: 1) Redefinition of the vision, mission and goals of the respective institutions; 2) Comparative work based on existing models or that are undergoing experimentation in different countries or sociocultural environments, and 3) Overcoming the obstacle of the specialisation and sectorisation of 'scientific-technological' and 'humanistic-artistic' languages in order to conceive collective, reciprocal work processes.

As regards the cultural sphere, the humanities have traditionally been associated to the typical cultural expressions and languages of western societies. It is from this hegemony that the academic and cultural ways of the rest of the world are viewed, even including other western languages and cultures that for reasons of history have not benefitted from state protection. Given the way things have gone over the last three centuries, what we call the humanities are actually strongly conditioned by the idea of 'national culture' (in the fields of literature, history, languages, and so on) and by the ethnicist view of 'other' cultures that came about in the colonial era, and even more so in postcolonial times, and which still exerts a strong influence today. The same goes for science and technology, for the branches that currently dominate research, funding and production in the global world are also derived from the scientific and technological revolution of western modernity.

Thoughts about the challenges faced by the humanities in relation to science and technology should not perpetuate these cultural frameworks and their effects on identity or in social terms. A knowledge ecosystem for the 21<sup>st</sup> century must be produced and developed from respect, listening, equality and reciprocity between the different cultures of the world and from the different ways of life therein, in accordance with human rights. This implies two premises: 1) incorporation of the different views of what we mean by 'human' and the environment in which life is developed, and 2) assumption that cultures no longer live in isolation or at a distance from one another but are in constant interaction, hybridisation and transformation, but not always on equal terms.

From higher education systems, these premises have consequences that must be taken into account. First of all, we believe that academic institutions must not only report on these conditions but should also incorporate

them in their ways of learning, teaching, researching and transmitting a humanistic approach to our cultural, scientific and technical experience. This means going beyond the cataloguing of cultures that 'cultural studies' have somehow perpetuated, towards truly intercultural or transcultural approaches and aspiring to dialogue for change.

Finally, with regard to philosophy, what we call the humanities are not separable from humanism, as a philosophical way of understanding the world and our place in the universe. Indeed, humanism, both from its more scientific and from its humanistic and artistic angles, puts forward an anthropocentric idea of the human condition that is currently being questioned from many areas of knowledge and our present experience, which has led to the need to reappraise the definition of the humanities and, with that, perhaps also its goals and methods.

The current limits of humanism can be situated around four core matters: 1) the planetary condition of the main challenges of our time, which make us as part of a much bigger life story, with an ecocentric root; 2) the patriarchal model of humanism, which has neglected many ways of life, worldviews and non-patriarchal interrelations; 3) the religious background of humanism, which despite the shift towards secularity is still grounded on eminently Christian values, and 4) the evolution of science and technology from the sixteenth century to the present, which has changed our relationship with the universe, space, time, matter and other living beings, and even with reality itself and our perception of it, including diversity and its preservation as a fundamental right and necessity.

The humanities are nothing in themselves if we do not put their different activities and ways of teaching and learning in relation to the current limits of the humanist tradition and their future challenges. Right now, the strongest philosophical, aesthetic, technological and other schools of thought have made a stand either for or against humanism. Hence the debates on Trans-humanism, Post-humanism, Anti-humanism, and so on, which are not scholastic debates but rather positions that are establishing how a large part of scientific research, technological innovation and ways of organising life and work are going to happen in the immediate future.

Higher education must find ways to gather and trigger these discussions in the field of teaching and scientific research, beyond its circles of specialists. It is not just about having knowledge of them, but also of being able

to spark discussion on the ethical, social and political consequences of these issues in academic spheres, together with their legal, scientific, technical and economic implications.

From here many perspectives that until very recently were not taken into account are opened up. For instance, feminism and gender studies have now for decades been producing and contributing essential work for repairing the damage caused by humanistic patriarchy with regard to our ideas of the human condition and relationships between us. However, gender studies are often classed as one specialisation among many that do not affect our view on knowledge in general and the way it works. We believe that one of the challenges for the humanities, science and technology as a whole is to include the gender question outside of its specific realm, and even beyond the duality of what have traditionally been viewed as ‘male’ and ‘female’.

On the other hand, the humanities in general and philosophy in particular must acquire the capacity and also the will to welcome the advances that science and its present methods can contribute, for example through knowledge of the way the brain works with regard to such topics as ethics, empathy, tribalism and others. Other technological issues such as robotics and artificial intelligence, or increased human capacities, condition and must be reflected in the future of philosophy and humanistic thinking.

## 2. Political and Economic Considerations

The political systems of each country, the legacy of their own traditions or born out of revolution, are a fundamental element when it comes to evaluating the state of the humanities in their education systems. To a large extent, laws on education and in the field of culture condition the day-to-day work of teachers, creators and researchers. It is not just a problem of public funding, but also one of orientation and goals, and of political priorities and institutional appraisal, which could range from curricular affairs to aspects of operations and promotion.

A fundamental question we need to ask is what kind of culture does each country want in the global context, on the understanding that the response and the way this is done will depend on social, political and economic development, and consequently also the individual

development of its members, including those related to other cultural, political and economic models, and with the natural environment. Thus, for example, during the formation of nation-states, to a large extent the humanities served a major role in forging their corresponding ‘nations’ (speaking a common language that was not necessarily shared initially, the establishment of a cultural corpus and of historical references that were not necessarily shared at first either, and so on), through, or by means of, a certain identity, which in many cases is still being promoted in our present era. In the struggle between democracy and dictatorships of the 20<sup>th</sup> century, to cite another example, the humanities also played a role in creating more democratic (critical, thoughtful and willing to enter dialogue) or otherwise more obedient (dogmatic) subjects. This role is also still very much apparent today. It was also evident in the tension between communism and capitalism, which was played out as a major cultural battle. And it is also the case with the current clash between the liberal and social economy, the unlimited spending of resources and sustainability, homogenising or integrating globalisation, and so on.

Right now, in political and economic terms (but in interaction with the environment, education, etc.), we are faced by a global scenario that in our opinion involves three major issues: 1) the birth or return of authoritarianism, in old and new forms; 2) the multifaceted and widespread nature of war, and 3) the climate emergency as a factor that is questioning the world’s entire financial and production system. All this, moreover, is shrouded by the growing difficulty to distinguish between truthful and proven information (always with an element of subjectivity depending on who is transmitting this information, but that is nonetheless essentially verifiable) and ‘fake news’, which so quickly spreads across global social networks. What place and what role do the humanities have in relation to science and technology in this context? Some laws on education and culture only seem to attribute them a testimonial and apparently ever-more residual role. Others, however, treat the humanities as a corrector or firewall against the evil that is so irretrievably caused from other sectors and practices. In this report, we go beyond these two opposing extremes, for we are working from the idea that humanities are neither a residual heritage that needs to be protected, nor a drug or a remedy to counter the devastating effects of other areas of society. Quite the contrary, the humanities are part of making sense of

human existence and our shared experience and, therefore, of the political and social lives of contemporary societies, within them, between them and in their relationship with the natural environment.

That is why we need to ask where we should place the relationship between current political systems and their interest in or rejection of the humanities. What are the reasons for that? And how do they relate to the academic goals of scientific-technological progress? What do they depend on today? There is a certain preconceived idea that the most authoritarian regimes are the least interested in the humanities. But that is a misguided view. We need only think about Nazism, for example, and its use of culture to rebuild the Aryan identity and push its ideas about society. It is not so much a question of "humanities yes or no", but more of the way they are put into practice, how they are produced, developed and shared, and by which criteria and for what purposes. So, it is very important to assess the cultural and political perspectives, as well the institutional dynamics of the humanities or they could be used for highly elitist and non-democratic motives, which rather than facilitating dialogue and reflection promote credulity and submission.

One of the many aspects to be taken into account in the cultural development and advancement of societies is the socialisation of knowledge at all levels: humanistic, artistic, scientific and technological. It is not easy for the members of a society to have a say in equal rights or be able to make decisions that affect the whole, such as, for example, those related to reducing the impact of climate change or which have to do with ethical issues, such as the use of big data or the application of genetic biomedicine, if they do not understand the basic scientific and technological facts and their humanist connotations, or at least have access to the right kind of knowledge, to assess for themselves the implications and consequences. Most advances in all fields of humanistic and scientific knowledge happen within academic institutions or through people who are directly linked to them, in the same way that art tends to move in certain cultural circles and technological progress is the main driver of industry. In the former case, for example, scientific advances are also communicated via academia, which has very well-established rules to guarantee the originality and reliability of those advances, including the use of technical language that avoids ambiguities but is also unfamiliar to anyone who is not a specialist in that particular field. What is more, use of these communication channels has traditionally

been limited almost exclusively to the members of academia, given their highly technical nature and the fact they must be paid for.

We therefore consider that there are two very important processes of change that need to be taken into account, and that are addressed in this report. The first is the fundamental role, in our opinion, of scientific, humanistic, artistic and technological divulgation and dissemination. The word 'divulgation' comes from the Latin *divulgare*, literally meaning "deliver to the public" (being made up of the prefix *di* followed by *vulgāre*), and involves providing a certain order of knowledge to a broader audience, which implies that this must be done using the linguistic standards and basic knowledge of that audience. Divulgation therefore reduces the distance between academic knowledge made by and for academics and the kind of knowledge possessed by the general public, which for us implies the essential need to socialise the knowledge that the members of society need in order to become implicated in equal rights and be able to make the decisions that affect them. In other words, we perceive that the dissemination of knowledge and advances in humanities, arts, science and technology is a necessary activity not only for the socialisation of knowledge but also, or as a consequence thereof, to foster democratic mechanisms and the democratisation of collective decisions, by incorporating all of society, or all the members that by their own free will wish to play a part in decision-making processes with equal rights and responsibilities. For this same reason we also speak, as a synonym for divulgation, of the dissemination of knowledge, in analogical reference to the way seeds are disseminated to germinate and bear fruit. So we could also speak of 'intellectual pollination'. Indeed, many of the most influential and well-known texts of the humanities were published by their authors in a non-academic, informative manner. And in the case of scientific and technological dissemination, the means used necessarily require the involvement of the humanities in the widest possible sense, since they are based on reading, writing, speaking, audiovisual media and other such processes.

The second process of change that we feel should be highlighted is the method for academic communication of findings, which is shifting from a closed system that due to the high costs can almost only be accessed by the members of academia, to an Open Science model, whereby findings in any field of knowledge, including publications, data, software, and so forth, and their

dissemination are accessible at all levels of amateur or professional research, at no cost to the receiver. This therefore fosters transparent and accessible knowledge that is shared and developed through collaborative networks. Open Science can therefore be viewed as the socialisation and democratisation of traditional academic publications, and is a necessary process given the growing social demand for access to knowledge.

However, the consolidation of the social and cultural methods of knowledge dissemination and the Open Science model fundamentally depend on the political and economic priorities of each country in an otherwise globalised world, where laws on education, culture and the promotion of R&D can be highly influential. So, cultural policies that encourage the dissemination and transparency of knowledge and education laws that prioritise reflective and 'discussive' elements at all levels of education will tend to promote a greater say and democratisation among all members of that society.

Open Science is not, therefore, an option, but a necessity. As a practical or moral concept, the sharing of knowledge and instruments in order to benefit the progress of knowledge that forms part of humanity should be an 'obligation'. An important first change involves the extension of what we call Open Data. Although there are still obstacles and difficulties, progress is slowly being made in some areas of both public administration and the world of research, and it means taking on the commitment to make the huge amount of data that is generated available to everyone at all times. The aim is to share the data obtained or generated from any source, such as that produced in the fields of research or that is derived from different public administrations and agencies that gather information. This would be the case, for instance, with data on the weather, traffic, pollution, finance, health, sports, and so on, which may be generated by sensors, by what is becoming known such as the Internet of Things (IoT), or by our own mobile phones and data repositories when properly enabled and protected.

In addition to being a major contributor to the development of new studies based on real and proven data, this approach compels us to think in depth about concepts related to the privacy and security of data and its public and private use. This requires the deployment of regulations and a solid, disruptive (and also ethical and social) political stance. Although it may appear conceptually simple, the management of 'living' data is a major

technological and organisational challenge. The idea is for each repository of data on any given topic or experiment to be preserved and for the public to be able to access the most recent and enriched version together with successive contributions made by every new study, while safeguarding authorship and the traceability of versions over time. This is one of the main problems with Open Science. Data is hard to come by and costly in resources and time, and it is also hard to share, while the duplicity of transformed data generates much confusion.

Open Science therefore needs a firm and consistent political and social positioning. On the one hand, we must establish the ideological, operational and ethical standards for collaboration in and sharing of knowledge at the global level. We also need to think about how this is feasible in a society that has established mechanisms for the protection of intellectual and industrial property that carry considerable legal weight and where knowledge is such a fundamental strategic and economic factor for innovative companies and projects. In this context, the private sector tends to be highly reluctant to share its most strategic or profitable knowledge, which is why there has been so little progress in this area. Without large-scale involvement of humanistic thought in this major transformation, it will not be possible to lay the foundations any further than what public institutions, such as universities and research centres, are morally obligated to do at present.

Another example of integration is the Horizon 2020 (H2020) programme promoted by the European Union, which focuses on three core areas: 1) scientific excellence, not only in basic research but also in exchange projects; 2) business leadership of small, medium and large companies, with predominance of ICTs, and 3) the social challenges that are also linked directly to the humanities, which include, among others, health, demographic change, wellbeing, food safety and agricultural, marine, environmental and energy sustainability, and the promotion of reflective, inclusive and innovative societies.

In short, any approach to the humanities that relates to its social value and its transformative effects on the freedom and dignity of people everywhere on the planet, with all their conflicts and diversity, must be viewed as a political approach. From the perspective of interdependence, this approach also includes the relationship with non-human beings. Humanities help



us not to fall into the trap of 'solutionism', immediacy and technicality, and provide an idea of the roadmap, analytical density and various assessment criteria. This makes the humanities not only an arena for resistance but a common, critical and diverse front, from which to put into question and at the same time to work together to address the main political challenges of our time.

With regard to economic issues, in any debate or analysis of the humanities, the issue of funding is almost always a central one. Who should finance their transmission, development, availability, activities, resources, and so on? The public system for funding the humanities and culture has been developed in the most prosperous Western societies over the course of the last century through the public education system and a cultural system based on museums, libraries, academies, auditoriums and so forth, as well as through the promotion of the activities associated to them (publishing, artistic production, exhibitions, subsidies, etc.), although there are other ideologies of a more neoliberal nature, where it is felt that at least some cultural manifestations should be self-sustaining.

There are many questions to ask on this matter, all of them necessary, but also difficult to answer, if the aim is to recover the value of the humanities and research on humanistic matters for human experience, and also in relation to advances in science and technology. For example, when it is commonly said that the humanities are not profitable enough, what is really being said? What exactly is this referring to? For whom and in terms of what parameters of profitability? Are there other parameters? Are there other economic models for the promotion of the humanities? Indeed, there is a current of authors (among them the philosophers Martha Nussbaum and Nuccio Ordine) who have prioritised the defence of the non-profitable or useless nature of humanistic knowledge. However, how far can this duality between what is 'profitable' and what is not be maintained in mercantile terms? By comparison, how much science is profitable and in which of its aspects? This is also a highly controversial aspect in terms of the basic scientific research that is mainly done at public centres with public funding. Who should finance that? In many economic and political systems, science is very much funded through public resources, on the understanding that at least some aspects of that research may be applicable in the future. In other systems, much of the basic scientific research is funded through public or private foundations that are financially supported

by private donations. In all cases, however, in order to be granted funding, applicants are asked to reflect on possible future applications and also, and this is a very important aspect, on the socialisation of this knowledge, through dissemination, and how it might end up having a favourable affect in one way or another on social development. In the context of the humanities, do we therefore need to redefine the concept of 'profit'? Indeed, do the humanities compel us to reconsider the very concept of value? What economies and ways of life can sustain the humanistic activities that really do form part of our lives today and of the problems that we need to ponder and develop in a sustained manner?

Based on all this, we believe that considering the humanities 'unprofitable' means having a highly limited perspective of the bonds between universities and the socio-economic system that surrounds them and finances them, and reflects a Cartesian system that is excluding in the way that it classifies scientific-technological and humanistic aspects. If the humanities are to be part of the fabric of higher education and interact dynamically and synergistically with other fields of knowledge, the concept of profitability takes on a new dimension.

If these ideas stem from a negative assessment of the potential employability of humanities graduates, perhaps we should think about the kinds of jobs that will subsist (or appear as new) in the future, which will undoubtedly be very different to our present world. In a scenario where most mechanical or routine activities will be performed by organised consortia of smart machines and devices, with autonomous learning capacities and in constant activity, we might need to start thinking about 'other' types of work that will necessarily have to incorporate aspects that are more inherent to people and their feelings, thoughts and vital attitudes. The interdisciplinary component of potential workplaces will play a central role in the humanities, which will lend meaning and content to many new kinds of activities, both professional and those focused on culture and leisure, all of them necessary for a dignified and dignifying life.

The path ahead is long and difficult. If companies' success is only judged by their position in the market, their profits and their shareholders' dividends, without considering, or sufficiently considering, the plenitude of human life, this change in our perception of utility will be harder to achieve. Higher Education Institutions also have a role to play in debating all imaginable and

evaluable scenarios and the ways in which mentalities, indicators and social, labour and financial systems can be changed.

When job insecurity and low wages are common features not only of most 'countercultural' activities, but also of academic and institutional life, and not only in the field of humanities, what can we expect from our lives and work? What can they contribute and what can they give? What material and labour demands are related today with a better course for humanistic activities in general, and scientific and cultural ones too?

The change may perhaps be brought about by assuming different values, especially among young people, the drivers of change and transformation, beyond commercial success and entrepreneurship, for example, which have been so highly appraised over the last 30 or 40 years and which will have long-lasting effects. The low-cost model does not lead to more efficient and balanced societies, but rather quite the contrary. Nor does disregard for life in the fields and agricultural work, or the view of the countryside almost exclusively as a place of leisure, like a kind of theme park, or the overestimation of urban conurbations, which do not lead to more efficient and balanced societies either. If we think that many activities will be automated, and very much so, in the immediate future, it is obvious that the resulting jobs will have to incorporate other skills and abilities, and these include those linked to and driven by study of the humanities.

Universities, and particularly public universities, in many countries of the world are suffering from budgetary cuts and regulation by different international, national, regional and local administrations, often based on various profitability indicators such as those mentioned in previous paragraphs. This relative decrease in investment, which has been especially harsh over the last few years has, among other things, cheapened the academic careers of young teachers and research personnel, and led to more unstable jobs. At the same time, universities, which should be the ideological drivers of change and transformation, have often become highly conservative in their attitudes and mechanisms. They have not reacted properly and failed to envisage the urgent need for the permanent presence on their institutions and governing bodies of younger blood with a more creative outlook, who tirelessly question the establishment to which they are exposed and are continuously critical of their environment. There can be no

doubting that universities require such freshness if they are to be truly faithful to their mission to society. The excessively regulated, bureaucratic, hierarchical and result-focused vision of university institutions is becoming increasingly apparent.

So, in this Report we also want to reflect upon and make proposals about the added value of people with humanistic training supporting scientific and technological endeavours, both in academia and in the business world. And, reciprocally, the added value that scientists and technologists can contribute to humanistic development. As is recognised in the report *Work for a Brighter Future*, published in 2019 by the International Labour Organization the main jobs that will exist in two decades from now do not even exist yet, and some of the skills that will be most in demand are related to the humanities, communication, relations and critical thinking.

### 3. Social and Environmental Considerations

The way in which the humanities are taught, shared and disseminated has much to do with the cultural idiosyncrasy of each society, including religious factors, with their history and with the relationships they establish and have established with other peoples, with their types of economy, with the environmental needs around them, and also with any possible social and gender inequalities, both locally and globally. Access to culture or cultures in general has always been a factor of social exclusion or inclusion and of the way societies are shaped, including the relationships between their members (equality, hierarchy, exclusion in certain areas, and so on). But beyond this, the different relationships that can be established when it comes to critical tools and individual and collective autonomy are the main elements that contribute to a fairer and more egalitarian society. We are in a world and in societies where inequalities have always existed on every level, meaning sociocultural, economic, gender inequalities, and so forth.

Studies on sociology, cultural anthropology and family relationships carried out in various human groups to analyse migration and migration paths, as well as mobility among families due to marriage, indicate that social and gender differences substantially increased from the Palaeolithic to the Neolithic Ages, due to ownership of land and all it contained. This process also included

people as property, as in slavery, feudal societies and even patriarchy over women, which have featured in many cultures throughout history. Although some of these inequalities have gradually been quelled, as in the case of the abolition of slavery, the path towards gender equality and different family units, universal education and healthcare and so on, the fact is that there is still major variability between cultures and different political and social systems, and this has become especially apparent in terms of access to information and globalisation. However, such globalisation fosters other types of inequalities, not only between people in the same territory but also between territories, which can lead to neo-colonial situations. And given how easily it can be distributed, information (which can also generate 'fake news') can also help to boost or hinder the processes of achieving equalities.

Despite all this, or perhaps due to all this, there is also the perception of new and growing inequalities, such as new and old forms of illiteracy (humanistic illiteracy, scientific illiteracy, technological illiteracy, digital illiteracy), which can increase the social vulnerability of certain schoolchildren. Likewise, the mobility of global populations, through massive and rapid migrations, and which is often the result of those inequalities, but which far from solving them instead often increases them, often makes this situation even more linguistically, culturally, socially, politically and legally complex. If the humanities are about the way we shape and make sense of the human experience in terms of dignity, both individually and most especially in a collective sense, then it is essential for them to include an assessment of the current conditions for equality.

In this regard, it is important and urgent to analyse examples of the contributions of the humanities to equality in different cultural, social and political contexts, and their implementation in higher education, which will help to generate environmental conditions that are more prone towards equality, and that help to reduce these new forms of illiteracy and their impact on people's vulnerability. There is also a need for the humanities to analyse the very concept of 'equality', to prevent it from becoming contradictory to our commitment to diversity and reciprocity between cultures and ways of life. We also need to analyse the extent to which technology, and especially communications, can help ensure that this concept of equality does not contradict diversity or reciprocity, and make sure that it does not work in the opposite direction through, for example,

fake news. Similarly, knowledge of the scientific method as a means to acquire knowledge, which by definition excludes the concept of authority whereby one discovery or theory prevails over any others that might be contradictory, can help us on the path towards human equality and dignity, while maintaining diversity and reciprocity between cultures and ways of life.

A specific aspect is that of environmental sustainability as a source of inequalities and as a path towards dignified living. In the eighteenth century, the Industrial Revolution significantly altered the relationship between people and nature, and is viewed as the beginning of a new geological age called the Anthropocene (derived from the Greek *anthropos*, man, and *kainos*, new or recent). It is not, however, a clear threshold, since the human species has been meddling with nature since antiquity, from the Neolithic Revolution, about 10,000 years ago, and which brought about a radical change in the relationship between humans and the rest of the environment, and the beginning of an increasingly clearer contrast between what is considered natural and artificial. With the beginning of agriculture and livestock rearing in the Neolithic, the human species began to drift away from its atavistic relationships with the ecosystems of which it was a part. We ceased to be hunters and gatherers, and abandoned a way of life that had been maintained since the beginning of our existence, about 200,000 years ago as *Homo sapiens*, or more than 2 million years ago as the earliest hominids that evolved into *Homo habilis*, the ancestor of today's humans.

The Neolithic Revolution was also the start of an ever more sedentary lifestyle, one of the consequences of the major technological and cultural developments that gradually led to the Industrial Revolution and the Anthropocene, which is not a geologic period in the strictest sense (unlike the Eocene or the Pleistocene) but has borrowed the naming structure. Instead, it refers to an era when human activity has started to have massive effects worldwide. In the eighteenth century, the beginning of the Industrial Revolution coincided with what is considered the birth of Western modern philosophy through René Descartes, who proposed the problem of the validity of knowledge as the primary philosophical question and went on to be one of the key figures of the scientific revolution. His way of thinking was also the beginning of the scientific method, and also of the *Cartesian* separation between science and the humanities.

But the schism between nature and humanity dates further back to the philosophical and theological discussions that considered mankind to be superior to the rest of nature, as in Platonic and Augustinian philosophy, to mention just two influential western traditions. In any case, there was a clear distinction between people and nature, which also generated significant differences in different cultural domains, such as between the West, East and so-called indigenous peoples, with regard to the relationship between humans and nature, and to humankind's position in the world.

Advances in various scientific disciplines such as ecology, genetics, neuroscience, chemistry and physics, among others, and new philosophical and humanistic ideas from what are generically known as environmental humanities, were a turning point in our conception of the relationship between people and nature, albeit against strong resistance from the prevailing political, economic and socio-cultural preconceptions and interests. Environmental humanities are an interdisciplinary area of research and reflection that addresses contemporary environmental challenges in a historical, philosophical, cultural and social manner, including scientific and technological aspects, challenges and inputs. It involves dynamically integrating the sources and development of environmental challenges, the most significant of which is climate change derived from global warming and waste accumulation, which has crucial social, financial and political repercussions, for example with regard to the availability of such basic resources as drinking water and food, and the increase in extreme weather events such as catastrophic floods and droughts. This is together, of course, with the different philosophical views derived from the different cultures all around the Earth.

In this context, the environmental humanities are characterised by a connectivity ontology based on the need to integrate human development into ecosystems. Or, put another way, to adopt ecological, economic and social sustainability as a paradigm for development, which implies treating humanity as part of a much larger vital system, the biosphere. Such a system was proposed in 1969 by James Lovelock (although he did not publish his work until 1979) as the Gaia Hypothesis, which postulates that climate, life and the geological substrate act together in such a dynamic, interactive manner that they self-regulate and create balance. According to this hypothesis, the Earth is a complex organism made up of the biosphere, the oceans,

the atmosphere and the geological substrate, which together form a cybernetic retroactive system through which the conditions for life are relatively constant via the control exerted by its own elements. Put another way, Gaia is a homeostatic system that tends to maintain its internal balance and stability.

It is not the only case in which a scientific advance has opened up a new field in humanistic research. One of the most paradigmatic was the publication of the theory of evolution by means of natural selection by Charles Darwin (*The Origin of the Species*, 1859), which was followed by another influential text for both the sciences and the humanities: *The Descent of Man* (1871).

The Gaia Hypothesis, which includes humans and all their activities as part of the homeostatic system and has profound humanistic implications, is based on several scientific principles, such as thermodynamics and the theory of complex systems, which are theoretically grounded in physics, chemistry and theories of information and ecology, among others. Although many of the postulates of the Gaia Hypothesis have been demonstrated empirically, many are deemed improvable by the scientific method, which is why it still called a Hypothesis and not a Theory (according to the current formulation of the scientific method, a 'hypothesis' is an acceptable proposal made by collecting information and data, and although not fully confirmed, serves as a tentative response to a science-based question, while a 'theory' is a model of reality used to rationalise, explain and predict phenomena, which needs to be verified by experimentation or observation).

Nonetheless, the integrated and interdependent vision that the Gaia Hypothesis offers for life, nature and humanity encompasses not only the various fields of science but also the humanities, which restores the humanities as an inseparable part, now and in the future, of human progress. For example, research in ecology has demonstrated the existence of many phenomena of symbiosis, a type of ecological relationship whereby organisms of different species collaborate for mutual benefit, and without which life on Earth as we know it would not be possible. In fact, in evolutionary terms, the first bacterial communities that existed more than 3,800 million years ago quickly grouped into small symbiotic ecosystems, known as stromatolites. The parallels with human societies and cultures are evident, and emphasise the need to use and foster the synergies between different branches of scientific and humanis-

tic knowledge, between different human cultures, and also between human activity and the rest of nature, as proposed by authors such as Edward Wilson, one of the founders of sociobiology. In fact, because of its humanistic implications the Gaia Hypothesis has also been worked on from philosophy by the likes of Pierre Teilhard de Chardin, Thomas Berry, Alan Marshall, Tony Bondhus, Edward Goldsmith, and others.

A derivative of this is the growing phenomenon of Smart Cities. Defined as cities equipped with mechanisms based on the technologies of the information and communication society, these are focused on improving both the management of different services and the quality of life of their inhabitants. They are not solely based on the construction and management of physical and digital infrastructures, but also on the availability and quality of communication of knowledge and social infrastructure, i.e. their intellectual, social and cultural capital. The competitiveness of Smart Cities therefore also depends on the sustainable and socially acceptable implementation of information and communication technologies, and on social and environmental capital. Sustainability and inclusiveness are fundamental components of this worldview, as is the need for the people to co-participate in decision-making. So, the necessary relation with the humanities is evident and direct, at the same time that the term Smart City is being used as a commercial slogan.

In parallel with advances in ecology, chemistry and physics, genetic research has demonstrated the single origin of life on Earth, and therefore the existence of an undeniable biological kinship among all living things, from bacteria to humans, who are all members of the same interrelated vital community. It has also been shown that what is known in evolution as the 'tree of life', which usually places the simplest organisms at the bottom and the most complex ones at the top, with humans at the highest point of all, is actually inaccurate. Despite the existence of an evolutionary relationship between all current and extinct living beings, genetic research indicates that there is no directionality in evolution, which places humanity on the same biological level as all other living beings with which we share our planet. This is a solid argument for environmental humanities, and raises important philosophical questions not only on our relationship with the rest of nature but also on humankind itself.

However, the absence of evolutionary directionality does not mean that mankind has found a new ecological niche, namely culture (in ecology, an 'ecological niche' is the place that a species occupies within the ecosystem, or, in other words, it is the function that a species performs within its ecosystem, and which is defined by such aspects as behaviour, the nutrients it consumes and where it gets them from, the effects it has on other species, and so on, and is the result of its evolutionary adaptation to the environment in which it lives). This ecological niche, in which the development and transmission of humanities, science and technology are deemed typically and exclusively human activities, arises from the ability to reason, deduce and analyse that is generated by a very specific organ, the brain. Advances in neuroscience have shown that the most distinctive and apparently exclusive characteristic of the human brain with respect that of any other organism, and despite humans having evolved out of ancestral primates, which came from other ancestral mammals and those, in turn, from the lineage of vertebrates, is the existence of neural circuits, located in the so-called frontal lobes, that are involved in the ability to visualise and plan alternative futures, to reason reflectively on the pros and cons of each of these futures, to make decisions that take this reasoning into account beyond any primary biological impulses, and to adapt individual behaviour in the right way to achieve the desired goal (what is called "control of the executive functions").

The ability to adapt behaviour to a desired goal or future very importantly includes inhibition against impulsive behaviours, which are produced as a result of emotional and previous learning experiences that condition behaviour in a reflexive, subconscious way. In terms of cerebral activity, emotions are preconceived behavioural patterns that are automatically triggered in any situation that requires an immediate response, since pondered responses are much slower and consume many more mental resources. This implies that we are not aware when emotions are generated (such as fear, anger, sadness, disgust, joy or surprise), but once they have been generated we do become aware of them and they can be redirected through the emotional control that is part of our executive functions. Emotions are, in evolutionary terms, crucial for individual survival, since they permit quick responses in situations that require them. The study of emotions and their role in human life has also been widely analysed by the humanities and art. In fact, art appeals directly to human emotions.

And as for philosophy, the subject of emotions appears in the work of many philosophers, both from western tradition, such as Plato, Descartes, Pascal, Hobbes, Spinoza, Shaftesbury, Hutcheson, Hume, Kant, Brentano, Husserl, Scheler, Stein, Heidegger and Sartre, among many others, and also from eastern tradition. In the fourth century BC, for example, the first Chinese philosophers were distinguishing between the mind (*xin*), biological human nature (*xing*) and emotions (*qing*) to explain the origin of morality and knowledge. And the subject of emotions and emotional management is central to the Buddhist and Confucian traditions. In other words, research in neuroscience and philosophy are clear examples of the synergies that can and must be established between the humanities and science.

Research in neuroscience has also shown that, although areas of preferential activity can be identified in the brain that manage certain types of task, it functions as an integrated whole, synergistically using all the sensory data it receives together with its previous experiences, emotional responses and the capacity for reflection and reasoning. Some activities that were believed to be typical of adult brains and that needed to be specifically learned, such as the use of the scientific method and philosophical reasoning, have been shown to be consubstantial to the human species, and are used instinctively from childhood as part of the 'basic software' of being human beings. For example, 12-month-old babies have been shown, before they have learned to speak, to routinely use both disjunctive syllogisms and the scientific method (observation, deduction, experimentation, analysis, new deduction, and start over again) to relate to the environment and extract information that they find valid and can hence transform into knowledge. Going back to the Anthropocene and current environmental challenges, where is this taking us? Although Gaia tends to maintain the homeostasis of the Earth, the accumulation of waste, over-exploitation of resources and the need to produce huge amounts of energy are pushing the planet to the limits of its own capacity for recovery and regeneration. Although there is debate about where this is ultimately heading, due to the lack of scientific data with which to compare the situation, and despite the existence of pressure groups who seek to minimise or deny the effects of climatic change by confusing them with oscillating weather conditions, alterations to biogeochemical cycles are threatening to increase social and territorial inequalities, cause more extreme weather phenomena, such as prolonged droughts and

floods and other catastrophic meteorological events, and as a result raise the number and virulence of regional and global conflicts.

Scientific research must open new avenues for understanding these phenomena and offer new possibilities for managing human needs, based on its methods. Humanities, in turn, should enable and facilitate intercultural, intersocial and interterritorial dialogue, reasoned assessment of needs and the establishment of shared and achievable sustainability goals both locally and globally, which also affects the ethical aspects of the integration of human life in its environment. And technological development must feed on scientific and humanistic contributions in order to streamline the transition towards sustainable development. Everything must come together in a political, social and cultural climate that encourages the integrated functioning of human brains (i.e. people), in a sufficiently settled environment in which they can make the most appropriate and meditated individual and collective decisions. And once these decisions have been made, they must have sufficient room to adapt both individual and collective behaviour to make them possible, in a multicultural, multisocial and multiterritorial environment that is respectful of different perceptions and sensibilities, and making use of the elements that are best suited for the common good. One of the goals of this report is therefore to offer a platform for meeting and discussion between the humanities, sciences and technology so that they can contribute synergistically to the environmental challenges that human activity itself has generated in every one of its senses.

In many cultures, human beings have viewed themselves as the centre of the world and of creation, different from the rest, with the right to use and exploit the rest of nature without having to render account. In modern times, we do the same as re-creators. However, the environmental challenges require a reappraisal of the situation, given what our legacy means for future generations, for human well-being and dignity, and for life as a whole. This also means non-human intelligence. In other words, the meaning and value of humanity must be resituated, in order to integrate human life, in a balanced way, in the life of the planet as a whole. And these are issues that go further than scientific research and technological applications and are instead fully part of the field of humanities.

## 4. Educational and Institutional Considerations

In general, education systems in much of the modern world, especially in secondary school and higher education, have a globalised tendency to prioritise the resolute, adaptive, and competitive aspects of learning, with a growing vocational focus. This has even affected the way we work in humanities departments, adapting all knowledge and research activities to goals, methodologies and (currently digital) instruments that are often based on criteria alien to the activity's own needs. The problem-solving and critical questioning involved in humanistic activity, which seek to trigger the critical, evaluative and creative dimensions of the relationships between what we do, what we learn and what we know, are side-lined from education at too young an age.

In a relatively similar fashion, there is often a tendency in science to try to explain scientific knowledge and theories in a finalistic manner, to solve specific problems rather than employ dynamic processes involving the gradual and critical extension of knowledge, which is often obtained *per se*. And these require the application of the scientific method in some of its forms, such as experimental or the hypothetical-deductive, and of reflection, also as procedures to predict and prevent problems.

On an educational level, all learning, whether of concepts (regardless of whether these are humanistic, scientific or technological), of skills (procedural learning) or attitudes (inclusiveness, respect, critical and reflective assessment situations, dialogue-seeking to resolve conflicts, empowerment of one's own life history, etc.), is stored as memories in the brain in the form of patterns of neural connections. The brain is the organ of thought, and its activity produces mental functions and psychic faculties. Learning fuels the brain, and this conditions a person's self-image and their view of their environment, and the way they relate to it. In other words, education is the key to the future of people and societies, as the great theorists of modern pedagogy have been emphasising for decades, with specific proposals of great didactic value that promote, above all, the personal growth of students from shared, cross-cutting and dynamic experience, getting them socially implicated in a context that enriches human dignity. An education that synergistically and harmonically integrates the humanities and science through

thought, reasoning and emotions will help to generate more plural and pensive human minds.

The more neural connections a person's brain has, the richer their mental life. But that is only half of the brain-building process through education. The other half is about the areas of the brain that are prioritised when establishing new connections. An education system that prioritises the management of otherwise inevitable uncertainty and changes to the environment through fear and, by extension, credulity, is not the same as one that does so via transformative curiosity. The former, taken to the extreme, tends to generate fearful people who will shy from change, and thus be more easily manipulated by demagoguery and populism. The latter, also taken to the extreme, will lead to people with a proactive attitude who are willing to thoughtfully explore new ideas and transform themselves and their surroundings should they deem it appropriate.

These differences arise from the way knowledge is transmitted, and how it interacts with other knowledge. To put it bluntly, primary, secondary and higher education that integrates humanistic, artistic, scientific and technological knowledge in a dynamic way, not by blending them all into one but by using them all, each with their epistemological particularities, to address different issues from all possible angles, will help to build people with a greater mental capacity to integrate, value and reflect on any situation. In other words, it will make for individuals with a greater capacity to contemplate and appreciate situations by themselves based on the data around them, and become involved in the search for solutions and to commit themselves to making them happen, both individually and collectively. Primary and secondary education conducted under these conditions necessarily means the same notion should be carried across to higher education, with the incorporation of humanistic aspects in the study of science and technology and vice versa, in order to maintain and enhance this 'wide-angle' lens, but without neglecting the opportunity to 'zoom in' on any required specialisation in any particular field of study.

If education stops teaching students to think and evaluate what we do and what we know by themselves and with others, and focuses only on the zoom without a wide angle view, it is no longer education and instead becomes schooling, programming or indoctrination. We should bear in mind that the word 'education' comes from the Latin *educo*, which is formed by the prefix ex-

(out of, far from, in each part of, in awareness of), and *duco* (driven, guided). So, the debate on the humanities should not be about how many hours or how many departments are needed in humanistic fields, but about ways to promote a certain attitude to knowledge (or knowledges) from the very start of the education system that includes all forms of learning and allows bridges and mutually enriching relationships to be built between science, technology and the humanities.

One of the key questions we need to ask is what curricula favour this dimension of learning and how education methodologies should be focused in order to promote cross-cutting knowledge and growth. Curricula tend to focus on *what* we need to learn (the content), and at best make only a few suggestions as to *how* it should be learned (the methodology). Indeed, *what* needs to be learned is one of the most segmented aspects of academic disciplines, and there are often very few inter-relations between them (especially between science and humanities). So, another key question to ask is how the *why* can be included in curricula, i.e. *why* we should learn certain things (the *what* or the content) and *why* this has to be done in a certain way (the *how* or the methodology), given that it is precisely the *why* that is always cross-cutting and lends meaning to everything else.

Taken to specific and possibly more tangible cases, and to cite an example from that of Europe, it is essential to reflect on the effects of the deployment of the European Higher Education Area on these education conditions; on the limitations faced by teachers and students when it comes to finding an interrogative, critical and evaluative approach to what they do; on ways to assess elements that do not apparently fit easily into current indicators of education, such as intuition, peripheral thinking, cooperative problem-solving and so on, and on what effects the rankings have on the humanities. Throughout this analysis, and something that justifies the imperative need for it, there is another crucial aspect that needs to be taken into account: complex situations only find sufficiently satisfactory and efficient answers from plurality and diversity, through wide-angle analysis from which we can zoom in on the most important points, and interrelate them.

At the institutional level, there is a general feeling of the regression or residualisation of humanities departments at many universities and higher education centres around the world, as well as humanistic approaches in other areas, which are viewed as accessories or optional.

The extent to which this is the case in different countries and contexts needs to be examined, along with the consequences and also experiences that have worked in the opposite direction, like some of those included in this Report. In many countries, a shift or transfer of humanistic activities has been observed. While the humanities are leaving universities, they are spreading into other types of cultural entity or institution. Similarly, there is also an excessive mood of mercantilist technical professionalisation in the scientific and technological departments of many universities and higher education centres, which put limits on a more global vision.

One of the issues to be resolved is the assessment of multi/inter/trans-disciplinary research. In terms of academic and research policies, this kind of research is held in increasingly higher esteem at the conceptual level. Indeed, mankind's greatest advances, in any area, usually happen in the borderlands between disciplines, where the weaknesses of one become the strengths of the other, and vice versa. However, in order to apply for funding, stand for academic positions or even to justify the curriculum, the system is cordoned off into impermeable areas of knowledge that work in the opposite direction, i.e. they clearly foster monothematic specialisation above transversality. Hence the long-standing but growing tendency in the scientific and technological university world to take refuge in the 'business' of publications and research focused on success in journals and 'competitive' assessments, while paying little heed to the potential transferability of 'research' or the need to socialise knowledge. However, and perhaps to compensate for this, the competitive funding of research, for example in the specific scope of the European Union and in several other countries, has, for some years now, included a section on the potential transfer of knowledge, where any intended actions in this regard should be noted. This requirement has led all public research centres and universities to create or expand communication offices, in order to contribute to this goal. However, these tend to be highly inward-looking, and lack the required multi/inter/trans-disciplinarity. We hence believe that we need to take another look at the interrelationship between disciplines, and this matter is also analysed in this Report.

By what processes are these displacements occurring and what are the consequences? The University, as an institution, has not only chosen to prioritise certain areas of knowledge, but more importantly certain procedures, objectives and standards for the assessment



and profitability of academic activity that are often unsuited to humanistic activities, which tend to encourage specialisation activities in very specific and limited areas. What are universities winning and losing by this move? On the one hand, by acting like this, universities are pandering to the dominant discourse and the increasingly widespread perception that the public sector in general needs to be changed into a merely neutral provider of quality services to society. This is the very worst case scenario for humanistic studies.

This view, manifested in a wide variety of ways depending on each social and cultural situation and each country's policies on universities, places the concept of the "citizen that must be provided with services", and which must be as personalised as possible, right at the centre. In this process, which in our view is still happens far too incipiently, the people also must also be made to feel they are able to control and audit the way the resources that they finance with their own taxes are used. In addition, some lobbies are trying to weaken or diminish that public sector, either because they have so little confidence in its efficacy, efficiency and transparency (often justifiably) or for more short-term interests, such as prioritising certain budget items over others or transferring them to the private or mixed sector, to the benefit of the corporations they represent. This legitimate need for control drives the creation of protocols and legislation to guarantee that the procedures, expenditure and results of institutions and administrations are monitored. The increase in controls and guarantees, and the inherent difficulty of managing such a highly digitised public sector, is a challenge for administration as a whole and, in particular, universities.

An example of this perspective of change in the relations between the administration and the people is the implementation of new models and concepts for life in cities and metropolitan areas, where the most rapidly-changing concentrations of the population are located. In Smart City or Smart Metropolitan Area terms, the people are active agents of the processes of urban and social change that will supposedly lead us towards a fairer, more sustainable and more caring society. Guided by such events as those derived from United Nations 2030 Agenda, cities are building a discourse that prioritises such issues as equity, circular economics, sustainability, the environment, health, mobility and governance, among many others. Where do universities stand in this new order?

When we project this phenomenon (and many other changes, such as the new digital skills of young students and their methods for socialisation) onto university, we find that they are affected in a variety of ways. On the one hand, as a public organisation (or private, but nonetheless projected at the public), it is subject to mechanisms for the control of procedures, results and, in the public case, costs, like any other administrations and services. This implies a certain level of often bureaucratic administrative control that clashes with the academic way of doing things, where there is generally less concern about criteria of economic efficacy and efficiency. It is the scientific quality or level of what is done for society that matters most and, unfortunately a lower status is attributed to the provision of adequate, modern teaching that is connected to the needs of society and the labour market.

So, in the adaptation and connection of academic activity, especially teaching, with the specific and often circumstantial demands of the socio-economic and industrial fabric, the situation is still very difficult, and also very unclear, in many university contexts beyond the quest for the very survival of academia as an institution. Is it the socio-economic fabric that should be dictating academic activity? Where does the need for university autonomy stand here? Is it possible to satisfy all the different stakeholders: the financial, political and social, students and academics?

Along with this, there is the pressure to specialise and to forge professional profiles that are in keeping with the specific demands of the economy at any given time. A paradigmatic case is the need for computer experts with in-depth knowledge of certain tools or products that are mainly implanted in the market. These computer packages and services often have a relatively fleeting lifespan in comparison to the working careers of professionals in the sector. This phenomenon of ultra-specialisation resonates with the tendency for science and technology to head in the same direction. The movement to promote multidisciplinary has only just begun, but trans-inter-multidisciplinary activity is still too heavily penalised in the academic context, and especially the mechanisms for funding research and in the relentless universe (and business) of publications.

Education centres are responding in a variety of different ways. Some simply react by inertia or mimicry, depending on the setting and what leading education institutions are doing in their respective fields. Others

respond with the utmost immediacy, for example by creating degree courses that are very tightly bound to the needs of the labour market.

We also need to differentiate between universities in terms of their history and origin. 'Historic' universities tend to offer a wide variety of degrees in all areas of knowledge, as part of their traditional mission to teach people who, over the years or centuries, are required by a certain society. The globalisation of supply and demand, and the internationalisation and appearance of new 'markets', are gradually changing their ecosystem. They still try to meet what they believe to be their commitments, regardless of financial context and the returns, and look to balance human and economic resources in order to satisfy 'all' academic needs, as perceived by the institution itself. This means keeping and/or finding staff and degrees that are difficult to sustain in the medium term.

Meanwhile other universities, which are often privately owned, focus their portfolio of degrees on the direct needs of the market and also, let's face it, concentrate on those professions that they consider strategic, be that socially, politically or to create nuclei of power and influence. By way of example, we find universities that concentrate on or prioritise such strategic areas as law, economics, business and health sciences. This brings them closer to present and future decision-making hubs and, ultimately, to empowerment and consolidation of their influence (a possible mission of the institution itself) and to hypothetical financial returns in the future.

We cannot ignore how certain currents have been bulldozing the image of universities as the original, sole and essential source of new knowledge. There are several questions that we need to ask here. What should we make of the boom in 'business universities', especially with regard to lifelong learning? How can the mechanisms for accrediting and acknowledging skills and knowledge (which are conveniently guaranteed via blockchain procedures) be coordinated with the demand for professionals and their remuneration? How can we integrate the research done in large companies within the 'open' panorama heralded by universities? And how can we quantify and evaluate, in a guaranteed and secure manner, the effect in the present and in the immediate future of quality virtual learning that is now so widely available to different layers of the population? We are no longer merely speaking of remote or open universities, but also of the huge amount of materials

and structures that are more or less spontaneous or even supported by major universities, that can be found nowadays on the internet (Coursera, Udemy, and so on, and in such an uncontrolled and uncontrollable fashion on such social platforms as YouTube).

This reality clashes with the lives of institutions that often stand out for their contributions to knowledge and research, but are struggling to subsist and to attract the best academics and researchers and the best students. How are these institutions to remain preeminent due to having the best experts and professionals, who can only be recruited and conserved if they are provided the means to do their research projects in a reasonable, long-term manner and with the right social and emotional returns and the knowledge that they are supporting human progress? We believe that one possible answer might be based on the ability to maintain and strengthen stable, well-structured, well-funded and well-governed, multidisciplinary and multi-institutional teams that integrate different fields of knowledge and, as a result, provide a response that is better oriented towards the need to understand and improve the complex systems that make up the world today. One such alternative is being consolidated, and it revolves around a new model of self-styled 'popular' or 'free' universities that are trying to provide an answer to some of the challenges and shifts that we have been mentioning in this introduction. However, without going into their social relevance and connection with new proposals and visions, to what extent are they or can they be ratified as academic universities?

Another key question for higher education in relation to the humanities, science and technology is where all of this is going to take us and who will ultimately benefit from it? Thinking in general, much of what 'comes out' of universities has no specific projection (so it does not really 'come out' at all) basically because the actual research is not based on society's direct needs but on the intellectual intents and interests of researchers and research groups. However, there are different models that depend on corporate involvement in university research and others for governing the obtainment of economic resources. Another considerable amount of university results is channelled through instruments that are perpetually being changed and adapted, such as framework programmes or national research programmes, which depend on political management by each country or each conglomerate of countries, such as the European Union and its Framework Programmes,

which are increasingly dependent on national programmes and whose intentions are well-meaning: to foster collaboration between states in terms of research and development. Unfortunately, however, the system supposedly driving their leadership has mutated into becoming the fundamental mechanism for the survival of research groups and other related institutions.

In the specific example of the European Union, the latest trend in Horizon 2020 programmes and the future Horizon Europe entails an incessant increase in the weight of (large) companies in the constitution and credibility of consortiums and in the distribution of resources as opposed to university groups, and it is easier for more flexibly structured private organisations to justify such expenditure than it is for more compartmentalised and hard-to-govern university system. Within this framework, the humanities are at risk of being marginalised.

Finally, we should consider the question of the relationship between the humanities and the circuit of cultural industries. It still seems evident that the world of humanities is unclear about how its academic, teaching and research work forms an integral part of the value chain in the future employment world and, in particular, of the promising changes to the cultural industry. It is shocking to see people question the connection between academic activity and the 'financial world', beyond the personal brilliance of scholars in different subjects. We need to stop viewing society as something to be instructed, driven or indoctrinated and instead see it as an integral part of the cycle of knowledge creation and the training of people and, in particular, citizens.

Of the many reflections that we could make on this subject, it is clear that, in the world of the immediate future, employment will gradually become scarcer and human beings will have to fill their time with other activities that generate another type of compensation and positive feelings. Industry linked to culture (and we are not just talking about the supply of cultural content, but also the whole industry that supports it by creating physical, digital and virtual infrastructures) and industry dedicated to the identification of interests, to the generation of expectations, to media management, to management of the business model, and so forth, will be the bulk of the work done by humans. The weight of the digital, virtual, augmented reality and other such worlds will also be very important and hence the need for universities to train new people who are able to recognise and integrate the different universes involved.

The establishment of permeability mechanisms between the universe of the humanities and the people, wherever they are, from whatever starting point, will bear increasingly more important value and weight in the creation and perception of personal and collective well-being, harmony, plenitude and satisfaction among societies.

Moreover, if this connection between the two universes, the academic (the trinomial of the humanities, sciences and technologies) and the resulting economic and social reality, does not occur, the void will be filled by others: clearly the evolution of those that are already being deployed, plus a multitude of complementary or additional initiatives that will come from other business sectors, and the most restless from the world of science and technology, who will have spotted an endless number of opportunities for the production, creation, diversification and generation of beauty and wealth.

In short, how can modern-day public institutions maintain and promote their commitment to social equality and the universal availability of all knowledge for everyone? What institutional scenarios can we imagine for the immediate future? Centralisation or decentralisation of universities? Standardisation or diversification of the ways of exercising knowledge? If we take heed of the tendencies and more superficial trends and perceptions, the shift towards the centralisation of systems and processes of coordination and control will unfortunately become even stronger.

Universities are following the same path. Coordinated and centralised organisation mechanisms, especially those based on computer applications, are tending towards unification because they are cheaper from the preponderant perspective, which is that of managers. Flexibility and proximity are always more costly and difficult to control, but the key factor when articulating decentralised, close and flexible mechanisms is precisely to get them to adapt to the changes that are inexorably on the way.

The distance and disregard among the management of academia is not working in our favour. It would be a grave mistake to consider this activity inferior because, from our cross-cutting approach, all cultures and knowledge are necessary in order to survive in the university of the future. Another dimension is blooming, and how is university teaching to be organised (and hence its areas of knowledge and departments) in order to structure a flexible offer,

with a capacity for evolution and sustainability, and to transmit knowledge and connect in a certain way with society?

The current tendency to specialisation from the first year, and to the continuous creation of master's degrees in line with scientific and technological trends as they appear, does not help to build bridges, although some of these courses do pool these areas, as in the cases of bioengineering or studies that combine environmental issues with social and territorial planning.

So, throughout this context, what are the implications of the Responsible Research and Innovation (RRI) paradigm and how should it be addressed at the institutional level, especially in relation to the humanities? Many science, engineering and architecture courses, for example, have made major efforts to progressively introduce aspects related initially with ecology and then with sustainability, and more recently with values and ethics in the research and exercise of professions. Clarification of the missions and visions of universities, along with the creation of codes of ethics in different university activities, has helped to change the flat and, apparently, neutral scenario of science and work at university in general.

What would be the most appropriate science and education policies to integrate the humanities, science and technology into higher education systems nationwide, and what success stories could be used as benchmarks? What are the implications of the concepts of academic autonomy and academic freedom at universities in relation to the humanities? How are these two concepts configured in the face of the current challenges? Some universities have already included subjects, seminars and even postgraduate courses whose purpose is to bring the humanities and science/technology closer together in an interdisciplinary manner. These are good examples of the humanities being moved closer to or included in other knowledge areas of higher education, and which foster joint research in particular fields. Analysis and reflection on the kind of future we all want for society should guide us in the exploration and implementation of a higher education that, without losing the necessary specialisation, opens its horizons towards the synergies offered by different fields of knowledge. This report hopes to contribute to that.

# The Report in a Nutshell

Key messages from  
all the contributions

# Part 1

# Worldwide Context

**1. What are the global challenges that require science, technology and humanities to be integrated into a conception of research and teaching in the higher space?**

# Higher Education in the New Era

Federico Mayor Zaragoza

- On December 2015 the Resolution adopted by the UN General Assembly, with the aim of Transforming our World by means of the 2030 Agenda and the 17 Sustainable Development Goals (SDGs), was a good cause for faith in our ability to tackle the global threats posed by the Anthropocene.
- The resolution coincided with the Paris Agreements on Climate Change, which were signed after several recommendations from the scientific community and a direct contribution from President Obama.
- The SDGs represent the commitment of all countries all over the world, in a multilateral UN framework, to wisely guide the behavior of human beings in order to ensure equal human dignity, with a knowledge-based strategy that shall provide them all with global human and sustainable development (food, water, health, environmental care and education).
- Now is the time to calmly discuss education and assert the essential importance of UNESCO's Constitution which, based on ethics and equal human dignity, proclaims that the goal of education is to create "free and responsible" people. These are the features that Francisco Giner de los Ríos proposed almost a century ago when he defined education as the capacity to "sensibly manage one's own life" and to act according to one's own reflections and never according to the dictates of others or of anything else.
- Education is a social component that allows human beings to live a life of dignity. It gives them the right to a dignified life! So, there should be no limitations on access to education at any age, on the possibility to learn and to study to acquire an education, i.e. to become capable, as already emphasized, of acting according to one's own reflections and not under the influence of ideological or religious dogmas or the dictates of others.
- What really matters is learning to be, instead of learning to have. To be oneself to the fullest extent possible.
- We must always bear in mind the difference between education and training. Training may vary substantially at times, reflecting progress made in the acquisition of new knowledge. In contrast, education is not based on aptitudes, but rather on attitudes, that is, on unchanging principles derived from abilities that are exclusive to the human condition.
- Conscience is the ability "of the human spirit to recognize itself, in its essence and in its changes... The sum of present or past experiences is what enables men to perceive an image of their physical and moral personality". This is why the promotion of philosophical and creativity capacities is essential at all levels of the educational process.
- For the first time in history, "We, the peoples" are men and women and, thanks to digital technology, both know what is happening worldwide and can express ourselves freely. No more silence, no more fear, no more submission.
- From a global perspective, universities should right now be the main parties responsible for mobilizing all human citizens of the world, in order to readdress the present trends. It would be a historic error not to act firmly and without delay in order to counteract many of the current ignorant and ideologically biased initiatives sponsored by irresponsible leaders.



## Key ideas

- Re-founding of the United Nations - Multilateral democratic system.
- 2030 Agenda and Sustainable Development Goals (SDGs).
- Paris Agreement on Climate Change.
- Endogenous and all-inclusive development.
- The goal of education: creating “free and responsible” people.
- Intergenerational solidarity - “living together” - recognizing the equal dignity of all human beings.
- Promotion of philosophical and creative capacities at all levels of the education process.
- Adoption of a “Universal Declaration of Democracy”.
- Universities at the forefront of the mobilization of “We, the peoples”.

## Recommendations

- Urgent enforcement of the democratic and multilateral system, with the elimination of plutocratic neoliberal groups (G6, G7, G8, G20).
- Adoption of a Universal Declaration on Democracy.
- New concept of security (it is intolerable to invest in armaments and the military while several thousands of human beings –most of them children from 1 to 5 years old- are dying of hunger and extreme poverty).
- Teaching a culture of peace at all levels of education processes.
- Using the present possibility of free expression in order to mobilize “We, the peoples” and raise our voices as citizens of the world.
- Universities must be at the forefront of the radical and urgent changes that are needed to put the SDGs and the Paris Agreement on Climate Change into practice.
- Knowledge-based solutions for the main global threats, particularly those that are potentially irreversible.

# Knowledge Resistance: A Global Challenge – in Research and Education, in the Humanities and Elsewhere

Arne Jarrick

- The mission to promote a knowledge-affirming attitude among broad sections of people is a strategic societal challenge, pivotal for the destiny and survival of our societies. Consequently, this should be a vital concern for the education system as well as for the scientific community.
- Such scientific endeavors should be organized as concerted efforts by scholars from different and too often sadly unrelated academic fields. Thus, to meet the challenge, humanist and social researchers should join forces with their colleagues from the natural and technical sciences for a common intellectual cause.
- In the academic community there is today an exceptional chance for rapprochement between the human, natural and technical sciences. This could be built on the widespread recognition of the plasticity of the human brain, on the basis of which, but also given the seemingly ineradicable confirmation bias, efforts to promote a knowledge-affirming attitude should be introduced early on, as early as middle school, and reiterated and developed at high school, and even at college and university. Students ought to be trained to take independent views, but also to respect other's independent views and needs for self-esteem. But to avoid instilling an overly stubborn attitude among students, they should also be trained in self-distance and suspicion of their own truth-holdings. Correspondingly, students should not only learn their favorite subjects but also become familiarized with subjects that they are not spontaneously curious of.
- There are obvious reasons for the need to raise these issues. First, the advancement of knowledge is largely meaningless in a world of ignorance or outright disrespect for knowledge. It is a universal fact that humans not only seek knowledge, they also seek to avoid or even resist it. And there are some worrying indications that things are getting worse in our time. Secondly, if people make uninformed or misinformed decisions, it will often cause them unintended or even unwanted consequences. Of course, the same will happen when people acknowledge real knowledge if they are not willing to adjust their actions accordingly. Thus, the mission is certainly cognitive, but also practical: first to erase the wall of ignorance, then to weed out behavioral inertia. Furthermore, so far very little research has been done on the conditions for the long-term breakthrough of basic knowledge. Studies on knowledge resistance will remain incomplete without studies of knowledge breakthroughs in society as a whole.
- Obviously, then, we are facing a strategic challenge that must be resolutely and ambitiously met if we want to avoid disastrous development of human society worldwide, but also in order to uphold the credibility of scientific enterprise and the education system. It should be taken up as a priority challenge in the EU's framework programs and elsewhere.
- But this lacuna only makes it even more important for us, humanist scholars, to stick to our basic mission as truth-seekers regarding the human condition, which basically means enquiry into the feedback loops of circumstances that condition and are conditioned by solely decision-making, meaning-seeking and culture-building agents – historically as well as in the present.

## Recommendations

### For the research community

1. Stress that the specific humanist study of the human condition means inquiry into the loops of feedback from circumstances uniquely conditioning and conditioned by decision-making, meaning-seeking and culture-building agents.
2. Researchers in the human and social sciences should join forces with their colleagues from other sciences for a common intellectual and scientific cause – to ask clear questions about essential issues, in search of the truest possible answers to these questions.
3. Fight post-modernist contempt for science and truth-seeking.

### For the educational system

4. Students at most levels should be trained to take independent views, respect other people's views and to scrutinize their own views as diligently as they do those of others.
5. It should be compulsory for highest level students to familiarize themselves with knowledge domains that are not their first priority.
6. The curriculum for all highest level students should include philosophy of science, textual analysis and close reading, source criticism, academic culture of communication and science ethics.

### For policymakers

7. Launch a large-scale international comparative research program on knowledge resistance and ways to overcome it.
8. Endorse policies to safeguard substantial space and resources for free basic research.

### For all citizens

9. Promote a knowledge-affirming attitude in practical life as well as in theory.
10. Make efforts to depolarize the cognitive distance between people with conflicting truth-holdings.

**2. What roles do universities play in the defence and promotion of humanistic approaches in all areas of knowledge and how are those roles addressed in the world's different education systems?**

# Consilience between the Sciences and the Humanities: Small Steps towards a Humanistic Education

Ahmed Bawa

- Universities as social institutions are experiencing a growing legitimacy gap represented by a chasm between universities and their publics stemming largely from perceptions of alienation, and of seeming disconnection from local contexts philosophically and in terms of their knowledge projects. This is heightened by the changes taking place in technology and in the integrations between machines and humans. These contexts create an exciting, though daunting, moment for universities; in particular through the emergence of new forms of humanistic education through richly diverse convergences between the sciences and humanities.
- There have been strong and compelling arguments both from the sciences and humanities that a shift towards convergence is the only way of organically reintroducing values perspectives to knowledge projects.
- There is universal consensus on the potential of science to impact positively on improving the people's quality of life. The question is to understand how societies take up science.
- Academic disciplines however, are powerful institutional structures. It is the way in which universities organise themselves. Important voices such as that of E.O. Wilson believed that all knowledge – sciences and humanities – is by nature unified.
- New modes of knowledge production that blur the boundaries and create synergies between domains of knowledge are emerging. University-industry applications-based research enterprises have produced what is referred to as Mode 2 knowledge production and the establishment of interdisciplinary centres for research and/or teaching. These are either within the sciences, humanities or social sciences or they may indeed straddle these domains. This happens especially where there is interaction between academic research and the world of application. Open and citizen science experiments together with an understanding of the complexity of interactions of different knowledge systems in society all provide for new adventures in 'consilience'.
- These approaches, and others, may well interweave with each other in producing new approaches to knowledge that will potentially contribute to the emergence of a humanistic knowledge enterprise and hence humanistic research and education.
- While universities regularly commit themselves to interdisciplinarity and the integration of knowledge domains, these commitments are not often translated into structural and policy changes, thereby reducing their sustainability.
- The response of universities and other knowledge-intensive institutions to the big challenges being faced by humanity will probably have to be shaped by major epistemological and pedagogical shifts that avoid as best they can the ideological overlaps in the knowledge projects of each society. How are universities, the scholars within them, students and the many publics of knowledge producing institutions to navigate such complex terrains? While this would seem to be an intransigent problem because it is tied to the balance of forces in any society, it also opens up the possibility of new conversations about the construction of knowledge.

**3. How can the obstacle of the specialisation and sectorisation of ‘scientific’ and ‘humanistic’ languages be dealt with in order to overcome the mediation of ‘dissemination’ and be able to imagine collective and reciprocal work processes?**

# Overcoming Specialization and Separation of ‘Scientific’ and ‘Humanistic’ Knowledge. The Co-creation of Hybrid Education Programs from Reciprocity and Complexity Understanding

Susanna Tesconi

- Higher Education Institutions should advocate for and foster an academic culture based on intellectual cross-pollination rather than dissemination in order to create fertile ground on which transdisciplinary synergies can be cultivated through research and integrated in teaching and program design.
- The tendency to specialization in curriculum and program design, especially in technological and scientific studies, is a limitation for the development of transversal knowledge languages, such as humanities, that are a key element for building critical thinking.
- Specialistic studies can be a useful strategy to improve employability. However, in order to respond to complex social challenges and prepare students for complex professions, a solid generalistic background with a strong transversal presence of the humanities seems to be a better option.
- The design of generalist interstudy programs implies the horizontal collaboration of faculty along with departments providing the opportunity for a constructive encounter between disciplines and individuals negotiating concepts and epistemologies and ensuring the equally significant participation of every actor.
- The design of generalist interstudy programs can be the starting point for the creation of a more stable co-creation platform for faculty such as an educational laboratory in the form of a community of practice.

## Part 2

# Knowledge Society



**4. The current knowledge paradigm is based on western ideals and has been exported all over the world with little regard for cultural diversity, which has been integrated into the idea of multiculturalism. How can we shift from multiculturalism to true epistemological diversity?**

# Towards Epistemological Plurality in Education across the Global South

Chika Ezeanya-Esiobu

- The quest to catch up with the Global North's perceived level of technological advancement has resulted in repudiation of the epistemology of knowledge indigenous to many communities and nations in the Global South.
- This paper makes a case for a reorientation of individuals, community organizers, influencers, researchers and policy makers regarding the need for epistemological pluralism rather than the presently fashionable pursuit of epistemological singularity.
- One way this can be achieved is through increased emphasis on the humanities and arts, not as disciplines designed to prepare graduates for the job market, but as a mainstreamed part of every course and every discipline in education, with the aim of making human beings out of learners, humans who can understand, embrace and empathize with life and its reality; and individuals who can intuitively and creatively predict and respond to challenges at both the micro and macro level.
- Another way of achieving epistemological plurality is through the empowerment of hitherto neglected indigenous languages across the academic community.
- Furthermore, validation and strengthening of the intellectual content of indigenous knowledge, usually housed in indigenous languages, will bring about inclusivity of thoughts and ideas held by indigenous peoples, who are known to still connect strongly, in many instances, to the idea of humanity and humanness.

## Key Ideas

- The Global South's quest for scientific and technological advancement has assumed desperate dimensions in the present era owing to the advanced information age and the predictions of even more complex advancements in the form of, for instance, artificial intelligence.
- What is often forgotten is that the Global North did not achieve its present level of advancement by focusing on science, technology and the job market. In the years preceding and following the industrial revolution, it was a "community that deeply valued the humanities and the arts."
- An emphasis on the job market cannot draw out the depths of the human mind and what it is capable of achieving, neither can it lead to the appropriate dissection of the present, emerging and future challenges that humanity faces and will face in the coming years.
- Jobs come and go, markets change and are re-invented, but the human community and what makes humanity thrive remain unchanged and are ever in need of advancement, and this situation is obtainable across cultures and climes.
- Educating the mind with a narrow focus on the job market will not draw out the richness and complexity that is the human mind.
- There is paucity of critical indigenous knowledge-based epistemology of relationality in the market-driven, science and technology focused education that governs the Global North, which the Global South is imitating unchecked and unhindered for the most part.

# On the Dynamics of Languages of Science: Lessons and Challenges for Higher Education Policies

F. Xavier Vila

- If not managed adequately, languages of specialized knowledge may transcend time and space and work as a *linguae francae* for elites, but simultaneously lead to the relegation of those who do not master them.
- It's worth distinguishing between:
  1. Academic *lingua franca* (the language of communication among scholars from different linguistic backgrounds),
  2. *Lingua academica* (any language used to produce, discuss, teach and disseminate scientific, technological and humanistic issues), and
  3. Non-academic language (language not used for academic or scientific purposes at all).
- Once it had achieved the role of academic *lingua franca* in the 20<sup>th</sup> century, English continued strengthening its position in the scientific and academic sphere to the extent that some observers feared it might be in the process of being reconceptualized as the *lingua academica par excellence*.

This is raising numerous controversies:

1. Socioeconomic challenges: the spread of English-medium instruction (EMI) in non-English-speaking countries may be socially divisive in nature and contribute to international inequalities.
2. The challenge for content learning and quality of teaching: the use of a foreign medium for discussion/instruction raises considerable suspicions in terms of the quality of HE content.
3. Epistemic challenge. If language contributes significantly to an understanding of the world, a reduction in the number of (academic) languages may lead to the impoverishment of the avenues through which reality is grasped.
4. Challenge for national identity and linguistic diversity: languages that do not convey modern knowledge may eventually be regarded as less valuable and eventually be abandoned by their speakers.

The answers to these challenges are complex:

- Public policies may have a determinant role in defining the languages used in the scientific and academic fields.
- Higher education is also a language learning environment and there are ways to improve the learning process.
- The status of *lingua academica* is less dependent on demography than might be thought: it is not only multi-millionaire languages that can be academic languages.
- No language is intrinsically unfit to become a *lingua academica*, and there is no need for a nation state to elevate a language to that status.

**5. Current changes in the field of science and technology are promoting an idea of human and non-human intelligence that goes beyond the notion of knowledge. What critical and proactive role must humanities play in this set of processes of change and what added value can they contribute?**

# The Contemporary Posthumanities

Rosi Braidotti

## The Posthumanities:

- Are growing both institutionally and discursively. See the Environmental, Geo and Earth; the Digital, Medical, Neural and Cognitive; the Public and Global Humanities. Their growth is a positive development, not a negative fragmentation. There is no crisis in the Humanities today.
- Introduce both new subjects and objects of knowledge of the non-human order.

New posthuman objects are organic - terrestrial, planetary, cosmic entities, and naturalized others like animals and plants, but also technological – datasets, codes, networks and algorithms.

New posthuman subjects do not coincide with Eurocentric humanistic Man, or with the anthropocentric hierarchy of species. They are constituted by transversal alliances across complex collaborative ensembles of human and non-human agents, post-anthropocentric (zoe); ecological (geo) and technological (techno).

- Are faced by fundamental tension: “we” are together in the posthuman era but “we” are not One and the Same: we are not homogeneous and unitary, but complex and diverse. “We” are positioned differently in terms of power, entitlement and access to the very environmental social and technological condition that defines us.
- Do not defend a “new” pan-humanity, bonded in shared vulnerability or anxiety about survival, but instead propose an affirmative ethics supported by materialist, differential cartographies of the new power relations that are emerging in the posthuman convergence.

## The Posthumanities imply that:

- Thinking and knowing are not the prerogative of humans, but of new subject assemblies that include a multiplicity of non-human subjects and objects: they are zoe/geo/techno-mediated.
- The best methodology is post-constructivism, which rejects dualistic oppositions: bios-zoe; nature-culture; human-nonhuman and revisiting naturalism. This is an embodied and situated method, supported by a vital

and relational neo-materialist understanding of matter and living entities, including humans. It is not relativism, but immanent neo-materialist perspectivism.

- Academic and intellectual labour is linked to the world, and to the socio-economic material forces of the market in advanced or cognitive capitalism. This is a research-driven, profit-oriented knowledge economy that profits from a scientific understanding of the genetic and informational codes of human and non-human living organisms, smart networks and algorithmic platforms. It cuts across traditional institutional divides, operating both inside and outside of university. It displaces human centrality and can instead become an inhumane system, willing to sacrifice multiple human and nonhuman life-forms for the sake of profit.

At least two kinds of knowledge economies are at work in the Posthumanities:

- The first is contiguous to the epistemic accelerationism of cognitive capitalism at the service of dominant or ‘Major science’. The second is not profit-driven and engages with minorities and a diversity of knowledge traditions or ‘minor sciences’. The relationship between them is neither binary nor dialectical, but is constituted by constant negotiations and contestations.
- The critical Posthumanities are both a reaction to the speed of cognitive capitalism and an attempt to repurpose its rapid shift towards non-profit and critical aims, raising issues of social justice, fair access, democratic participation, solidarity, dissent and an end to necro-political violence. The relational ethics of affirmation are their core value.
- Examples are: Indigenous/decolonial feminist and queer; Environmental and Digital Humanities; Postcolonial Green; Transnational Environmental literary studies; Queer neo-humanisms; Indigenous knowledge and cosmologies; non-human legal personhood.

**6. What added value can be offered by people with humanistic training that are engaged in scientific and technological development projects? Likewise, what added value can be offered by scientists and technologists that are working in humanistic development?**

# At the Interface of Biology and Humanities: Archaeogenetics and the New View of the Past

Carles Lalueza-Fox

- In recent years, the massive availability of genomic data generated from ancient human remains (“Archaeogenetics”) has revolutionised the study of the past, until now restricted to disciplines of Humanities such as History and Archaeology, challenging previous assumptions about many periods and regions.
- The potential information generated by genetics has always been at the core of humanistic interests, including evidence for migrationism versus diffusionism, sex biases, past inequality, family relationships within sites or individual stories.
- Archaeogenetic studies seem to have tipped the scales towards a view of the past dominated again by migrations, although in some cases support for diffusionism has also been found. Associated to large migrations, changes in culture (including language) and social structures can now be associated to genetic turnover.
- Genetic data offers for first time large-scale and accurate sex determination of skeletal remains. This, along with the possibility of detecting first and second-degree -and sometimes even more distant - family relationships, represents a step forward in the archaeological interpretation of funerary contexts.
- A consequence of unravelling relatedness among individuals within and between sites and correlating them with differential ancestry is the possibility of gaining insights into the social and reproductive behaviour of past cultures. Past inequalities can now be directly tested.
- We can also explore whether a migration is male-driven by exploring the fraction of a specific ancestry in the X-chromosomes as compared to the autosomes in the same individual. We now have evidence that some of the most important population movements in prehistoric Europe were strongly sex-biased with more incoming males than females.
- Despite the advances of archaeogenetics, the reconstruction of human history will be a complex enterprise that could only be addressed by multidisciplinary teams. However, an understanding of the methodologies, as well as the possibilities and limitations of each field will require a level of communication and interdisciplinary that is not yet present in the Humanities.
- Therefore, major collaborative efforts will need to be established among geneticists, archaeologists and historians in the future. One suggestion to advance in this direction would be to establish new “archaeo-science” programs that could train students jointly in these disciplines.

**7. Who knows? Knowledge implies a certain conception of who the subject of this knowledge is. Who is our current knowledge system aimed at today? Who are the beneficiaries and who are not? How do we define the concept of profit? Is it possible to hold a universal point of view?**



# Unravelling Silicon Valley's Innovation System from a Southern Perspective

Raúl Delgado

- Intellectual property and the ownership of patents have become key components of the imperial(ist) system of domination under the aegis of neoliberal capitalism.
- Silicon Valley's innovation system is portrayed as a patenting machine, aimed at accelerating and appropriating the products of the general intellect with the aim of centralising human capital in the form of brain power, knowledge and skills.
- From a Southern perspective, Silicon Valley's Innovation System not only epitomizes the overarching contradictions of capitalist modernity but also the possibility of advancing towards alternative modernity. Its system embraces a critical paradox: while its dynamism increasingly relies on highly skilled labor from peripheral countries, it hinders the development potential of those countries.
- A critical dimension of capitalist development in the contemporary era relates to how large multinational corporations have managed to place at their disposal the "human capital" and knowledge production capacity formed in both the centre and the periphery of the world system.
- In the academic and political discussion on highly skilled migration, the concept of "brain drain" has been replaced by the notion of "brain or talent circulation". The pessimism and concern about highly skilled South-North migration has transformed into a rampant optimism that substitutes the notion of loss with that of gain. This view is based upon the supposition that knowledge is beneficial for all and that contact with highly skilled compatriots abroad generates synergies that drive development.
- The role of higher education and research institutions is crucial for advancing. By recovering their role as a part of the global commons, these institutions can function as: a) generators of productive and emancipatory knowledge; b) mentors of a critically, socially and environmentally committed citizenship; and c) autonomous agents for development and social transformation.
- In the last three decades a new wave of critical Latin American thought on development has emerged, ranging from neo-structuralism and neo-developmentalism to neo-dependency, 21<sup>st</sup> century socialism.
- A central element for advancing towards a Southern perspective is a decolonialised perspective capable of incorporating new categories and concepts that de-totalize the intended universality of the Western world in the face of the valuable, varied and extensive social experience with a multitude of Southern micro-rationalities that make up totalities in many parts, and not as components of a totality and a global rationality.
- Another fundamental aspect for advancing towards a Southern perspective is to design and implement national laws that are capable of counterbalancing the "straightjacket" imposed by the institutional framework designed by imperial powers.
- The restructuring of innovation systems provides a privileged vantage point for analyzing and understanding the meaning and implications of the forms of knowledge appropriation that distinguish neoliberal globalization, and that underlie the logic of domination that accompanies free trade agreements.
- It is possible to envision and move towards an alternative modernity, that is, a non-capitalist modernity that "implies a true abundance and a true emancipation".

# From Info-Cognitive Extractivism to the Social Economy of Knowledge: A Proposal from the Global South

Analía Minteguiaga, René Ramírez

- Today, we are witnessing a new form of primitive or original accumulation of capital based on mining data and information from a general intellect.
- As in mercantilism, in which profits by transference took place through violent processes of exploitation of slave labor and natural resources, today we return the same rentier profit system through info-cognitive extractivism.
- Value is not generated only at work but also in every instance of daily life that is transformed into information when large monopolist corporations that control the information highways and have the capacity to process it do so.
- Info-cognitive extractivism takes place through a process not coincidentally known as “data mining.”
- The extractivism of data mining co-exists with other, equally violent processes: 1) South-North knowledge transfer due to the net flow of qualified migrants; 2) contributions to scientific research from the South that are appropriated by transnational companies; 3) Biopiracy of the South’s genetic resources; and 4) extraction of ancestral and traditional knowledge to create technologies.
- These processes are enabled by falsely construing ideas, ancestral knowledge, and information on biodiversity as scarce goods through ever more sophisticated systems of intellectual property, digital technological systems, and the stock exchange.
- This panorama creates a new biopolitics over (human and non-human) bodies and lives, in which a substantial part of capital accumulation is based on the erection of worldwide panopticons.
- Data mining extracts information on material and immaterial life, processes it and sells it through different forms of intellectual property.
- This new form of extractivism generates a neo-dependency of countries in the global south, or periphery, on those that own the intellectual property despite the fact that a large extent of primary and tertiary resources come from the global south.
- To face these processes of cognitive injustice and global asymmetry, people in South America have proposed the “social economy of knowledge, creativity and innovation”.
- In December 2016, Ecuador approved the Organic Code on the Social Economy of Knowledge, Creativity and Innovation that gathers scientific, technological and innovation systems with those of ancestral/traditional knowledge and intellectual property in a single legal text.
- Intellectual property is not conceived as an end but as a tool for endogenous development, placing the emphasis on mechanisms that allow technological pairing through the legal protection of technological transfer and disaggregation.
- The fundamental pillar of this legal framework is: a) the recovery of the public and common character of knowledge (maximizing social appropriation), where knowledge, creativity and innovation are not only individual human rights but collective rights of the peoples; b) generate epistemic equality by protecting and recognizing the worth of artistic, cultural, traditional and ancestral knowledge; and, c) guarantee the rights of nature by safeguarding it as the people’s patrimony against biopiracy processes.

## Part 3

# Institutional Perspectives

**8. How can universities participate in the changes that are helping to build bridges between different fields of knowledge? What should their role be?**

# Synergy via Shared Platforms: The International Islamic University of Malaysia (IIUM) Way Forward

Lihanna Borhan, Dzulkifli Abd Razak

- As institutions that are liable parties for the division of knowledge, universities are also in good stead to address this and move towards the convergence of knowledge instead.
- The International Islamic University of Malaysia is in a position to push forward this convergence of knowledge as the philosophy of the University itself is the tawhidic epistemology of knowledge (i.e. all knowledge comes from one single source i.e. the Creator).
- Although integration has been a core driver of the University, the conventional faculty-based model has continued to serve as its organizational model.
- Hence the launch of shared platforms as a definite manifestation towards full integration and convergence.
- The IIUM shared platforms model is also known as the Tetrahedron model; made up of 4 inter-connected platforms.
- Human and social transformation is the basis of the Tetrahedron Model, being the ultimate pursuit of knowledge at IIUM. The pursuit and dissemination of knowledge and skills, whether via academic programmes, research, consultation or public discourses, should serve to benefit humankind, as befits the concept of *rahmatan lil-alamin* (mercy to the worlds).
- The sustainability and life sciences shared platform acknowledges the biological bases of life on earth, and how discoveries in these fields need to be interpreted in light of human nature, to bring about more meaningful transformation as envisaged by the United Nations Sustainable Development Goals (2016-2030) and therefore upliftment of the quality of life.
- Through the technology and cyber-physical space platform, advances in technology are to be mastered and innovated, not for the sake of technology per se, but to “humanise” it for the greater good of humanity.
- The spirituality and post-materialist platform addresses the notion of rediscovering the lost soul of universities, and is tasked with making the Muslim voice heard through the championing of societal and global issues that affect humankind, not just Muslims.
- Moving from an isolated perspective, academics at IIUM are starting to work on projects that push the boundaries of knowledge toward convergence, creating not just new areas of knowledge, but more importantly a new working culture and relationship, and partnerships that are integrated and holistic, providing solutions for humankind in a seamless journey in humanising education (*Insan Sejahtera*).

# Overcoming Overspecialisation through Integrating Knowledge, Leveraging Diversity, and a Return to Basics

Haruaki Deguchi

- One can characterize the current state of academia with two major trends: overspecialisation and technological advancement.
- Overspecialisation refers to scholars probing deeper into their respective fields; an overspecialised scholar may find it difficult to understand broader contexts.
- To address this, we need to be able to integrate knowledge across fields, and to achieve this we need to strengthen ties across a wide range of disciplines. The creation of joint research teams and harnessing of the latest technology will be increasingly critical for the integration of knowledge.
- As we move forward into the future, we may need another Renaissance in which we balance specialisation with a more holistic approach.
- Technological advancement can make knowledge obsolete in no time at all; for higher education, this means that even if a student learns the latest content now, it will be old news by the time they graduate in four years.
- Universities will need to offer a system of recurrent education that allows learners to go back and forth between university and the real world. This should take the shape of shorter two, three or six-month courses in which individuals can brush up their knowledge and skills before heading back into the real world.
- Another solution is to help students develop a solid foundation by focusing on liberal arts. Because the speed of change means that technological or similar skills that students learn will become obsolete in a short time, it is important for students to develop the ability to return to first principles and foundational knowledge.
- In the future, universities must be more than just places where lecturers teach students. The centre of university-level education must be the students; the future of university education will be a framework in which faculty and staff exist to support a diverse array of students as they learn what they want to learn.
- Lectures will need to move away from a teacher-centred model to one in which teaching assistants or other students assume more teaching duties and that involves more discussion; the best way to enhance learning through discussion is with diversity.
- Universities need to let the public know what roles they will assume and what actions they plan to take; the key is to create a positive feedback loop whereby universities properly publicise what they are doing to secure support from the public, which in turn will lead to more investment in education.

# The Humanities Center: Synergising Institution, Institutionalizing Synergy

Sara Guyer

- Over the past sixty years, across North America, but also increasingly around the globe, in Chile and Argentina, Taiwan and Hong Kong, Lebanon, Australia, South Africa, Tanzania, and the Netherlands, humanities centers and institutes have emerged within universities and colleges of all sizes and budgets as a formation through which interdisciplinary, engaged, and collaborative work in the humanities can be developed and supported. Today, virtually all members of the Association of American Universities, which includes 62 leading US and Canadian research universities, have humanities centers.
- University-based humanities centers and institutes work across the structures – schools, disciplines, units, faculties – through which universities operate. As a result, they have become sites where some of the most significant innovations in – and beyond – the humanities are taking place, in terms of content (i.e. what is being researched), form (i.e. how, where, and under what conditions), and aspiration (i.e., how can the university be a lever of social transformation).
- Collaboration between humanists, scientists, and social scientists has been central to the project of humanities centers, at least since the 1970s.
- More recently, university-based humanities centers have broadened their focus beyond connections between individual scholars to include institutional synergies: collaborations with schools, galleries, NGOs, and even the private sector, as well as collaboration between centers at other universities, both regional and international.
- If universities are to continue to be sites of innovation and societal transformation and if they are to engage their local and global contexts, humanities centers will be core partners in this project.
- Funders – private and state – can play an essential role in this project by recognizing the contributions of humanities centers and institutes.
- While many international and national funders have turned their attention to development fields or STEM, they should not overlook humanities centers and institutes, which are forging collaborations within universities in areas of health, AI, work, and environment, as well as partnerships between universities and community colleges, state agencies, corporations, schools, and NGOs. Structural agility and a focus on multidisciplinary approaches renders humanities centers uniquely modelled to lead in these areas.
- Additionally, funders and policy-makers focused on our increasingly global society should become aware of and invest in global humanities networks, like the international Consortium of Humanities Centers and Institutes (CHCI), which links over 270 humanities centers and institutes from around the world. This cross-institutional network builds on the synergies within universities to multiply the synergies between them.

**9. Humanities are not only active in the university sphere, but are also encountering increasingly more space in cultural institutions and industries. What relationship must the university system have with these other entities? Is it possible to conceive an institutional ecosystem that is able to overcome the dualism between universities and society?**



# Museums and Collections, Epistemic Convergence and Higher Education

Andrew Simpson

- This paper argues that creative use of material collections can significantly counteract the marginalisation of the humanities in higher education. Material collections have been at the core of knowledge-based organisations since antiquity, but their cross-disciplinary utility was lost during the specialisation and epistemic fragmentation of the 19<sup>th</sup> century and has become further obscured by the marketization of higher education in recent decades.
- Reasoned argument based on observation is an Aristotelian tradition born in antiquity. Objects within collections have always been associated with the generation of knowledge. Universities were among the earliest public institutions to house collections.
- Object engagement can be construed as a unique transaction of intrinsic and extrinsic meaning. Objects have a dual, or contradictory nature, being both definitive, observable and immutable; while also allowing mutability through multiple reinterpretation.
- The Enlightenment prioritised laws and theories formulated by induction from phenomena, while conjecture and metaphysics became irrelevant. However, this is antithetical to the potential of objects and a museum methodology. In recent decades we have witnessed exponential growth in the number of museums and the number of universities. Many university collections were established to support the teaching of specific disciplines. The modern situation for most collections in higher education is one of disciplinary dependence.
- An important characteristic of objects in museum collections is that they are the historic record of each intellectual breakthrough or advancement while also being a template for generating new constructions of knowledge.
- The museum and collection construct enables cross-disciplinarity because the process of collection and interpretation is always culturally situated. If universities have a role in helping societies to confront existential threats, we must consider whether the history of knowledge production and disciplinary specialisation has placed impediments in the way of resolving such crises. Objects provide multiple pathways to understanding and multi-disciplinary avenues for engagement with ideas through the university's tripartite mission of teaching, research and engagement, representing both the generation and transmission of knowledge.
- UMAC (University Museums and Collections) was established as an international committee of ICOM (International Council of Museums) to advocate for the creative use of material collections in higher education. We encourage epistemic convergence and the proactive rediscovery and retention of multi-disciplinary frameworks as part of our knowledge systems in preference over narrow specialisms. We contend that material collections provide a template, and museums in universities provide a laboratory to do this.
- Collections in universities should be lifted from their discipline-specific origins to enable them to play a more dynamic and central role focussed on major issues and big questions that can draw on the broad intellectual dynamics from diverse areas of their parent institutions.

# Mediating the Duality of Universities and Society: Arts and Humanities Confronting the Obstacles of ‘Authentic Engagement’

Richard Watermeyer

- Higher education is in a state of profound systemic change, if not crisis, influenced and exacerbated by the abundant failures of global capitalism and the dogmatism of its protagonists.
- The public role of universities is consequently obfuscated by the prominence of economic rationalisations and a perceived inescapability or unwillingness by university leaders to disconnect from the demands of higher education when it is configured as a prestige economy.
- The preoccupation of institutional managers in maximising the inward flow of ‘positional goods’ into university contexts depreciates, makes worthless or even provokes censure of outcomes of academic labour that are either weakly aligned or non-aligned to enhanced market competitiveness.
- A concept of universities at the service of the public good has degenerated to the point that their efforts to be publicly accountable have been usurped by a desire to be competitively accountable.
- Under a regime of ‘competitive accountability’, public engagement by academics may be exercised not in the terms of moral obligation but self-interest. However, the precise (or measurable) contribution of public engagement as a lever of competitive accountability is highly contested.
- Disagreement and confusion in the conceptualisation of ‘engaged research’ is rife and amplified by disciplinary differences. Notwithstanding, public engagement unshackled from the binds of institutionalisation offers a viable route to the restitution of academics’ self-concept from which might emerge a ‘socially authentic’ public interface.
- Public engagement ought to be reinvested as a process of ‘mutual reciprocity’ and analogously a pathway to political renewal. The arts and humanities are both well-positioned and indispensable to the unleashing of public engagement from its neoliberal stranglehold.

# University Culture as Communities of Practice: Cultivating Interactions Inside and Outside Campus

Antonio Casado

- Universities are key cultural agents in knowledge transfer, lifelong education, social innovation, and the protection and democratization of cultural heritage.
- The “relational turn” understands the university as an ecosystem of relationships or interactions between academic and social agents, on and off campus.
- Communities of Practice (CoPs) are people who care about a specific and pressing problem or topic, and who on that basis interact regularly to think together and learn from each other.
- CoPs are voluntary, domain-based, and practical, fluid processes rather than entities. They can be cultivated and sustained, but not “set up” from the bottom-up.
- Interaction can be improved by design so that the times and spaces of campus life make it easier for CoPs to develop and activate university cultures.
- University culture cannot be forced into existence. To stay alive, it needs to be attractive. It requires resilience and adaptation to local and global trends.
- Some hints: make time to celebrate university cultures; grant autonomy to those culture makers already present on campus; open spaces for creativity and change.
- University culture is enacted in the way the university interacts with the rest of society, and requires a material infrastructure of human, technological and economic resources.

# Business Ecosystems and the Dualism between Universities and Cultural Industries

Roberto Moreno

- Out of the information society, the knowledge society was born as a concept that encapsulates the social transformations of modern society.
- These changes make the specialised cultural unit the object of study and analysis, whose results must lead to formal proposals for academic cooperation.
- The rapid dynamics of change under which the modern cultural enterprise is facing the challenges in terms of economy, markets and their failures, which are mainly changes in megatrends and high levels of competition, are no longer merely challenges that businesses are responsible for dealing with in isolation.
- The demands of the present-day knowledge society imply new educational dynamics in line with social changes and needs for cultural and social development
- University and its 'knowledge economy' stands as a strategic institution in production processes and the transfer of cultural values.
- The 'talent economy' maintains such traits as intelligence, creativity, strength and vision, which are so essential for exercising business leadership, and these include cultural traits.
- The cultural ecosystem is comprised of the government, university and creative society, all within an institutional regulatory framework. From this perspective, the model for cultural industry at the UdG is materialised at the University Cultural Centre (CCU).
- In terms of culture, the CCU at the University of Guadalajara is the prime example of its commitment to the cultural industry.
- This requires related strategic sectors: entrepreneurship, innovation, value chains, clustering, business development, development of managerial skills and intellectual property.
- The relevance of the University of Guadalajara in this process of disseminating and developing the cultural industry dates back a long way.
- The institutional framework is relevant for achieving the goals of the university cultural industry.
- The recognition of the International Book Fair and the Guadalajara International Film Festival is particularly important. The cultural infrastructure at the UdG includes, among others, the State Public Library, Telmex Auditorium and Performing Arts Centre.
- Today, the university cultural industry is clearly structured within the UdG from the perspective of a cultural ecosystem that is more than local, adapted to the demands of a changing cultural environment from the principles of innovation in the cultural industry, as reflected in national and international recognition.

**10. Universities are part of each country's political system and depend on its decisions in the fields of education, research and the fostering of innovation and knowledge. How can universities maintain their autonomy but at the same time foster impact as agents in their respective societies?**

# The Balancing Act of Societies and Autonomous Universities: How Universities Could Do Better

Sijbolt Noorda

- In theory it is very simple. Universities should be autonomous to be able to do their job well, to do what they are good at. It is equally important for universities to understand what they are good for. Universities do not exist for themselves.
- In practice it is more complicated. Autonomy does not come easily. Both the legal framework and the funding arrangements are subject to political preferences and societal demand or pressure. Universities are granted their autonomy for a reason and for a purpose, which is to be useful to society and responsive to its needs. In consequence, lawmakers and funders are sorely tempted to give specific instructions as to what universities are to be good for.
- There should, however, be a fair balance between autonomy granted and returns demanded. Simply said, not easily done. It is quite a challenge to perform this balancing act of universities and societies well.
- A first challenge is immediately linked to the great successes of universities. They are seen as useful by many and for many uses. This translates into competing claims to ownership and rivalling concepts of the university. Under such circumstances autonomy easily suffers.
- Universities' successes have not only generated applause and stimulated demand. They have generated criticism and scepticism as well. A particularly relevant example is the erosion of the public support base for universities. This shift in public support is a pressing invitation to rethink how exactly universities are serving society, how they can do better and in particular how they should respond to a context marked by division and diversity rather than by solidarity and unity.
- If the university is to be true to its calling to serve future generations well, it should not shy away from adapting its structures and programs to this end. We cannot make progress unless we dare to change our traditional *modus operandi*.
- Three recommendations for universities follow on from this. The first concerns leadership. Autonomy is a crucial precondition for a university. Making good use of it is just as crucial. For this, courageous and strong leadership is essential.
- The second recommendation concerns the importance of commonality. Universities are usually devolved organisations, archipelagos of self-determining units. To be effective as a university, internal collaborations and priority settings are essential. To that very end, the creation of a collective sense of direction is a top priority.
- This immediately links to the third recommendation, on shared values. If a university is seriously committed to serving its society, it needs collegiality, based on shared ideals and shared values. Universities should work to this end by openly and widely discussing different approaches and diverse ideals, and finding ways to function as an open and diverse academic community based on shared values rather than as a collective of highly individualistic academic rivals.

## Part 4

# Education

**11. How can education curricula be designed to integrate different areas of knowledge on the basis of common problems in an interrogative, critical and cooperative manner? How should learning methodologies be focused in order to benefit transversal humanism?**



# Resolving Complex Situations at the Heart of the Curriculum: the Situation in Andorra

Marta Llop

- The paradigm shift that took place within Andorra's education system in 2009 had an impact on many levels - from a re-thinking of the citizen profile that we wish to see at the end of compulsory education through classroom practice.
- The Strategic Plan for the Overhaul and Improvement of Andorra's Education System (PERMSEA) launched this new pedagogical approach, attributing a key role to the development of competences and the ability of pupils to act effectively in complex, real-life situations.
- This reform therefore affects the curricular framework, methodological foundations, syllabus, assessment model and the roles of pupils and teachers.
- The student profile is expressed in the form of general competences (globally).
- The methodological approach involves distinguishing between learning spaces: Workshops, which are focused on the acquisition of the necessary resources for developing specific skills, and grouped into Programmes (analytical level); and Global Situations that go beyond the discipline, and where global issues are put forward, the resolution of which entails the integrated mobilisation of resources from a range of areas of knowledge.
- The link between Global Situations and Workshops is achieved via unit maps (at a global level), which ensure a coherent progression of skills development at different stages.
- Within the unit maps, the social, science and technology areas are found in the majority of Global Situations in order to encourage student reflection and action on issues related to humanity and to do so in critical and cooperative ways; as well as raise issues that are socially, scientifically and technologically current.
- In the classroom, lesson units are based on complex situations that need to be resolved. These ensure that pupils exercise the competences that we have previously selected and that they mobilise resources from different areas.
- Under this model, pupils are at the centre of their learning process. They see the need to learn in order to solve a challenge. They think critically and collaboratively, planning, implementing, self-evaluating and so on. The role of the teacher in the classroom is to guide pupils' activities so that they move towards mobilising the resources they need in order to develop the scheduled competences.
- This Global Analytical-Global cycle is the basis of an integrated teaching approach that overcomes the limiting perspective of a discipline; and enables approaches between knowledge areas based on real-life problems in a critical way.

# Assemblages in Higher Education: a New Learning-Teaching Approach through the Prism of Social Space, Transdisciplinary Practices and Contemporary Art

Quim Bonastra, Monica Degen, Rosa M. Gil, Daniel Gutiérrez-Ujaque, Gloria Jové, Guillem Roca

- Intensified processes of globalization require higher education to transform in order to respond to the rapid changes in modern societies.
- This article proposes a methodological approach to university teaching that is capable of integrating inclusive, reflective, critical, creative learning processes and enablers of change in the lifestyles of students and teachers.
- This approach is based on the philosophic concept of assemblage, social space, the uses of contemporary art practices and transdisciplinary perspectives.
- Developing our teaching from the Sustainable Development Goals allows us to break from traditional teaching models that compartmentalize subjects and disciplines and generate significant learning situations for both students and teachers.
- This project emerged within the subject of Geography and History in the second year of the degree in Social Education and the subject of Industrial Automation on the degree in Industrial Engineering at the University of Lleida (Spain).
- Understanding education and educational processes as assemblages allows us to give open, flexible and dynamic responses to the learning processes that emerge in teaching.
- Learning and communicating through contemporary art are catalysts for possibilities and a strategy that enables rhizomatic thinking, giving the freedom to create the knowledge and understanding necessary to rethink education.
- Focusing research on the dimensions of bodily and sensory experiences (objects, architectures and environments) provides a more holistic understanding of social life.
- The results show how this methodological network design helps to train creative, reflective and critical professionals.
- Through our approach, the creativity of transdisciplinarity projects between social education and industrial engineering students arises from the opinions and daily life practices that make up the social space of the city.

# Robotics and Artificial Intelligence Meet the Humanities: Some Initiatives for Ethics Education and Dissemination

Carme Torras

- The influence of the humanities on the study of technological subjects —such as robotics, biomedical engineering, artificial intelligence, data science or biotechnology, to name just a few— needs to grow rapidly, for the simple reason that these technologies are becoming a part of humanity: assisting, interacting, and enabling people in an increasing number of ways in daily life. There are many options to integrate contents from the humanities in technological university degrees, ranging from including a course on good professional practice in the syllabus, to allowing students to take some credits or a minor in a Humanities Department, or even offering a mixed degree, like the Computer Science and Philosophy degree at Oxford University.
- Prestigious associations such as IEEE and ACM include 18 knowledge areas in their Computer Science curricula, one of which is “Social Issues and Professional Practice”, so that “students develop an understanding of the relevant social, ethical, legal and professional issues”.
- The teaching of professional ethics differs greatly from teaching other subjects on a technological degree. It is not so much a matter of students learning some specific contents, but one of making them aware of sensitive issues that they may face in their careers. Moreover, technology students are not philosophers: they should know about ethical theories but from a pragmatic viewpoint. Thus, instructors teaching Ethics on technological degrees are recurring to science-fiction stories to exemplify conflictive situations, since narrative is a good way to engage students in safely discussing and reasoning about difficult and emotionally charged issues without making the discussion personal (Burton et al. 2018)<sup>(1)</sup>.
- Two books to teach technoethics, relying on science fiction and purposely written by robotics researchers themselves in order for the stories to accurately illustrate the issues to be discussed, are those by Nourbakhsh (2013)<sup>(2)</sup> and Torras (2018)<sup>(3)</sup>.

1. Burton E., Goldsmith J. and N. Mattei (2018) How to teach computer ethics through science fiction. *Communications of the ACM*, 61(8), 54-64.

2. Nourbakhsh I.R. (2013) *Robot Futures*. MIT Press.

3. Torras C. (2018) *The Vestigial Heart*. A Novel of the Robot Age. MIT Press. (A teacher’s guide and a 100-slide presentation are provided as free ancillary materials for instructors: <http://mitpress.mit.edu/books/vestigial-heart>)

# Humanities in Medical Teaching: a Passing Fad or a Sound Need?

Josep Eladi Baños, Irene Cambra-Badii, Elena Guardiola

- Medicine and humanities are two disciplines that share the same interest: the human being. However, at different times there has been a long academic divorce between them because medicine has traditionally been considered a scientific discipline that did not need the humanities at all.
- Since the Hippocrates Oath, the paternalistic approach in doctor-patient relationship considered that physicians would always choose the best options for their patients and this included their participation in medical research. The atrocities performed in the Nazi concentration camps during the Second World War pushed the need of considering moral philosophy to agree in regulating all clinical research steps.
- In early 1960s, the need of deciding how to allocate patients to renal dialysis given the shortage of apparatus conveyed the need of ethical committees to make the best decisions. Since then many hospitals around the world have clinical ethics committees to allow the best choices for patients and health institutions based not only in medical, but also on psychosocial criteria.
- Humanities were introduced in medical studies with the appointment of Joanne Trautmann Banks as professor of literature in 1972 in the College of Medicine of the Penn State University. Since then many schools of Medicine include some humanistic subjects in their curricula.
- Literature provides a clear example of how humanities can expand educational opportunities for medical students beyond technical training. Cinema and TV medical dramas are also productive fields to analyse and discuss ethical issues in medical practice.
- Empirical studies have shown very interesting results for medical studies from incorporating the humanities into medical education. However, in the next future it seems unreasonable to expect new specific humanities subjects to be incorporated into medical students' crowded curriculum. Hybrid approaches may help to its acceptance in medical schools.
- A cultural context is essential for science and medicine and a cultural vacuum can hinder their advance. Humanities can help in improving physicians' knowledge of patients and thereby help make medical care more human and efficient.

**12. What skills and abilities need to be acquired in order to deal with the current changes to the employment, social and economic system on a global level?**

# Education in the Era of Automation and Artificial Intelligence

Ana María Fernández, Anna Forés, Gilberto Pinzón

- For millennia and since we first appeared on the face of the earth, humans have been in a constant and progressive process of development.
- Knowing, and the capacity to learn, are the fundamental foundations of what we are. They are the pillars and the main differentiators between human beings and other species.
- We have been able to automate the learning process that, together with humankind's conquests and developments, have expanded our knowledge and capacity to learn.
- Education is the intentional process of using methods that have been structured to facilitate learning and the acquisition of knowledge, skills, values, beliefs, and behaviors.
- The purposes of education should be: 1-to form a good human being, who lives in balance, looks for meaning and adds value to any situation, and 2- to give that individual the tools to perform correctly in the moment when they are destined to live.
- Unfortunately, we have oversimplified the purpose of education and we have shifted to the idea that it is the vehicle to generate efficient, capable, and productive workers.
- The expansion of education has accelerated the development of humankind and thus requires permanent feedback to adjust and redefine its configuration and its purposes.
- What are students taking into life after having been exposed to 12 or 14 years of school education? Is current education providing what children really need in today's world?
- Students today can learn more than ever about almost any topic without the help of teachers or without even having to go to school.
- Current and future generations face complex challenges of different types.
- Scientific advancements will bring unthinkable moral and ethical dilemmas.
- Schools must focus on developing highly ethical individuals, with integrity and character, perseverance and passion to achieve long-term goals, the growth mindset, individuals with the mental flexibility to explore different perspectives that allow them to become lifelong learners with a disposition to think, skills and habits of mind, empathy and emotional intelligence.
- This article analyses the role of education in this era and what its approach to the development of today's human being should be. We reflect on 2 teaching practices through 5 cultural forces and give specific ideas for what and how education should be focusing on.

# What Skills and Competencies do 21<sup>st</sup> Century University Students Need?

Francisco López

- Students born at the beginning of the 21<sup>st</sup> century have new characteristics: they are digital, active on social networks, global, learn by doing, work together in face-to-face and virtual groups and they network. They prefer practical, dynamic classes, not traditional lectures. They tend to harmonise vocation with employability. They aspire to be trained for jobs that do not yet exist, to receive innovative teaching for entrepreneurs, which will lead them to get quick results in the labour market. The first generation to have grown up in a digital environment is now entering universities. The Internet has radically transformed education in just 20 years.
- Unlike traditional higher education, that of the 21<sup>st</sup> century and its new modalities – open degrees, double degrees, degrees in foreign languages, hybrid professions, flipped schools - demands new competences other than the typical ones of degree disciplines - mathematics, physics -; such skills as leadership, communication, languages, creativity, resilience; and ethical values, in a digital environment that is advancing exponentially. In such a scenario, Artificial Intelligence (AI) - the ability of computers to perform tasks that normally require human intelligence - and automation, are dictating their rules. According to the OECD (2019), 21% of jobs in Spain are at risk of disappearing and in the US, 47% of jobs will disappear in 15 years, according to a study at Oxford University.
- At today's universities, it is necessary to learn - and/or master - not only knowledge specific to the 'professions', but above all: to learn to be enterprising; to prepare projects; to work as a team with students and teachers; to connect interactively to global and regional networks; to improve knowledge of languages such as English, Chinese, Russian, French, Arabic, Portuguese and Swahili, among others; to have an absolute command of the technological products of the digital revolution (big data, blockchain, neuro-robotics, software, cybersecurity, video games, 3D) and of the ICTs at their most advanced. It will be essential to learn generic skills beyond those of the specific discipline. Learning and permanent refreshment are essential in the knowledge society.

# What Can Universities Do About the Future of Work?

Michael A. Peters

- The nature of capitalism is changing to a fully global-scale digital economy - a single planetary system.
- Digital capitalism emerged from military, government and education research networks.
- Labor as a production factor is disappearing.
- AI can be considered a new production factor with a transformative effect on growth.
- By 2020, more than 212 million people will be out of work, up from the current figure of 201 million, according to the International Labour Organization's report titled *World Employment and Social Outlook: Trends 2015*.
- Few agencies have raised questions about the ontological or subjective basis for work, its declining importance for capitalism since the symbolic, financial and algorithmic turns, or indeed the social and psychological prospect of "workless" capitalism.
- What function will higher education serve in the era of "final automation", once the vocational justification has been removed.
- The university can contribute to job creation in terms of reshaping curricula to better partner with the "third sector."
- The neoliberal response is to define education towards digital skills to equip children (and adults) for the (shrinking) digital economy.
- Is there any way to responsabilize global Big Tech in relation to workers and employment law?
- Augmented intelligence must seek to achieve a new, comfortable working relationship between AI and human beings in the world of work.
- The relationship between labor and payment is historically broken, or about to be broken - there is no guaranteed ongoing relationship between higher education, labor and wages.
- What will it be like for such groups to experience permanent unemployment?
- The profound existential question that refers to identity issues and also to societal institutions must be rethought at a philosophical level.
- The philosophical reappraisal of the concept of work is a way of rethinking the concept of the "laboring society" that characterized industrial conceptions of work and society. We are witnessing a shift towards a generalized online "solution" to industrial institutions that emphasizes decentralized, personalized, civic "spaces" based on the co-creation and co-production of symbolic public goods.
- In its ideal form, the new institution is many-to-many, interactive and constituted through forms of social exchange.
- The world of work is changing as a result of four simultaneous tectonic shifts: a demographic shift towards an aging population; an economic shift towards digital globalization; a technological shift, driven by internet platforms; a democratic shift towards alt-right and far-right politics.
- The new labor ecology suggests a possible German Work 4.0 model, which is distinctive in terms of its use of internet-based 'smart technologies', new forms of work via digital platforms, the rise of flexible employment regimes, and new forms of human-machine augmentation.
- There are two separate techno-ecosystems – American and Chinese – and they operate in different but parallel universes.
- The European experience and the development of the welfare state in the West (followed by neoliberalism) is very different from the experience of China.
- There will be no universal solutions to job losses - the rate of job loss will differ over time, and history and culture also play a role in imagining acceptable solutions.



# Fit for Future - Skills for Next Generation Learners in a Sustainable Digital World

Zeinab El Maadawi

- Digitalization and sustainable development for a climate-resilient future necessitate relevant transformation of the education system and learning in the workplace.
- The rapid advancement of automation and artificial intelligence is producing new business opportunities but also carries challenges to education and training.
- New forms of training and capacity development programs are necessary in order to harness new technology and automation and also to handle the knowledge boom phase.
- Education maintains the potential for societal transformation through mutual and joint learning processes and can be used as an enabler for the responsible climate actions that are needed in order to foster equitable, resilient and sustainable communities.
- Four main categories of skills are needed to help the next generation of learners adapt to the rapidly changing world.
- Digital and technological skills are core requirements for persistence in increasingly digital work environments.
- Intellectual skills remain one distinguishing feature for competitiveness.
- Socio-emotional skills are distinctive for human-centred business and economic models and are important to maintain the use of technology for the common good and within an ethical framework.
- Ecological skills that are based on learning for environmental stewardship are mandatory for sustainable nature-based solutions.
- Digital technologies can create new learning ecosystems to improve the relevance, accessibility, and quality of education and training.
- Collective skillsets adapted to learners through appropriate education policies are essential in order to thrive in a technology-rich climate-resilient future.
- This fundamental transformation should be driven by innovative higher education systems that can create a new modality of “learning workers” that combines interdisciplinary expertise and varied skills.

## Part 5

# Research

**13. What do we understand socially responsible multidisciplinary research to mean today and what changes need to be made to current research protocols and methods?**

# Fostering Institutional Changes towards Responsible Research and Innovation through European Framework Programmes for Research and Innovation

Linden Farrer, Philippe Galiay

- Research, Technology Development and Innovation (RTDI) have been on the agenda of the European Commission since its inception and return on investment for European society has always been a key consideration.
- The constant upward evolution of the sums dedicated to RTDI in the Framework Programmes (FPs), and the long-term presence of dedicated ‘science and society’ actions, show that Member States and the European Parliament perceive this as a beneficial investment for Europe.
- Under Horizon 2020 (H2020, the 8<sup>th</sup> FP for R&I), the concept of Responsible Research and Innovation (RRI) has been applied as a cross-cutting issue. It calls on stakeholders to work together in transdisciplinary consortia to align R&I outcomes with European citizens’ values, expectations and concerns.
- An operational approach to RRI has been taken, focused on five dimensions (gender equality, science education, open access/open data, public engagement and ethics), underpinned by attention to governance, thereby ensuring that RRI is applied to all disciplines and sectors.
- As of May 2019, 2,287 H2020 are reported to have taken an RRI approach, representing around 10% of the total number of projects and a EUR 7.7 billion contribution by the EU. The key performance indicator (KPI) for RRI will live on in the next Framework Programme, Horizon Europe, in the societal impact pathway.
- Efforts to measure RRI at member state level have also been undertaken. The MoRRI project, and its successor Super\_MoRRI, aim to demonstrate the evolution and benefits of the RRI approach, and enable effective evidence-based policy responses.
- Over time, the emphasis of science and society policies has shifted from a largely societal deficit approach to one that increasingly recognises deficits and capabilities across society, requiring urgent changes in education systems, behaviours and governance frameworks. This understanding underpins the goal of increasing ‘science-society literacy’.
- Institutional Change towards RRI, i.e. targeted evolutions of RTDI stakeholders’ organisations, has become a strategic orientation of the Science with and for Society programme under H2020 in order to accelerate and sustainably embed these evolutions towards RRI. This emphasis will not be lost in Horizon Europe, where a societal impact pathway will consider citizen engagement mechanisms a medium-term impact.
- As the end of H2020 nears, it is useful to reflect on where we are in terms of mainstreaming RRI in both of these FPs, and consider ways to build on the considerable body of work, skills and capacities that have been developed to date.

# The Multidisciplinarity of Science and its Processes of Socially Responsible Transformation

Bartolo Cruz

- The origin of multidisciplinary research is associated with the concept of sustainable development; when considering the existing link between economic and social development; and its effects on the environment.
- The capacity to maintain the goal of working for the common good is considered to have increased the need for multidisciplinary collaboration; and the various case studies emphasise experiences and discuss some challenges for socially responsible multidisciplinary research.
- The current analysis of training programmes for science practitioners shows that, globally, there is a strong ideology of change guided towards socially responsible multidisciplinary research.
- The importance of the role of universities lies in vocational training that generally privileges their students' knowledge. This area of training has the most direct and fundamental repercussions for the extension and improvement of education at schools.
- The various disciplines seek to generate new knowledge using their own tools, techniques, methods and theories. However, there is one common feature of all disciplines, there is not one in particular that responds in a comprehensive and global way to a phenomenon.
- Networking needs to be generated to group the required potentialities and specialities in areas such as the prospection and evaluation of the new protocols required for research, to produce extraordinary results that will generate benefits for their peers and social communities, who should be given an effective service regarding shared problems that need to be resolved in the best possible way via the revolution of socially responsible research processes.
- The critical areas in which integrated work is needed are those that are related to the greater well-being of human populations, their resilience and their ability to meet the Sustainable Development Goals.
- We must be convinced that socially responsible multidisciplinary research can be framed in a system that trains new researchers at universities through processes involving a reflexive (thinking about the common good) rather than an instructive (disciplinary) approach; so that they really can contribute to the development and well-being of human societies, in unison with all other (biotic and abiotic) actors that form part of this planet; with the sole purpose of coming to understand the conception and future of humankind.

**14. Is the democratisation of science through ‘Open Science’ and ‘Open Data’ feasible? How can it be effective? What are the implications of the concepts of academic autonomy and freedom at universities? How are these two concepts configured in order to deal with current challenges?**

# Open Science: A Cultural Change for Universities

Paul Ayrís, Ignasi Labastida

- As a result of a public consultation launched in 2014 by the European Commission, there has been a deployment of European policies aimed at fostering and supporting open science activities. The main goal of these activities is to make research more transparent and accessible to society.
- The laudable goal of embracing Open Science concepts and practices involves many changes at the institutional level and universities need to make cultural change happen in order to adopt these new practices and principles. There are many opportunities and challenges, and each institution must develop its own roadmap by defining its areas of interest and by prioritizing them.
- Research institutions must lead the change, finding the answers to three questions. First, who is going to lead the change? Second, how is that change to be managed? What is the plan? Third, how will the research community be supported in introducing the changes to thought and practice that Open Science requires? Cultural change to deliver Open Science, therefore, requires “Leadership, Management and Engagement”.
- Regarding changes to the current scholarly communication model, universities must get as much data as possible about where researchers are publishing, how many articles are published in open access, and who is paying for opening up articles following the hybrid model. Although we can assume that a neutral cost shift is achievable, do we want to continue paying these sums or do we really want to change the system?
- In order to make research reproducible, the publication of results as journal articles alone has been proven to be inefficient. This is one of the reasons why researchers are required to publish and share data underpinning their published results. But sharing research data is not just an act of uploading meaningless spreadsheets that no one can understand. Universities must establish research data management policies aimed at helping researchers to share data in accordance with the FAIR principles.
- Universities must establish Open Science training programs for all the members of the institution. For instance, data literacy should be included on many of the current curricula without delay because future researchers need to be ready to manage and curate their data to make them FAIR.
- The uptake of this new way of doing science needs to be accompanied by a change in rewards, incentives and assessments. In many cases, institutions are using systems that rely on the evaluations of editors or administrators rather than any real academic assessment. The establishment of new evaluation methods is a key factor for achieving a change in the way research is performed and disseminated, but we must also emphasise the importance of research integrity.
- Universities must pursue integrity in all their activities, especially in research, and establish tight norms to prevent malpractice. By promoting codes of conduct and best practices, clear rules can be established to avoid fraud, plagiarism and other misconduct.

## Part 6

# Impact



**15. How can ideas that may not fit easily into current education indicators, such as intuition, peripheral thinking and cooperative problem solving, be evaluated? What are the positive and negative effects of rankings on humanities, on science and on technology? Which need to be reviewed and which should be promoted?**

# Assessing the Impact of Humanities, Science and Technology: How to Fill the Gap?

Emanuela Reale

- It is hard to disentangle the contribution of Humanities to science and society using measurements of scientific results or economic advancements from an input/output approach.
- Impact cannot be circumscribed into the notion of the usefulness of SSH research for science and society. The contribution of SSH research is to anchor notions and knowledge to the existing society, to analyse and explain changes in society and to overcome problems and inequalities by promoting linkages and exchanges between the different societal components.
- The impact of SSH research can emerge through long-term processes dealing with the diffusion of cultural changes and new perspectives to understand society, which are difficult to grasp in the short time that policy makers have to make decisions.
- An understanding of the impact of Humanities research requires bottom-up procedures to grasp the intrinsic diversity of the field, rather than extrinsic indications of what impact should be.
- The process-focused pathway for the assessment of social impact is an important method to identify the conditions and elements that make a research effort relevant for society, and the ways in which scholars engage in generating impact through their research work.
- A specific feature of the humanities is that they identify the stakeholders involved in interactions, and the role they can assume given the highly fragmented methods used, and the different epistemic bases driving knowledge production and results achieved.
- It is difficult to build robust indicators to demonstrate impact, and the absence of baseline data makes the representation of progress difficult to justify using objective measurements. This is not surprising, because the Humanities deal with epistemic values and identity creation between and within communities.
- The generation of impact is first and foremost a process of communication using adequate language to enable mutual exchange between academics and non-academic actors. The establishment of a communication strategy is a key feature for producing effects.
- The engagement of the actors involved in a research project is a key element for producing long-term effects. Humanities should invest in raising awareness about the impact that their results might have in order to reinforce the likelihood of a cultural change occurring.
- Barriers constrain impact because the real-life implementation of research results can lead to changes that are not appreciated by the users or are not allowed by existing regulations or institutions.

# Assessing the Impact of Humanities in an Era of Rankings

Paulo Franchetti, Marcelo Knobel

- The locus of the humanities is facing a crisis in the university structure, which could be related to the emergence and increasing influence of rankings, and the consequent lack of understanding of diversity in different areas of knowledge.
- In the humanities, scholarship occurs at a rather slow pace, and the impact of a publication can very often be felt in different ways, sometimes taking years to happen.
- When measuring academic quality, the importance attributed to papers published in specialized journals ignores the major differences in the construction, dissemination, and rate of obsolescence of knowledge between a variety of subjects.
- Some of the most well-known and influential texts in the humanities were published in didactic or cultural newspapers or books; and some books continue to be referenced half a century after their publication.
- The prominence of research results is also evident in the evaluation of universities and in the selection of new faculty, and, in turn, in progress in their respective careers. A direct consequence of the excessive weight of research indicators is that even at the most respected universities, the role of the researcher takes precedence over that of the teacher.
- One of the main problems with importing a techno-scientific paradigm is that it ultimately excludes or minimizes what we could broadly call the educational nature. Not the explanatory nature of textbooks or computer programs geared towards teaching, but education as an endeavor of preparation and social performance: from classrooms to major physical and virtual auditoriums.
- When one allows for only one evaluation methodology for such diverse areas of knowledge, the same metric clearly does not apply to all. The consequent corollary is starting to believe that everything that cannot be measured by means of such a metric lacks quality or relevance. This situation, for the good of the future of culture and humanistic knowledge, appears to be a fatal error.

**16. How can we identify, evaluate and communicate the social impact of research? What is the key to successfully achieving the greatest social impact of research? Is the social impact of research a consequence of research or the very reason for its existence? Should research always seek social change and impact?**

# Research Impact Assessment as a Source of New Inquiries, Values and Practices in University Research Ecosystems

Paula Adam

- Research Impact Assessment (RIA) practices have served to formulate new inquiries around university research.
- RIA practices have contributed to academic disquisitions, but also to changing practices regarding how university research is being governed, managed, prioritized and executed.
- RIA practices have also served to assess whether university values are being preserved, respected and enhanced
- Overall, RIA is a powerful tool for university practitioners to formulate questions and find robust, evidence-based answers. It is a tool for evidence-based university policy making.
- One generation of RIA inquiries is into how missions, visions and objectives are being met. These studies have been used as advocacy tools to make the case for research funding to policy-makers and society.
- A second generation of RIA inquiries has served to improve the way research is organised and executed to optimise impact.
- A third generation of inquiries has been influential in identifying how best to increase the value of research, and to minimise research waste and research that cannot be reproduced.
- An RIA exercise sheds light on retrospective evidence and, more importantly, on ways to move forward in research governance, planning, promotion and policymaking.
- Therefore, an RIA exercise is just as valuable as a research piece: it is connected to the capacity for transformation.
- Guidelines for effective RIA processes can help RIA practitioners to advance from practicing a discipline to applying discipline to a policy practice.

# Cultural Impact of the Impact Agenda: Implications for Social Sciences and Humanities (SSH) Research

Gemma Derrick

- In the past, research has been assessed and valued primarily in relation to its academic contributions and only through the use of summative indicators (citations, collaborations, complex indicators) as well as subjective assessments of research “excellence”.
- However, globally, countries and research organisations are increasingly looking to institutionalise methods for gaining returns on their investments in science through formalised considerations of how research has made a contribution to society, beyond academia.
- These intentions include infiltrative, ex-post, definition-bounded, formal assessment criteria at the organisational level, such as the Impact criterion used in the UK’s Research Excellence Framework in 2014 and to be used in 2021; or the productive interaction, ex-ante approach used by many funding agencies such as the ERC, NSF and RCUK.
- However, alongside this change in the way research is assessed as excellent, and therefore rewarded, comes the parallel change in how researchers behave during the production of knowledge. This is therefore expected to generate widespread changes in the research reward system, and there is a culture that is poised to disproportionately affect already vulnerable groups and research endeavours, namely SSH research.
- When responsibility for the assessment of societal impact, as well as the responsibility for its generation and production, lies with the academic community, alongside its governance mechanisms, cultural changes in the organisation, prioritisation and management of research are to be expected.
- The re-orientation of research reward structures around engagement, and impact beyond academia, especially through media and social media engagement poses significance risks for women.
- Likewise, there are risks and trade-offs associated with engagement and impact that are unique to Early Career researchers (ECRS).
- The article explores classic and developing models of research impact generation and assessment, as well as new emerging debates about impact that are the result of realised impact assessment exercises such as the UK’s REF, the Netherlands Standard Evaluation protocol, the indicator system of Australia, as well as micro-level assessments at the research funding level. In addition, it outlines and compares efforts by countries and research organisations that have shown an intention to, but have still not formally implemented methods of research impact capture and assessment. Finally, it compares these efforts on the macro- and meso-organisational levels to the micro-level effects on the production of knowledge and research culture. Specifically, it addresses the question of if, and to what extent, research should have an implicit and explicit influence on society, as well as the moral component of incentivising impact without sufficient hindsight of the nature of the assessment object.

## Part 7

# Gender and Equality

**17. How can equal gender opportunities in access to education and the choice and continuity of an academic and research career be encouraged today?**



# Are Women Their Own Obstacles to Progress – a Woman’s Perception!

Zakia Ali-Chand

- The underrepresentation of women as leaders of higher education institutions and other industries continues to be a major challenge as the 21<sup>st</sup> century enters its third decade. In Fiji, as in other developing Pacific island countries, female lecturers are not able to advance to assistant/associate/professor level at the same rate as their male counterparts. The careers of female academics stall at the lecturer or assistant lecturer level.
- This chapter aims to present the challenges faced by female academics for gaining promotion to senior ranks and management. It argues that one of the barriers to women’s progress in their pursuit of higher management roles is women themselves. Though there is a paucity of research information on this barrier to women’s advancement, which is arguably an indicator of the lack of importance of this factor, there is a dearth of women at the top level of higher education institutions all over the world.
- Women are overrepresented in humanities and education while grossly underrepresented in science, technology, agriculture and engineering. While women might be overrepresented in their jobs in education and humanities, they are still underrepresented in leadership roles.
- With increasing numbers of women in the workforce at all levels, their presence at the top is still scarce, and the departure levels are higher. Nothing has changed in these global trends for forty years, and women continue to face significant challenges for securing senior leadership positions.
- There are barriers to women’s career advancement at all levels: individual, organizational and societal. A barrier at one level reinforces a barrier at another. However, in terms of career advancement they are most concrete at the organizational level (Wood, Franken and Plimmer, 2018)<sup>(1)</sup>. Factors such as the lack of mentors and line manager support mean that women may get overlooked for opportunities for career advancement and are open to discriminatory treatment.
- The world may have reached the end of the second decade of the 21<sup>st</sup> century and progressed much in terms of information and communication technology, but societal attitudes towards women seem to be centuries behind. Women continue to be discouraged and often lack the motivation and confidence to move up the ranks and participate in decision making.
- Women are often perceived as lacking ambition or the skills required to perform in senior management roles. In the Pacific there are certain gender issues that cut across all the island nations. These include low levels of political participation, poor labour conditions, and women not being given the freedom to pursue higher research degrees without approval from their senior managers.
- Discussions on women’s forums continue to reflect on women’s lack of confidence to break the glass ceiling and make it to senior positions at the rate that men do. While it may be true to a certain extent that women are at a disadvantage in some areas, they, whether consciously or subconsciously, also contribute to the lack of upward progress for other women when it comes to success in the workplace.
- Research shows that the lack of gender equality in senior roles is a consequence of both external and internal factors. Any progress in breaking down these barriers needs an understanding of the complexity of factors surrounding women’s access to top positions. All institutions need to focus on sound policies aimed at breaking down barriers and guaranteeing equal access. Finally, to bring about greater gender equality and equity, higher education institutions need to develop leadership programmes that are specifically designed for women’s career progression.

1. Wood, K. Franken, E. and Plimmer, G. (2018). *Modern barriers to professional women’s career advancement*, Centre for Labour, Employment and Work, Victoria: University of Wellington.

**18. The ideological basis of humanism, as well as our conception of science and technology, is patriarchal. How can patriarchy be criticised and overcome in all areas of knowledge, both theoretical and practical?**

# Towards an Inclusive Paradigm: the Change from a Patriarchal Conception of Science

Maria José Prieto, Claudia Prats

- The main humanistic conceptions and the path of Western culture, as well as the first definition of science were born in the context of classical Greek culture, framed in the patriarchal worldview.
- The structuring of technologies and their applications would be conceived in accordance with the same patriarchal paradigm. Moreover, the patriarchal concept also refers to the establishment of male values with primacy and power.
- Briefly, male values are considered to be those related to analytical thinking, independence and orientation towards concrete goals, while female values refer to feelings, interdependence and orientation towards the processes themselves. With this in mind, it is clear that science was defined from a male perspective.
- Science was born and understood as systematized knowledge based on observation and abstract rationalization. Moreover, it has been constructed on the basis of fragmented and isolated scientific knowledge. However, this rational and analytical sense was also necessary to get through the first phase of the consolidation of science.
- The analytical view of science was required in order to proceed towards the separation of the scientific branches. This then led to the practical differentiation of the knowledge into such areas as the humanities and experimental sciences.
- We should emphasize the hierarchical and competitive way that scientific work is done by individuals and groups, which is also evident in teaching methods, whereby social behaviour may in part be driven by changes in hormone levels. Testosterone has a major influence on bodily and behavioural features that are viewed as male and/or masculine.
- Criteria for selecting curricula imply a hierarchical structure, and this is related to a prevalence of the mainly male values. Also, considering that we are all victims of the economic system, extreme importance is put on the scientific productivity of work in terms of publications.
- Knowledge of our brain, mind and consciousness was needed to understand the way humans process information, among other aspects. Hence, the study of brain asymmetry and function believed that the asymmetric brain involved the left and right hemispheres processing things differently. However, neuroscience has shown that the two hemispheres of the brain work together in all cognitive tasks.
- Interestingly, the classical definition of right and left was also related to male and female, respectively. However, in terms of brain function, the right hemisphere has been related to female values (Synthetic, Analog, Intuitive, Holistic); while the left hemisphere has been related to the male ones (Analytical, Abstract, Logical and Linear). According to McGilchrist, the right and left hemispheres are themselves distorted by our left-hemisphere-dominated worldview.
- Science should not continue to be defined and identified only from the understanding of the abstract, rational, logical and lineal, but also, from the analogical, intuitive and holistic, in order to achieve an integrative paradigm of science involving coordination between both hemispheres. It is our responsibility to consciously work on the individual capacity to integrate both.
- Such a change is a necessary step on the evolutionary path of the scientific world. And this proposal needs to be viewed as personal and collective advancement of the consciousness, i.e. the need to do “science with consciousness”, thus leading us from the merely rational and exclusive, to the empathic and holistic, which incorporates everyone and everything.
- From an academic point of view, we need to educate students from an early age in the need to include synergy between different disciplines in order to keep progressing towards integral science. In this sense, it is essential to promote awareness of the importance of some disciplines, such as neuroscience, psychology and epistemology, that can contribute to educational progress.

**19. How can a trans-disciplinary gender approach be developed, beyond gender studies as a specific branch of each area of knowledge, which are usually only developed by women and for women?**

# Gender Equality: Is It a Matter of Education?

Amal Al-Malki

- A trans-disciplinary approach to Gender Studies is possible when embedded in the socio-economic and political context that shapes education systems.
- Gender mainstreaming in education can be implemented in an effort to integrate gender equality and more so to scale it through a trans-disciplinary gender approach.
- The inclusion of a gender perspective requires expert intervention of Gender Studies throughout the design and implementation processes of a cross-disciplinary curriculum.
- This mainstreamed agenda takes the theories and practices offered within Gender Studies and builds them into other curricula, creating new and dynamic academic dialogues on gender and gender parity in modern and just societies.
- Gender Mainstreaming in education focuses on institutionalizing policies that ensure parity. It goes beyond access to education, which is considered a human right, to equal representation, equal opportunity, equal pay, and more. It also focuses on both the importance of education and on empowering females within the field of education, using gender equity frameworks, working to eliminate gender disparities, and ensuring that women have access to different fields and levels of education.
- The Gender Mainstreaming approach is also concerned with issues of gender representation, where there is a need to look at the specificities of the content of all education materials to align them with serving and promoting the gender equity agenda.
- Countries that have committed to the SDGs need to include Goal 5 in their national visions and implement it through different interrelated paths and avenues, one of which is education.
- An example of an academic program intended to act as a catalyst for the trans-disciplinary gender approach and a conduit between academia and the community is the Master's program in "Women, Society, and Development" - launched in 2017- at Hamad bin Khalifa University.

## Part 8

# Environmental

**20. Traditional Humanities have been developed in terms of such contrasts as those between nature/culture, natural/artificial, civilised life/uncivilised life, etc. In the time of the Anthropocene, how can this dualism be overcome in different fields of knowledge?**

# The Environmental Humanities and the Current Socioecological Crisis

Marco Armiero

- Universities are organized into compartmentalized knowledge in order to organize the way in which we look at the world through distinct disciplines.
- The humanities have been at the forefront of a hybridization process, combining themselves with other disciplines in new fields, such as the medical humanities, the geo-humanities, the digital humanities, and the environmental humanities.
- The “undisciplining” of the humanities is a notion aimed at signaling a vexation in the usual way that knowledge is produced while acknowledging the boundaries of disciplines (often rooted in a construction of knowledge that has been colonial, patriarchal, racist, classist, heteronormative etc.).
- Engaging with sustainability should mean rethinking what sustainability is, and not simply reproducing mainstream discourses.
- There is a need for radical transformation of university curricula in order to change the ways in which we build our infrastructures, understand public health, manage companies, view economics, and write our histories. I believe that a call for such changes is the contribution that environmental humanities scholars can make to increased greening of universities.
- Environmental humanities scholars should not be content just to be included in research projects on sustainability, but should instead aim to be part of the entire design of the research, helping to set the ways in which scientific knowledge is produced.
- Humanities scholars – perhaps more than others who are more familiar with the funding game – should contribute by bringing ethical and power issues to the forefront.

A Decalogue for socially committed environmental humanities:

1. Being relevant does not mean embracing all the buzzwords and policy jargon thrown at us but does imply doing research while keeping in mind the challenges society is facing.
2. An environmental humanities scholar should not stop being a humanities scholar in order to be relevant.
3. Leaving the ivory tower is an important step, but one must also decide where to go when outside the walls of academia. Big corporations and grassroots organizations are both outside the ivory tower. Where will we go?
4. The urgency to do something useful does not mean no longer asking fundamental questions such as: what is useful? Who decides what is useful? And useful for whom or what? What might be a viable alternative to the obvious?
5. A speech, a novel, a photograph, a song, a poem or works of art have often had an extraordinary impact. The fact that the current neo-liberal academic system does not know how to measure such things does not make them irrelevant.
6. Aiming to be funded should not imply self-censorship. Extreme times require radical thinking.
7. The production of knowledge for social transformation is a powerful driving force but scholars should not forget that most changes happen in society without their intervention. Humility and the desire to contribute must go hand in hand.
8. Environmental humanities scholars should aim to change their research and teaching practices. A syllabus produced by all-white-male authors, for instance, will not deliver any transformative message.



9. Committed environmental humanities scholars should be curious to explore new languages in order to communicate their research.
10. There are many contradictions that environmental humanities scholars need to face while working on alternatives, including the hierarchies of knowledge production that privilege the academic paths of the Global North; the commodification of knowledge; bibliometric measurements; an absolute devaluation of certain activities such as teaching and outreaching. For this reason, they should master the canon in order to find ways to break free from it.

**21. How can the Sustainable Development Goals (SDGs) be developed in the different fields of knowledge?**

# Optimizing the Space for the Development of the Sustainable Development Goals (SDGs) in the Different Fields of Knowledge

Akpezi Ogbuigwe

- The SDGs wish list urgently needs to be transformed into action.
- Though governments, businesses, and other stakeholders are vital in the implementation of the SDGs, higher education institutions (HEIs) are indispensable.
- Through their core business of teaching, research, and community development, they can generate and advance new areas of research and learning in each field of knowledge.
- Some theorists suggest that it is possible to combine high economic growth with environmental and social sustainability. Those of a contrary opinion assert that it is impossible to combine economic development with environmental and social sustainability (Bäcklund, 2014)<sup>(1)</sup>, and that we cannot choose the path of unbridled economic growth and consumption and arrive at sustainability. The development of knowledge on sustainability in the different fields of knowledge can help to guide it to address this quandary.
- Interdisciplinary, multidisciplinary and cross-disciplinary approaches necessitate the emergence of diversity in the content. Such an approach is required to structure sustainability problems to confer treatability and comprehension, both in depth and diversity. This can be attained by equipping leaders and learners with the skills to identify challenges, craft cost-effective solutions, design and implement strategic interventions, communicate effectively, and work collaboratively to solve problems.

Lessons from the UNE Mainstreaming Environment and Sustainability in African Universities Programme (MESA) include:

- Sustained sustainability programs Impact individuals, institutions and communities.
- Promoting sustainability to students is an effective strategy.
- Leveraging on Technology to Establish Knowledge Exchange Centres promotes web-based collaborative opportunities and contextualised learning.
- Institutions have experienced an increase in networking at local, national and international level because of the urgency of sustainability issues.
- Indeed, learning about, from, with and for sustainability within each discipline will expand the horizons of the disciplines into the realms of transformation, relationships with rights, ethics, ecological integrity, social and economic justice, democracy, nonviolence and peace (Corcoran, 2019)<sup>(2)</sup>. This process will engage our head, hearts and hands in translating the SDGs into action.

1. Bäcklund, A. (2014). *Philosophical perspectives on sustainable development with a focus on the urban poor*. KTH Royal Institute of Technology, Stockholm, Sweden.

2. Corcoran, P. B. (2019). 'An Earth Charter Invocation', Opening Address at the 2019 International Earth Charter Education Conference, Leading The Way to Sustainability 2030: Education, the Earth Charter, and the Sustainable Development Goals.

**22. Environmental problems today redefine the fields of ethics and the relationship with the sense of human experience. What ethical challenges are being faced by the different fields and practices of current research?**

# Global Environmental Challenges: Scientific, Philosophic and Social Implications

Jordi Bruno

- Humankind is currently facing critical global environmental challenges that are putting the continuity of our human species and its social organisation, at least in the form we know it today, in doubt.
- Global climate change due to the accelerated use of fossil fuels has become the most acute of these issues, but there is also a number of global problems related to the intensive use of energy and resources that our “developed” societies are based upon.
- Our efforts to tackle these vast problems require Science and Technology to be deeply anchored on ethical principles, and these should guide the choices we will have to make in order to define a valid strategy for the survival of our species.
- These critical choices require a fundamental understanding of the scientific and technical challenges involved but also of the social and cultural parameters that condition our construct of societal risk. While University education is clearly geared towards technical and scientific risk assessment, very little is being done on understanding the notions of societal risk.
- We present two case studies of global environmental issues in order to reflect on the challenges that education/university and society face today.
- We explore some of the inherent tensions between the overall global goals and the consequences at a local scale, and some of the lessons learned that could have an impact on the way we currently approach University education and research in the field of environmental risk.
- Responses to global challenges require dynamic interplay between science and technology and social sciences and philosophy that must be integrated in University curricula.

## Part 9

# Engagement

**23. How can current public institutions maintain and promote their commitment to social equality and the universal availability of all knowledge for everyone? What concept of equality can we defend that does not contradict that commitment to diversity and reciprocity between cultures and lifestyles?**

# The 'Open' University as a Transformer of Public Service Ideals

Paul Benneworth, Julia Olmos-Peñuela, Lucy Montgomery, Cameron Neylon, John Hartley, Katie Wilson

- Universities are knowledge institutions: they curate, develop, store, create, critique, transfer, exchange and retire various kinds of knowledge relating to the real world.
- Universities have never been 'ivory towers': creating knowledge about the real world involves interaction with the outside world beyond universities.
- University knowledge processes – teaching, research, public engagement, knowledge exchange, or community service – take place within knowledge communities who learn collectively involving participants from outside universities.
- University knowledge communities depend at least part for their success on their capacity to access knowledge within society: the interaction between universities and society is mutually productive, benefiting universities and society.
- This mutually productive exchange (between society and universities) depends upon 'openness': porous institutional boundaries allowing free flows of knowledge.
- Universities' capacities for openness recently came under threat from attempts to make universities more externally accountable, notably efforts to manage universities as uniform institutions not collections of knowledge communities.
- These tendencies risk decoupling the institution of university from societal partners, and ultimately undermining the relevance and the usefulness of the knowledge created by universities for the society that funds them.
- An open knowledge institution is one that participates in and develops larger scale 'knowledge commons' beyond its own walls, and puts effort into ensuring that the institutional boundaries remain open.
- Universities actively seeking to retain these open institutional boundaries devote work to ensuring there is a diversity of voices in the conversations taking place around different knowledge activities.
- Open Knowledge Institutions act as networks of knowledge, spanning common disciplinary boundaries and campus barriers in order to serve as agents for societal change.
- Open Knowledge Institutions can only thrive where openness is built into core missions, institutional culture and management techniques (such as Key Performance Indicators) to become more than a set of discrete projects or a vague, aspirational strategy.



**24. How can we relate such phenomena as populism and the discrediting of democracy with respect to the ways that humanities are practiced (or not) today? When politics reinforces identities and the clash between identities (religious, cultural, etc.), what role can the humanities play?**

# A Society of Interpreters

## Daniel Innerarity

- Human and social sciences stand out as specialists of meaning, as types of knowledge that produce and evaluate meaning.
- Most of our current debates do not revolve around data and information but around their meaning and relevance.
- The problem is not the availability of information but its assessment (its degree of reliability, relevance, meaning, the use that can be made of it).
- The interpretative intuition practiced by the humanities has an enormous epistemological, heuristic, and prudential value in spaces of major uncertainty.
- The political value of interpretative cultures consists of placing citizens at the center of social transformations.
- A society of interpreters is a society that assesses itself, discusses, and is capable of taking responsibility for anything new that emerges in social processes.
- We have learned this critical dimension of interpretation in the cultivation of what we call the humanities, which is, of course, the greatest education for the people.

# Case Studies

# Case Studies

Full Case Studies can be read in the complete report.  
Available at [www.guninetwork.org](http://www.guninetwork.org)

1. Humanities Courses in All Degrees: The Case of the International University of Catalonia (UIC) (<https://www.uic.es/ca>)  
F. Xavier Escribano, Gabriel Fernández-Borsot, Judith Urbano
2. The Importance of Interdisciplinarity and Intercultural Practices ([https://sigarra.up.pt/up/en/WEB\\_BASE.GERA\\_PAGINA?p\\_pagina=home](https://sigarra.up.pt/up/en/WEB_BASE.GERA_PAGINA?p_pagina=home))  
Fátima Marinho
3. Integrating Technology with Humanities and Social Science: Endeavors of a Global University in Rural India (<https://jgu.edu.in/>)  
Nandita Koshal
4. The Universitat Oberta de Catalunya (UOC) and the Universitat Politècnica de Catalunya (UPC) Form an Alliance to Bring Humanities Closer to Technology (<https://www.uoc.edu/portal/ca/index.html>) (<https://www.upc.edu/ca>)  
Carme Fenoll & Teresa Ferriz
5. Planetary Wellbeing, a Challenge for the Planet and a Central UPF Project (<https://www.upf.edu/web/wellbeing>)  
Josep Lluís Martí
6. Experience of Collaborative Work between Students of Health Sciences and Media Communication (<https://www.ub.edu/web/ub/en/index.html?>)  
María Laura Cuffí, M<sup>a</sup> Ángeles García, Jaume-Elies Vilaseca
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Xavier Serra
8. EPNet Project - From Multi- to Interdisciplinarity: A View from Archaeology (<http://www.roman-ep.net/wb/>)  
Iza Romanowska
9. The Interdisciplinary Laboratory on Climate Change of the University of the Balearic Islands: a Multidisciplinary Approach to Studying and Confronting Climate Change (<http://iincc.uib.eu/en/homepage/>)  
Damià Gomis
10. ProjectA-U: Where Artificial Intelligence (Science), Machine Translation (Technology) and Translation Studies (Humanities) Meet to Improve Higher Education Student ' Access to Global Knowledge (<https://sites.google.com/a/tradumatica.net/projecta-eng/>)  
Anna Aguilar-Amat, Pilar Cid-Leal, Marta Fuentes, Olga Torres-Hostench
11. Synergies between Humanities and Technology Outside of the Classroom (<http://www.mobilityhumanities.org/main.html?lang=EN>)  
Jooyoung Kim & Farrah Sheikh
12. The Euro-Mediterranean University of Fes (UEMF) (<http://www.ueuromed.org/pro/en/index.php>)  
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13. Cross-Disciplinary Study Abroad Programs: The Case of James Madison University (<https://www.jmu.edu/>)  
Lee Sternberger
14. Humanising Higher Education: Transforming the Co-curriculum as the Core curriculum at the International Islamic University of Malaysia (IIUM) (<http://www.iium.edu.my/>)  
Zainal Abidin Sanusi
15. The Case of "Ateneu Barcelonès" (<https://www.ateneubcn.org/>)  
Jordi Jiménez
16. Creating Art of Science (<https://www.cpn.rs/o-centru/?script=lat>)  
Dobriboje Lale Eric

17. SciTech DiploHub – Barcelona Science and Technology Diplomacy Hub  
(<http://www.scitechdiplohub.org/>)  
Martí Jiménez & Alexis Roig
18. Territorial Awareness at Rovira i Virgili University (URV): A Chemical Itinerary in the City of Tarragona  
(<http://www.urv.cat/ca/>)  
Núria Ruiz
19. Neurosciences and the Humanities: Teaching Neurosciences as a Liberal Art  
(<https://www.upf.edu/documents/3958335/215761782/19+HESP+NEURO.pdf/c1ca8b20-5407-294e-b41c-fe8c12a7aaa4>)  
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Quim Bonastra, Monica Degen, Rosa M. Gil, Daniel Gutiérrez-Ujaque, Gloria Jové, Guillem Roca
21. Integrating Social Sciences and Humanities into Teaching about Energy: The TEACHENER Project  
(<https://www.teachener.eu/>)  
Meritxell Martell & Piotr Stankiewicz
22. Play4Guide Project  
(<http://play4guidance.eu/about/>)  
Zacharoula Smyrniou
23. The Communicative Competence of University Students  
(<http://www.clod.ub.edu/page18/>)  
Marta Gràcia
24. Experimental Practices: Humanities and Arts in the Process of Modeling Knowledge for Data-Based Society  
(<http://artandsciencestudies.com/en/>)  
Agnieszka Jelewska, Michał Krawczak
25. RMEI on TARGET- Taking a Reflexive Approach to Gender Equality for Institutional Transformation in Mare Nostrum  
(<http://www.rmei.info/index.php/en/>)  
Anastasia Zabaniotou
26. Gender Inequality in STEM in Spanish Higher Education  
Andrea Fernández, Ana Sánchez
27. Equality as an Instrument that Favours Access to Education and Subsequent Insertion into Academic and Research Activity: The Case of the University of Guadalajara, Mexico  
(<http://www.udg.mx/en>)  
Martin Barajas, Martin E. Barajas, Jorge G. Bautista
28. The Innovative Gender Studies Program at Sciences Po  
(<https://www.sciencespo.fr/programme-presage/en.html>)  
Hélène Périvier

# Special Chapter (summary)

## Integrating the Sustainable Development Goals (SDGs) in Higher Education

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This special contribution to the GUNi Higher Education in the World Report 7 focuses on Integrating the SDGs in Higher Education.

### Introduction

The United Nations (UN) system universally adopted the Sustainable Development Goals (SDGs) in 2015 as a beacon for socially, economically and ecologically sustainable development. This 2030 Agenda establishes 17 Goals that are universally applicable to all countries of the world<sup>(1)</sup>. Within this globally agreed and universally applicable framework, each country (and many provinces) has developed (or is in the process of developing) specific national and locally relevant benchmarks and indicators for achieving these commitments. While the SDGs are broadly acceptable to all countries and peoples, and have been developed through an extensive consultative process to enable wider ownership, achievement of this ambitious agenda by 2030 faces several capacity deficits:

- Ensuring sustained political support from government leaders at national and sub-national levels. Political leadership in most democratically governed jurisdictions tends to make generally short-term decisions (3-4 years at most) with a view to winning the next elections.
- Investment of adequate resources in each country and region. In the contemporary economic environment, it is uncertain whether all countries, and the global community, will have enough funds to invest in all SDGs.

- Thirdly, deficits in institutional and human capacities are also beginning to affect the implementation of practical strategies for the achievement of the SDGs in many countries. Most public institutions are designed to function in silos, pursuing narrow objectives, and hence government actions focus on one SDG at a time. However, most SDGs can only be achieved through simultaneous action on several of the sub-goals.
- Fourthly, knowledge is the most critical deficit regarding achievement of the SDGs. Dominant existing knowledge systems are founded on the principle of instrumental rationality. Modern science practiced over the past three centuries has been posited on the premise that scientific knowledge can be used to control and mine nature and its huge resources. Alternative perspectives of knowledge are required to fill this knowledge deficit in order for learning and collaboration to be organically linked to generating locally relevant solutions for the SDGs<sup>(2)</sup>. Higher education and its myriad institutions can address this knowledge, learning and collaboration deficit.

Such a contribution from higher education institutions (HEIs) is possible if higher education is viewed within the larger societal context, and not merely as educating for jobs and livelihoods. Views on the social relevance of higher education have only just begun to be raised

1. <https://sustainabledevelopment.un.org/post2015/transformingourworld>

2. Alternative perspectives of knowledge are required to fill this knowledge deficit in ways that learning and collaboration are organically linked to generating locally relevant solutions for SDGs.

afresh. The recently published Global University Network for Innovation (GUNi) Report (2017) has clearly argued: “Social responsibility emerges as the need to reconsider the social relevance of universities in light of the encounter of the local with the global, regarding priorities, demands, impacts and knowledge needs in the context of globalization. The competitiveness of nations – as the only way to achieve progress – should be balanced with inclusive social development and sustainability of the entire global population.”<sup>(3)</sup>

HEIs and universities, therefore, are public institutions that contribute to public goods, irrespective of the nature of their financing. “Treating higher education as a private good, to be financed by the individual students benefitting from it, as economists have argued; is to severely curtail the real and potential contributions of higher education”<sup>(4)</sup>. In many societies, regions and communities, HEIs are some of the most resourced institutions. They have enormous physical infrastructures (classrooms, labs, residences, office space, recreational facilities, etc.) that are far superior to anything available to local communities, or even local government agencies. And much of this infrastructure is underutilized, when viewed through today’s 24X7/365 lens. HEIs also have enormous digital capacity in hardware, software and human-ware. They have financial resources, endowments and revenue streams. Their intellectual resources and capacities are unparalleled in such locations. Most importantly, HEIs have youthful energy, commitment and hope, as is reflected in its students. At the International Conference on Sustainable Development Goals (SDGs) hosted by GUNi in September 2017, Federico Mayor Zaragoza, Former Director-General of UNESCO remarked, “Universities have abandoned their previous commitment to educating future citizens. In this world where globalisation of indifference is growing, universities must prepare their students as citizens who practice and value freedom, equality and solidarity”<sup>(5)</sup>.

HEIs can serve the public good of supporting SDG achievements locally and globally when this perspective is integrated in their core missions of teaching and research. From this approach, SDGs should be integrated into each core mission:

- Promoting learning and teaching about SDGs
- Knowledge generation and mobilisation towards finding innovative solutions for achieving the SDGs

## Curriculum and Teaching Functions of Higher Education Institutions

Teaching, the facilitation of learning, is the most common and widespread function of all HEIs. HEIs can do many practical things to align learning and teaching of students to the various SDGs, and across all disciplines and courses. Knowledge about relevant SDGs, and their underlying analysis and rationales, can be integrated in teaching by all faculties, disciplines and professional courses at every HEI. There are three practical ways to align teaching at HEIs with the SDGs, thereby creating an integrated learning opportunity for students:

### 1. Modifying current curriculum for the planet

The case studies in this section come from Canada, the USA (Hawaii), India, Italy and South Africa. Each of them in their own ways makes a case for integrating science, engineering and maths with humanities and social sciences. The larger case that they make is that in the world of community, family life and work, all forms of knowing are integrated.

But when we take even a brief look around the world, we can see that in spite of the fragmented process of curricular change in higher education, change is happening. While it is true that universities around the world are for the most part teaching from the dominant Western canon, what some would call a colonial knowledge framework, there are changes both within the disciplines and also with new disciplines arising. These have sprung up as part of a complex interactive global discourse among academics, public intellectuals, social activists, political voices and others. Take, for example, SDG5 which focuses on ‘achieving gender equality and empowerment of girls and women’. Ordinarily, this topic will not be covered in an undergraduate economics course. However, the syllabus of such a course could include topics like: How do constraints faced by women affect their employment? How does it impact GDP and

3. [http://www.guninetwork.org/files/images/imce/guni\\_print.pdf](http://www.guninetwork.org/files/images/imce/guni_print.pdf)

4. [https://www.livingknowledge.org/fileadmin/Dateien-Living-Knowledge/Dokumente\\_Dateien/making\\_the\\_commitment\\_-\\_sdgs.pdf](https://www.livingknowledge.org/fileadmin/Dateien-Living-Knowledge/Dokumente_Dateien/making_the_commitment_-_sdgs.pdf)

5. <http://unescochair-cbrsr.org/index.php/2017/10/03/preparing-global-citizens/>

other dimensions of economic development? In what way do restrictions on mobility affect girls' education at secondary and post-secondary levels?

## 2. Introducing new courses

In order to increase student knowledge about different SDGs and their underlying analysis, new courses can be introduced at undergraduate and graduate levels.

For example, very few courses currently exist on subjects of water and sanitation as related to SDG6 with its focus to ensure access to these resources. New courses for engineering students may be designed with an exclusive focus on water harvesting, storage, security and distribution. Management programmes could design a new course on logistic & business planning for sustainable 24x7 water supplies to urban and rural habitations. New courses for students of civil engineering and architecture could focus on individual and collective sanitation systems in an affordable manner. The case study from Sardinia, Italy offers an interesting possibility for a new course. Based on the sustained involvement of the FOIST and InHum laboratories at the University of Sassari and its community partners, a new tool for participatory and empowerment pedagogy has emerged. Called PISA, it can easily become the focus for a new course that combines aspects of urban planning, pedagogical innovation and participatory research.

## 3. Role of interactive pedagogies

Teaching methods at HEIs are becoming more interactive through the advancement of digital learning tools. In addition, experiential learning methods can be introduced to the learning of existing subjects and courses in a way that is more engaged with the real world and society-at-large, and not merely in classrooms. Innovative interactive pedagogical tools can be adopted in teaching to enable students to learn subject matter in interaction with the society around them.

activities required to achieve the SDGs<sup>(6)</sup>. Research needs to contribute much more to generating knowledge to help achieve the SDGs in different contexts. In addition to generating an understanding of phenomena, research is now perceived as being able to provide 'new solutions, through appreciating and incorporating alternative perspectives of knowledge' (Hall & Tandon, 2017). Achievement of the SDGs also requires finding new solutions to various socio-economic challenges, and new knowledge will be essential towards this end. HEIs can undertake partnerships with local communities and stakeholders to co-create knowledge that is appropriate to local contexts and decision-makers, and which is a pre-requisite to finding sustainable solutions. This, in essence, lays the foundations of 'engaged research', which requires moving beyond traditional notions of top-down research (dictated by academics), to a more collaborative/participative form of research, where research questions are framed in accordance with local community needs, and the research is designed in collaboration with the local stakeholders who are impacted by the particular problem (Hall & Tandon, 2017). High-quality, engaged university research in developmentally strategic areas can inform good policy, and can unearth solutions to key problems across all SDG focus areas (ACU, 2015). The W.K. Kellogg Foundation's Community Health Scholars Program defines CBPR as "a collaborative process that equitably involves all partners in the research process and recognizes the unique strengths that each brings. CBPR begins with a research topic of importance to the community with the aim of combining knowledge and action for social change"<sup>(7)</sup>. CBPR can effectively contribute towards the 'development of new knowledge and insights on various societal challenges linked to SDGs, and play an important role in providing sustainable solutions for the same'.

Three practical ways can be readily adopted to undertake research in respect of locally relevant SDGs:

1. Frame locally usable research
2. Build knowledge partnerships
3. Strengthen new competencies

6. <https://ideas4development.org/en/strengthening-societal-contribution-research/>

7. <https://www.wkkf.org/>

# Research Function at Higher Education Institutions

All HEIs engage in research by their faculty and students. There is increasing pressure on them to show excellence in this, with Research Innovation regarded as being essential for the transformation of human



## Excerpts from the Case Studies

### Our Bodies are Made of Water: Stories and Community Vignettes from Ghana, South Africa and Canada

The case study focuses on UN SDG #6: Clean Water and Sanitation which warns us about the situations experienced by profoundly gendered and localized communities around the globe. When we look at the lack of potable water in indigenous communities across Canada or how women face barriers to obtaining clean water in South Africa, it becomes clear that water stories expose asymmetrical power relations and the persistence of colonization and environmental injustice in our current time. The case study draws upon narrative community vignettes to discuss the fluid connections between citizen voices and participatory policy dialogue centred on the issue of access to clean water.

Further developing the storytelling method, which also draws on participatory videos, the case study aims to tell a story about the co-construction of knowledge, identification of local solutions, and implementation of these in decision-making. Drawing upon examples in Ghana and South Africa, the authors profile community vignettes as a demonstration of the process and significance of co-construction in addition to providing an analysis of how knowledge emerges from multiple forms of expertise, which we view as central to a movement for the democratization of knowledge. This transdisciplinary gesture weaves together diverse fields of inquiry including Science, Technology, Engineering and Math (STEM), Humanities and Social Sciences. This contributes to a continuous, ongoing and emergent global conversation about the imperative value of transdisciplinary forms and sites of knowledge.

The core of the argument here stems from an assertion that community voices must be at the center of water governance conversations.

### Humanizing Mathematics: An Integral Approach to Teaching and Learning of Mathematics. Case from Durban

The Incheon Declaration's<sup>(8)</sup> (2015) stated vision for education is to “transform lives through education” (UNESCO, 2015). It commits to an education agenda that “is holistic, ambitious and aspirational, leaving no

one behind” and this new vision is fully captured by the proposed SDG 4 which aims “to ensure inclusive and equitable quality education and promote life-long learning opportunities for all” (UNESCO, 2015). Clear and flexible learning pathways are an important measure towards achieving the Sustainable Development Goals (SDGs) and specifically SDG4 in relation to Technical Vocational Education and Training (TVET) Colleges. Members of the South African Knowledge for Change (K4C)<sup>(9)</sup> Hub located at the Durban University of Technology (DUT) have participated in research collaboration between the South African Qualifications Authority (SAQA) and DUT. This investigation entitled *Developing an Understanding of the Enablers of Students Transitioning between Technical Vocational Education and Training (TVET), Higher Education Institutions and the Workplace* has focussed on the mobility of students between TVET Colleges and Universities of Technology (UoTs). One of the primary aims of the project was to identify, analyse and document successful models and relationships for student transitioning between TVET Colleges and UoTs, in order to create a baseline of practices.

One of the case studies in this larger research partnership is the Jirah Project, which focuses on enablers of individual articulation pathways for second chance learners who want to gain entrance to post-school education at TVET Colleges and Universities but have been prevented from doing so for a variety of social, economic and personal reasons. It is usually the result of a combination of interrelated factors that lead to youth disengaging and dropping out of school. This paper describes the case study and explores the approach adopted by the Jirah Project in mitigating the psychological and situational barriers that surface in the teaching and learning of Mathematics, in particular to second chance learners. The findings highlight the notion of interdependency between the individual and the collective and between competition and collaboration among students; the co-construction of knowledge between students and between students and teachers; and the leadership that underpins the teaching and learning of Mathematics within a humanist/humane philosophy.

8. [http://uis.unesco.org/sites/default/files/documents/education-2030-incheon-framework-for-action-implementation-of-sdg4-2016-en\\_2.pdf](http://uis.unesco.org/sites/default/files/documents/education-2030-incheon-framework-for-action-implementation-of-sdg4-2016-en_2.pdf)

9. <http://unescochair-cbrsr.org/index.php/k4c-2/>

## Engaging with the Urban: Transcending Disciplinary Boundaries in Urban Planning with Community, Universities and Civil Society. Cases from India

SDG 11 focuses on “Making cities and human settlements inclusive, safe, resilient and sustainable” and SDG 6 promises to “Ensure availability and sustainable management of water and sanitation for all”. Achieving both these Goals will be significant for the urban poor living in slums and informal settlements in India. The momentum of urbanisation in India is unparalleled. By 2030, it is estimated that more than half of India’s population will be living in cities. Rapid urbanisation has led to a strain on civic services, in particular sanitation services. The state of urban infrastructure and delivery of public services is highly unsatisfactory, and is far short of what is required to sustain inclusive and sustainable economic growth for the poor who live in informal settlements within cities. Open defecation in urban settings with high population densities and untreated sewerage is the biggest source of water pollution in India. The lack of safe spaces poses further challenges, as it affords little dignity and serious security risks for women.

Swachh Bharat Mission – Urban (SBM-U)<sup>(10)</sup> and Atal Mission for Rejuvenation and Urban Transformation (AMRUT)<sup>(11)</sup> – two flagship programmes were launched in 2014 and 2015 respectively by the national government to address the sanitation woes faced by the urban poor. This case study delves into the efforts by communities, civil society organisations, and universities to transcend the narrow disciplinary expertise and specialisation that has been considered the epitome of higher education for so long. It examines two case studies to illustrate this – first, the joint efforts by Participatory Research in Asia (PRIA) and the urban poor communities from informal settlements in various Indian cities to make public sanitation services responsive to and inclusive of urban poor; and second, an attempt by a university to engage with urban municipalities to undertake inclusive planning. Sustainable solutions to urban sanitation have to be inclusive and participatory, based on co-construction of local knowledge in partnership with informal settlements, municipalities and academia.

## Decent Work in Poor communities: Case from Sardinia, Italy

Sardinia, in Italy, is one of the European regions with the highest unemployment rates. According to the latest data from Eurostat, in 2017 the percentage of people between 15 and 74 years of age who were out of work in Sardinia was 17%. The mean for the European Union (28 countries) was 7.6%. In Italy, it was 11.2%. More than half of unemployment in Sardinia (53.4%) can be defined as long-term. Figures for youth unemployment rates are even more drastic: 46.8% of 15 to 24 years olds did not have a job in 2017, a rise from 56.3% just one year before. The figure for Europe (European Union – 28 countries) in 2017 was 16.8%.<sup>(12)</sup>

Those figures, of course, do not account for the quality of working conditions. And they only partially account for a situation which in some areas is certainly more acute than in others, such as areas with high rates of material deprivation and social exclusion. This case study specifically refers to one of those areas. Santa Maria di Pisa is a highly disadvantaged neighbourhood of Sassari, a city of about 127,000 inhabitants in the northern part of Sardinia.

The neighbourhood was raised between 1973 and 1979 as a result of a public housing programme. Before then, many families in Sassari were living in unhealthy sanitary conditions. Most of them had illegally occupied small disused military barracks dating from the Second World War on the town’s outskirts, or were living in decaying and crumbling houses in the old historic centre. The local council undertook a major urbanization plan to provide decent housing solutions and higher urban standards to those people. Most of the neighbourhood today is characterized by a large number of public lodgings; of 1,155 dwellings only about 60 are private. The latter were built to accommodate cooperatives of ex-workers when the rest of the neighbourhood was already in place and by which time the high density of public housing had already clearly produced a ghetto.

The case study highlights the initiatives of The Foist Laboratory for Social Policies and Education Process-

10. <http://swachhbharaturban.gov.in/ToiletBlocks.aspx>

11. <http://amrut.gov.in/>

12. All data was retrieved from the Eurostat website on February 3<sup>rd</sup> 2019. <https://ec.europa.eu/eurostat>. All data refers to regional statistics in the NUTS2 classification: the classification of territorial units for statistics. According to this classification, EU member states are subdivided at three different levels, each covering NUTS 1, 2 and 3, from larger to smaller areas.

es for co-construction of new knowledge to find local solutions to the community's problems. The case study highlights the synergy between research, community and social work. It also looks in detail at how the structured action-research approach was used in the project.

## Conclusion

All higher education institutions, whether publicly or privately funded, have a responsibility to contribute to the public good. Some of our public universities, like Simon Fraser University in Canada and Gulu University in Uganda, have defined themselves as 'engaged' universities. By this they mean that nearly all of their students, and academic and administrative staff, are engaged with the community where they are located. Other privately funded universities such as Manipal University in India and Stanford University in the USA make contributing to their communities one of the keys to their identity. But all universities have the capacity to shape their mission statements and strategic plans in ways that offer benefits to both their students in terms of enhanced skills and employment possibilities and to their societies, the sources of both the business profits coming from payment of fees and of the public taxation that supports them. The existence of the United Nations Sustainable Development Goals is an opportunity for all HEIs to provide a focus for an important stream of collective outputs. Engaged teaching, research and partnerships can all benefit from alignment with the SDGs, which are universal for all nations, and are interconnected, such that, for example, issues of gender justice can relate to the availability of water and the provision of sanitation. And the SDGs are transformative in intent, meaning that they are meant to transform negative power imbalances and facilitate positive social, economic and environmental change. We could think of the SDGs as providing the rationale behind the current in various political circles that we sometimes call the 'green new deal', the linking of economic and social justice with a shift from dependency on fossil fuels.

Our various case studies illustrate the three characteristics of the SDGs, namely their universality, their transdisciplinarity and their transformative nature. To summarize:

1. Each SDG has been defined in terms of issues that are currently being faced by humankind. Water, education, habitat and work are 'transdisciplinary' constructs. Hence, STEM can provide a technical understanding of

these issues but not holistic socio-cultural knowledge of that specific context.

2. Teaching at HEIs continues to be discipline bound. SDGs can only be taught in a trans-disciplinary manner, overcoming rigid silos of academic disciplines.
3. Learning about SDGs, even for students at HEIs, has to be linked with the real world. Learning by doing, and engaging with the real world, is critical for teaching the SDGs.
4. Teachers at HEIs need to acquire competencies and confidence in new pedagogies of engaged teaching. Special opportunities for strengthening the capacities of teachers need to be created.
5. Integration of SDGs in HEIs is most widely and urgently needed in its research functions. Each SDG, in each context, for each type of community requires new, actionable knowledge for appropriate local solutions.
6. Such an approach to research focused on the SDGs would therefore necessitate trans-disciplinary and inter-disciplinary interactions between theories and frameworks from STEM as well as the Humanities and Social Sciences.
7. No single SDG, or its sub-goals, can be addressed independently.
8. As the SDGs were being formulated, and knowledge about climate change and ecological destruction was becoming universally available over the past 5-10 years, it became clearer that modern science may not in fact have full solutions. Therefore, the integration of multiple indigenous and other ancient and land-based knowledge systems and epistemologies should also be encouraged if HEIs are to engage significantly in research on SDGs.

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# A Regional Approach (summary)

## The Latin American University: Science and Technology Seen from the Humanities – Emer(conver)ging Issues

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### Introduction

The university system in Latin America and the Caribbean has a Napoleonic profession-oriented tradition, and its organizational and academic structure is strongly rooted in faculties, fields of knowledge and its research centres, which are all different and separate from each other both physically, theoretically and methodologically. This same scenario has been reproduced and remains predominant, despite all the advances that have been made in recent decades, as shown in this paper.

In June 2018, UNESCO held its Regional Conference on Higher Education in the framework of the centenary of the reform movement, which across the region had promoted and established university autonomy, co-governance (parity in the representation of students, faculty and authorities on collegiate bodies), the right to receive a subsidy from the state, and a critical stance of the university towards society, the economy and political powers. The legacy of this reform is a model that is deep-rooted in the region, and which continues to be a matter of debate and study and the cause of movements that support and sustain it, and which represents one of the core principles on which public Latin American and Caribbean universities are based. The final declaration of this multitudinous event (with more than 12,000 participants) expresses the conviction of the need to advance with the transformation of the region's university and higher education systems, based on a vision of science and technology from the point of view of the humanities, inter-cultural matters, inclusion and equity.

In the last two decades, knowledge management and the organization of university teaching and research have been focusing on the construction of interdisciplinary spaces that seek coordination between disciplines and

for interdisciplinary conglomerates to be in direct correspondence with policies and programs for social inclusion, equity, and inter-cultural and regional integration, given the huge inequalities that exist and are maintained.

In the region, this tendency to rearrange academic spaces into new platforms for synergy, social commitment, integrity and inter-culturality, and particularly the defence of the human and social sciences, without ignoring their articulation with formal and natural sciences and technology, is growing, but only at the local and regional levels, especially with the innovation of new branches and with additional sites being built in the most developed universities, and the new national universities that have been created.

In the experience of universities in the region, this academic and organizational innovation has been encouraged in a much more coordinated manner in some countries, with new programs emerging whereby research centres work on cutting-edge knowledge in such areas as nanotechnology, genomics, biosciences, microelectronics and complexity, to cite just a few, as well as with others that focus on the convergence of the humanities and the arts with inter-culturality, environmental studies, sustainability, social sciences, governance and education. There have been many recent examples of knowledge production that have successfully created complex systems among disciplines and inter-disciplines, in all fields of knowledge.

The most active and dynamic academic groups and networks in the region are becoming more and more aware of the fact that disciplinary lines of work are no longer sufficient or relevant by themselves to tackle an understanding of contemporary phenomena and the complexity of issues in the region that require more coordinated efforts of epistemological transgression to attain converging and socially responsible academic

management. This should be viewed as a tendency that needs to be developed as soon as possible, encompassing a greater quantity and quality of processes, especially high-level learning and research-innovation processes, as well as those associated with the work of new regional or international networks.

This chapter presents the changes happening at universities in Latin America and the Caribbean, especially those of a public nature, with important focuses and cases on the fundamental boundaries of knowledge, related with the inherent problems of our societies, and with a special focus on the debate regarding the synergy between the humanities, arts, sciences and technology, including on a programming level.

## Winds of Change in Higher Education: The Approach from CRES-UNESCO 2018

The general context of higher education that framed the CRES-2018 debate was different, and perhaps much more complex, than that of the previous decades and meetings. This section presents a brief analysis, above all to emphasize the idea of complexity, diversity of coverage and the general effort of higher education institutions, but most of all of the critical status that has arisen in the levels of social inequality in access and permanence<sup>(1)</sup>, the increasing and challenging level of privatization and commodification of the institutional offer, changes in the government policies of some countries, the creation of new universities, together with the tendency to generate major academic innovations, as opposed to a sea of obsolescence in traditional education processes, as a set of aspects that show how at universities, and especially public universities, something is moving and is doing so in a very critical and dynamic manner.

In Latin America and the Caribbean, poverty affects 200 million people, of whom 88 million live in extreme poverty, representing more than 25% of the total

1. "Only 56% of those in the lowest income quintile attend secondary school and only 9% continue into tertiary education, compared with 87% and 46%, respectively, for those in the highest income quintile"...As a result of these performance differences associated with socio-economic and cultural factors, students in the lowest income quartile fall two years behind those in the highest income quartile". OECD/OCDE (2015). Latin American Economic Outlook, education, skills and innovation. OECD/OCDE, Paris. p. 24.

population. The last two decades of the last century witnessed a series of economic crises throughout the region, leading them to be dubbed 'the lost decades'<sup>(2)</sup>, followed by other crises, such as the one of 2009, which have only worsened the desperate plight of millions of human beings, mostly children and young adults.

Despite an increase in gross enrolment rates in the Latin American and Caribbean higher education system, the universalization of the tertiary level continues to be a typical phenomenon of the most developed countries, where the number of university students accounts for 60% to 70% of the corresponding age group, whereas in Latin America it accounts for between 25% and 40%, with some notable exceptions, such as Cuba. Enrolment rates at the post-graduate level present even lower indicators.

This has a considerable negative impact on the possibilities for social mobility, job promotion, and job placement rates of graduates from secondary, upper secondary and higher education, on account of the socio-economic disparities that are reproduced in the education system<sup>(3)</sup>.

At present, the increase in the number of school age children has introduced the question of universalization and free access to education as key items on the new equity agenda for higher education systems, viewed as a step towards growth in the incorporation of the corresponding age group in the contemporary processes of knowledge production and transfer, significant learning, and multiple, coordinated, relevant, significant and socially meaningful knowledge development.

2. "Indeed, after the failure of the IMF and World Bank's Structural Adjustment Programs implemented in the region in the 1980s, the 1990s witnessed a certain economic upturn that did not however succeed in reverting the upward trend in absolute poverty rates, whereas relative poverty rates fell by 5 points in the 1990-1997 period, representing 43% of the population by the end of this period. At the same time, Latin America is still the most unequal region in the world, with the highest quintile's share of income vastly exceeding that of the lowest quintile by 10 to 16 times". See: Bonal, Xavier. "Educación y pobreza en América Latina: reflexiones y orientaciones para nuevas agendas políticas". In: Bonal, Xavier (Editor). Globalización, Educación y Pobreza en América Latina. Fundación CIDOB, Barcelona, 2006, p. 11.

3. According to a study by the OECD (2015), the educational level of workers vis-à-vis their actual job is the lowest among its member countries, with a fall in their rate of return in recent years. This is reflected in the gap between the skills taught in the education system and the requirements of sectors of the job market (p. 21). More than half of the people classified as belonging to the 'middle class' are in the informal sector (p. 22), hence their salaries are lower than those earned by workers in the formal sector, despite having the same level of education. Idem.

However, both the reduction in public resources and the privatization of education services (for a small and specific population segment in accordance with their payment capabilities) have undermined the capacity of many countries to expand their education services in order to adapt to growing demands, especially in the state-run system, a situation observed even in the largest and most developed countries of the region. In addition to this, we must add the brain drain and especially the unequal conditions with regard to continuous and successful education trajectories, which are hampered by wage gaps, belonging to certain ethnic groups, gender and language issues, physical disabilities and also other geographical and suburban determinants.

## Social Inclusion as the Fundamental Axis for Change at Universities

The university system in Latin America is unique for its historic willingness to question the regional reality to which it belongs. Based on political and critical reflection on education and society, it questions unequal and undemocratic societies. Its internal organization fosters research, pedagogical autonomy and co-governance as practices for encouraging the effective participation of its subjects (Leite, 2018; Didriksson, 2018). In practice, it uses extension activities, besides research and teaching, as a form of responsibility and social insertion.

Here we highlight two mechanisms that we believe to be heading in this direction. There are two types of program that have been adopted in different countries of Latin American higher education, namely: (1) affirmative actions implemented by institutional decision-making bodies responsible for *stricto sensu* graduate programs; (2) the federal teacher initiation program (PIBID) that was adopted as an introduction to teaching practice and for the qualification of current teachers.

A first condition for the university to be able to commit to social transformation concerns its commitment to its transformation. To think about social, political and cultural transformation committed to the production of conditions for the performance of young people in society is to strengthen the collaborative function between university and school. This would foster qualified training and greater opportunities in the process of youth education and thereby reverse the exclusionary processes that

have been the basis of the dynamics of the academic world. In some Latin American universities this occurs not only in access but also throughout the whole term, resulting in dropout or failure of around the 50% of the cohort students. Governance needs to be rethought to build more democratic processes of participation vis-à-vis under-represented decision-making groups.

The approach here does not involve the use of inclusion mechanisms but rather discusses possibilities for reversing the educational and social exclusions that have historically been produced and maintained in the Latin American society. It is understood that such affirmative action policy is a fundamental resource in order for social segments to have access to higher education and to foster dialogue with students that are the children of non-educated parents, who constitute the new generations and can help to push the boundaries of knowledge production in the traditional university fashion. It is understood that students from new historical and social backgrounds are active agents in problematization and discussion for the improvement of the public character of higher education institutions. Their agency is directly related to movements, causes and even the dynamics of the everyday working lives of people in general. These aspects of affirmative action policies are directly related to actions aimed at enhancing social insertion at university.

The notion of pertinence associates the validity of higher education with social practice. This permeates inclusion in employment, cultural democratization, and the ability to respond to long-term social and human development needs. This notion also speaks of the ability to propose solutions to local, regional and global problems. As stated in the above data, the search for solutions to social problems by higher education involves taking responsibility for fighting inequality. Among the options that have emerged in the last decade to make higher education more relevant are the commitments to qualifying elementary school and providing access to higher education at free, public institutions, both at undergraduate and graduate levels, to deprived social groups.

In some countries of the region, affirmative inclusion policies have been presented. Several specific programs and some institutions have taken the initiative to implement affirmative actions, but other steps are needed. There is a need to expand this access policy at the institutional and national levels. Besides, affirma-

tive action must be understood as a totality that is not restricted to appointing placements. It is not enough for the programs to merely create mechanisms for these groups to access degree programs, for permanence policies must also be formulated. There is a need to fight the subtle mechanisms that limit the possibilities for students to progress in their activities and to be recognised as subjects in their own right within the institutional framework on affirmative action for degree placements also instituted centres of Afro-descendants and indigenous studies. Since postgraduate education involves research, affirmative action at this level needs to be in contact with these centres.

When reaching out to other social groups, affirmative policies need to be accompanied by new approaches to study and research. Hence, the admission of these social groups into university should also involve the offer of subjects, theories and problems related to these populations, and their knowledge and experiences. Education for diversity and against discrimination also gains strength, motivating curricular change, especially on undergraduate courses. The Latin American and Caribbean universities are beginning to rediscover themselves, and to understand the centrality of inequality in their composition.

## Solidary Internationalization Based on Academic Networks

University internationalization is a process that started in the 1980s, stimulated by the convergence of the following trends: a common academic model throughout the whole world that came from the Medieval European university system and was transferred to the rest of the globe; a growing global academic market, for students, teachers and researchers; the use of English as the internationally accepted language for research, communication and teaching; the advance of e-learning and use of Internet and new information and communication technologies in education processes; the tendency of academic institutions to associate with institutions in other countries, the creation of external campuses and the opening of franchises resulting from commercial regulations; and the standardization of certificates, courses, credits and other methods for evaluating and measuring academic progress, due to the local dissemination of

internationalized regulations (Altbach, 2002; Altbach & Teichler, 2001; Brunner, 2009; Didriksson, 2008; García Guadilla, 2010; Perrotta, 2016).

The consideration of higher education as a market good (commercial service) shook the foundations and changed the meanings of university policies around the world and shaped a competitive or Phoenician paradigm of internationalization (Perrotta, 2016). This meant the subordinated incorporation of Latin America and The Caribbean in this process (Landinelli 2008), thus increasing the divide between institutions and the countries at the centre and on the peripheries (García Guadilla 2010; Perrotta 2016). In consequence, university internationalization rose in importance on the agenda of international organizations, and in state public policies; together with debates between academics and political actors regarding the dispute between different university systems (Del Valle, Suasnabar & Montero, 2017).

The reaction to these processes was immediate, both due to the mobilization of the academic sector and higher education institutions themselves, as well as university teachers' unions, and regional student federations. In the framework of these protests and responses, a central issue for higher education in our region was the conflict between the *perspectives of public good versus market good* (Bizzozero, 2006; Verger, 2006); which since 2008 has been reconfigured in terms of rights versus *commodities* (Perrotta, 2008, 2016). It is important to stress that this process in the Latin American and Caribbean region has an additional edge derived from negotiations of the Free Trade Area of the Americas (FTAA) treaty of 1994 and 2005, which includes provisions for the deregulation of higher education, and which generated a transcontinental process of social upheaval (Feldfeber & Saforcada, 2005).

Specifically regarding the matter of internationalization, although it is not given that name, the CEMES 1998 called for the configuration of networks as a defence strategy against the unequal distribution of global knowledge, characterizing this kind of cooperation on the principles of solidarity, mutual respect and symmetry.

The configuration of university networks enabled greater interaction among institutions and their academic communities, better use of each of their capabilities to boost individual strengths, and the establishment of new forms of integration and articulation (Zarur, 2008). At the same time, these new forms of inter-university cooperation demanded the creation of synergies and



complementarities, defying universities' identities (García Guadilla 2006; Krotsch 1997). Within the immediate setting of CRES 2008, international cooperation between universities was viewed as the starting point to allow knowledge to be shared horizontally and vertically (among universities, and among less favoured sectors of society), and to strengthen regional integration processes (Gazzola & Goulart Almeida, 2006).

In this context, universities need to take an international and cooperative perspective that permeates the agenda of national governments, regional organizations and higher education institutions.

## Recommendations

From this perspective, universities cannot be excluded from social criticism of development systems that encourage inequality and the wellbeing of an absolute minority, and destroy the fundamental conditions for life and existence. That is why the state, from its role as guarantor of sustainable human development, must continue to demand academic integrity in the organization of universities, most especially in three strategic areas: a) respect for life and rights for life, that is, the development of alternatives for human rights as opposed to commodification, control of intimacy, individuality and dignity, the privatization of health, indiscriminate genetic and food manipulation, and neglect for the future of new generations; b) the foundations of social organization, political domains and the local, national, regional or world economies, as opposed to single-mindedness, the irreversibility of domineering and exclusionary globalization, poverty, hunger, misery, marginalization and ignorance, and the theoretical and methodological perspectives that justify them; and, c) regarding the development of alternatives for cooperation, the community, the common good, rights for all, inter and trans-culturalism, security, citizen participation, organization and representation in governments and states (Ricardo Petrella 2003; UNESCO, p. 130-131).

The conditions under which this must be accomplished and the challenges implied are huge, but neither can they be addressed solely from a locally-minded and non-pragmatic perspective; nor can they be achieved, socially speaking, without a new approach to national and regional integration agreements, associated to the new international division of knowledge. We cannot be swayed by narrow-minded nationalism, because isolat-

ed institutions would not be able to work together to take on the great challenges of the future.

Unlike what is happening in other parts of the planet, Latin American universities build their particular past and present identity from integral institutional autonomy, a collegiate and participatory government, and have maintained a predominantly public model, with important differences between its countries, and where universities are one of the few social institutions that take a recurrently critical stance, and where both students and teachers have constantly taken action against the barbarism, injustice and excessive authoritarianism of governments, the rich and the powerful, whether local, national or foreign. They have also stood for the defence of the public good, of liberty and equality, of human rights and even for their own existence.

During the last two decades, public universities in the region have promoted major structural changes to their platforms for networks and associations, to their processes of regionalization and integration, to their curricula, and to their orientation towards research and scientific and technological innovation. They have also promoted excellence in the production of new knowledge, despite global indicators clearly suggesting that the region has fallen comparatively behind the rest of the world, and progress has been made in the coordination of knowledge, interculturality and the relationship between humanities and sciences.

## Conclusions

Synergy between the humanities and arts, science and technology is a recent academic phenomenon at universities in the region, but there is a very long tradition of creativity and social innovation in the humanities, social sciences, arts and culture where many important schools of thought have taken root and proliferated. These processes have had major social impact and received worldwide recognition, especially from philosophy and artistic education. More recently, a multi and interdisciplinary process has been developed to connect the humanities, science and technology with major intercultural and sustainability content.

However, the rising tendency regarding these synergies and new processes for articulating knowledge neither represent a structural change to the region's traditional disciplinary and profession-oriented university system,

nor to the higher education system as a whole, because this system continues to reproduce and rely on state resources and its relations with political power, but most of all, because there is still inequality and inequity in its structures despite the context of new cognitive and informational configurations that are questioning and challenging the current forms of power.

There is hence a need to combat the shift towards dependence on and domination of large businesses with regard to cognitive and informational capital and genomic manipulation, together with major communication, food, transportation and finance (credit and insurance) multinationals, which relate to the debate in some academic sectors about the importance of building endogenous knowledge platforms from a relationship with different stakeholders and contexts and with the state, and which leave us in a constant state of neo-peripheral subordination (Albagli & Maciel, 2011). In some countries in the region, progress has been made in this regard, but the conflict of interests and the real power of far-right neo-liberal groups, bolstered by the rising mercantilisation of higher education that has been prioritized over the possibility of fostering major changes to universities to thus promote new expressions and experiences from a multiplicity of knowledge, the construction of subjects who appropriate that knowledge, and the ripping apart of scientific and technologic determinism, in order to put universities at the service of a just and fair society, from a new humanism and deep-rooted social innovation, within spaces that produce “a new commons” (Idem, p. 130).

The challenge, then, is the transversal concatenation of these initiatives, which translates into the state's duty to design a national education project that is truly public and of universal access. In the rightist new governments in the region, there are doubts about the short-term prospects of state action in this direction. In this context, it is the responsibility of institutions and other agents of higher education to stress that this is occurring, in order for social relevance to indeed materialize. If this tension must be confronted by the state in the public policy field, it must also be done in terms of human training, honouring students' rights to quality education and in commitment to building education as a public good.

Broadly speaking, the two related practices imply the integration of science, technology, arts, and innovation because all these areas of knowledge are directly or indirectly involved. There are important initiatives

for inclusion in both the humanities and science via teacher training and innovative inclusive actions.

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### Case Study

- *Center for Complexity Sciences (C3) at UNAM*  
Aurora Lechuga

### Coutry Case

- *Towards a Policy on Coordination between the Humanities, Sciences and Technology: the National Council of Science and Technology (CONACYT) in the New Mexican Government*  
María Elena Álvarez-Buylla

# Special Contribution

## The Union for the Mediterranean (UfM) perspective in promoting Higher Education in the Mediterranean

### Higher Education and Research Division – Secretariat of the Union for the Mediterranean

The Union for the Mediterranean (UfM) is a Euro-Mediterranean intergovernmental organization bringing together all 28 countries of the European Union and 15 countries of the Southern and Eastern Mediterranean, with an aim is to addressing three strategic objectives: human development, stability, and regional integration. In order to fulfill this mission, the 43 countries work together on several axes, including higher education and vocational training, research and innovation, environment, water, blue economy, energy and climate action, and education for sustainable development<sup>(1)</sup>. As an organization uniquely positioned to bridge and strengthen dialogue across the shores of the Mediterranean, with a focus on Human and Sustainable Development, the UfM aims to advance towards a Positive Agenda based on achieving the 2030 UN Sustainable Development Goals (SDGs) in the region by addressing the UfM's axis of work in a cross-cutting, results-focused, and dialogue-based manner.

The Mediterranean region has one of the highest rates of unemployment in the world. As such, the UfM is engaged in the implementation of specific projects and initiatives focused on the development of employability skills, business and employment opportunities, with a particular emphasis on youth and women. Special attention is also devoted to universities and university networks, their students, researchers, and academic staff, as vectors for innovation and economic growth in the Mediterranean region. Considering the potential of higher education to increase employability, promote intercultural dialogue and sustainable development, and prevent extremism, regional cooperation efforts on vocational training, Education for Sustainable Development in all of its forms, and mobility, play an essential role in achieving a positive agenda for youth in the Mediterranean (which is of particular importance in a region where almost 60% of the population is below the age of 30). In this context, the UfM works towards guiding and advancing higher education and research objectives of Member States' across all of its thematic axes.

#### **Strategic objectives of the UfM regarding higher education and research strategy also include:**

- Advancing the Mediterranean mobility agenda - which includes addressing common challenges affecting its progress;
- Supporting efforts to prepare students for the changing nature of work, enhancing their employability and improving transitions to employment;
- Enhancing the consolidation of Euro-Mediterranean academic consortia, networks and communities - from rector to teacher and international relations manager levels;
- Facilitating Higher Education to migrants, refugees and displaced persons.
- Supporting all initiatives in favor of Education on Sustainable Development in the Mediterranean.
- Contributing to regional dialogue on innovation policies;
- Strengthening regional cooperation in R&I aimed at understanding and addressing the root causes of migrations;
- Improving brain circulation and engagement with the scientific diaspora;
- Supporting regional efforts to increase knowledge and technology transfer across the Mediterranean as well as efforts to transfer research results into policy decision-making.
- Contribute to the implementation of the 2017 Ministerial Declaration on Strengthening Cooperation through Research and innovation (in particular with regards to PRIMA, BLUEMED, and migration).

The UfM also participates in and supports The Global University Network for Innovation (GUNI), as a network currently composed of over 220 members from 78 countries, and including UNESCO Chairs in Higher Education, higher education institutions, research centers and networks dedicated to innovation and higher education as a social commitment. Following the collaboration initiated on the occasion of the **GUNI International Conference on Sustainable Development Goals: 'Actors and Implementation'**, held in September 2017, GUNI and the Secretariat of the Union for the Mediterranean successfully established a cooperation framework in 2018 for the upcoming three years through the signature of a memorandum of understanding (MoU) aimed at continuing to work together in accordance with the mission and objectives of both institutions.

In this context, the UfM Secretariat continues to strive towards giving a voice to experts coming from the Euro-Mediterranean region and, in particular, from the Southern Mediterranean rim, always with a view to ensuring the visibility and perspectives of women and youth. Indeed, Higher Education (including vocational training), research and innovation have been priority areas in the mandate of the Union for the Mediterranean since its establishment in 2008, and as indicated in the UfM Roadmap for Action adopted in January 2017 by the Ministers of Foreign Affairs of all Member States.

Higher Education, as well as Research and Innovation, are critical in order to successfully address and overcome the unprecedented challenges faced by the Mediterranean region, including climate change, youth unemployment, and preventing radicalization and terrorism through the promotion of intercultural dialogue. The role of Humanities as well as Social Sciences, Culture and Arts becomes key in addressing these challenges, but also when exploiting the existing untapped potential to build more inclusive, ethic, diverse, committed and democratic societies.

From among the more than 50 labeled projects benefiting from the political endorsement of the UfM countries, shown below is a sample of the UfM's most active and emblematic projects regarding its commitment to research, innovation, and higher education with special emphasis on the role and importance of social sciences and humanities.

### **The Euro-Mediterranean University of Fes (UEMF)**

is a regional center of excellence based in Morocco that promotes dialogue, intercultural exchange and knowledge sharing. The UEMF seeks to build a new generation of young people with a unique Euro-Mediterranean profile, who can actively play a role in transforming the region from their future positions. Students from both Engineering and Humanities & Social Sciences backgrounds receive cross-cutting classes on Euro-Mediterranean history, civilizations, heritage and languages along with transversal courses on ICTs and entrepreneurship. Social responsibility, eco-citizenship and multiculturalism are among the core pedagogical pillars of the University, mainstreamed into all study programs. The University delivers degrees focusing on the integrated development of the Mediterranean region (i.e. Master's programmes in Renewable Energy & Energy Efficiency or in Environmental Engineering & Water Management).

The UfM Secretariat also envisages playing a role in maximizing interactions and synergies among other regional universities, networks of higher education, institutions, and research centers (crucial for fostering knowledge, critical thinking, creativity and the development of personal and professional skills for the future of the region, especially youth) by becoming a focal point for collaboration among such stakeholders, thus amplifying the impact of their actions on the ground. In particular, the UfM aims to enhance its role as a regional platform for Mediterranean Higher Education and youth mobility. Indeed, academic mobility has always been at the core of the UfM strategy because of its capacity to boost creativity, the flow of ideas, and the reinforcement of dialogue and mutual understanding. In recent years, several University networks (close partners of the Union for the Mediterranean in the Higher Education field) have pledged, through different fora, to provide Humanities with the importance they deserve, in particular when it comes to shaping the region's response to the unprecedented societal and environmental challenges it currently faces.

1. The UfM works at three main levels: 1). Political (including UfM Ministerial Meetings that build on the joint agenda of the countries), 2). Regional dialogue platforms, and 3). Projects with regional impact (i.e. those labelled by the 43 countries).

**The Mediterranean Universities Union (UNIMED)** launched in December 2017 a *Manifesto for a new Mediterranean of Knowledge*. This Manifesto, endorsed by almost 50 institutions, calls for the need to grant Social Sciences, Humanities and Arts a more prominent role in Euro-Mediterranean Education and Research cooperation strategies and programs, as a tool to foster more sustainable development of the Mediterranean basin and the resilience of its citizens.

Another example is the **Arab-Euro Conference on Higher Education (AECHE)**; an initiative promoted by the University of Barcelona, which gathers annually all members of the European University Association (EUA) and of the Association of Arab Universities (AAU). In the final statement at the 4<sup>th</sup> edition of AECHE, held in Rabat in 2017, partners affirmed that cooperation between European and Arab Universities could benefit from interdisciplinary and multidisciplinary approaches, which all too often are still not getting full recognition and support. At the same time, they expressed their concerns regarding how the role of Social Sciences and Humanities applied to the research and study global challenges (including food and water insecurity) is often ignored.

**EMUNI University** hosts the **Jean Monnet project Knowledge Hub on the Euro-Mediterranean region (MED-HUB)**. This project was born with the view of reinforcing the links between academia and policy makers in order to efficiently translate knowledge on the Euro-Mediterranean region into relevant policy actions, which raises, in turn, new and meaningful research questions. In this regard, a community of experts and academics in the field of Euro-Mediterranean studies has been created, with great potential to contribute to regional integration.

In the field of Research and Innovation, the **PRIMA project on water resources and agro-food systems** was one of the main topics of the Ministerial Conference on Strengthening Euro-Mediterranean Cooperation through Research and Innovation (Valletta, May 2017). PRIMA proposes in its Work Plan for 2019 an integrated approach involving as many stakeholders as possible and embracing inter and transdisciplinary perspectives by engaging a wider diversity of disciplines including Social Sciences and Humanities.

Through its dossier on 'Environment, Water, and Blue Economy', the UfM has also been strongly involved in the extension to the South and East Mediterranean Countries

of the **BLUEMED Initiative**<sup>(2)</sup>. Endorsed by the UfM Ministers through the 2015 UfM Ministerial on Blue Economy, the BLUEMED Initiative addresses research and innovation from a multidisciplinary approach linking economy, environment and humans. The ultimate mission of BLUEMED is to design a shared research and innovation pattern to foster blue growth in the Mediterranean area, namely through the BLUEMED Strategic Research and Innovation Agenda (SRIA). This living document, resulting from a consultation process at national level and open to inputs, aims to identify, highlight and address strategic priorities of societal relevance in the Mediterranean area. The UfM is also currently working on accompanying these states in the SRIA prioritization process in order to reach a consensus on its most pressing goals and actions. A number of awareness and capacity-building sessions have also been organized in non-EU UfM countries (BLUEMED days), as well as Research Funders' Workshops.

In pursuit of the UfM's mission and following the will of its Member States, the Ministers of Environment of the UfM also endorsed the **Mediterranean Strategy on Education for Sustainable Development (MSESD)** at the UfM Ministerial Meeting on Environment and Climate of 13 May 2014 in Athens. The aim of the MSESD is to encourage countries of the Mediterranean region to develop and incorporate Education for Sustainable Development into their formal education systems, in all relevant subjects, and including non-formal and informal education. The MSESD has already yielded positive results at regional level, and innovative multi-stakeholder projects have been developed and labelled by the Union for the Mediterranean. **The UfM-labelled project "Forming responsible citizens"** (initiated in 2016), for instance, has contributed to establishing schools as key vehicles to disseminate citizenship and gender equality values in the Euro-Mediterranean region. The project sustained the creation of a new curricular guide to citizenship education (which was implemented in pilot Moroccan and Tunisian schools), aiming to encompass the concepts of inclusive and sustainable development. This new pedagogical material was also implemented in and supported by teacher training and innovative practices.

As education for sustainable development under the MSESD must take into account local, subnational, national and regional circumstances, it may place varying

2. During the event 'BLUEMED - A Basin for Research Innovation and Sustainable Growth' (Malta, 18-19 April 2017), BLUEMED formally opened to non-EU countries of the Mediterranean area interested in joining.

degrees of emphasis on the different aspects of sustainable development, depending on the country and the field of education. This Strategy will serve as a flexible framework for the countries of the region, given that the implementation of the MSED is driven by countries' priorities, initiatives and specific needs and circumstances. In response to the UfM-endorsed MSED, the Action Plan of the Mediterranean Strategy on Education for Sustainable Development was unanimously adopted, with the participation of the Secretariat of the UfM, at the high-level Ministerial Conference held in Nicosia (Cyprus) on 8-9 December 2016. As part of the UfM's commitment to follow-up on the Nicosia Ministerial Conference, the UfM Secretariat also participated, in November 2017 and June 2019, at the first two meetings of the Mediterranean Committee on ESD.

ESD is still developing as a broad and comprehensive concept, encompassing interrelated environmental, economic and social issues. It broadens the concept of environmental education (EE), which has increasingly addressed a wide range of development challenges.

In order to turn the Mediterranean into a space of innovation and knowledge transfer at the service of sustainable economic growth in the region, the Humanities have a key role to play in spreading awareness of a common heritage and opportunities for establishing a **Euro-Mediterranean Area of Higher Education**.

The UfM encourages all actors involved in Higher Education, Research and Innovation in the Mediterranean region to rise to the challenge of contributing to a paradigm shift around the role and application of humanities and social sciences vis-à-vis the complex, evolving, and deeply inter-disciplinary challenges currently facing the region.

*\*\*The Union for the Mediterranean (UfM) is an inter-governmental Euro-Mediterranean organisation which brings together all 28 countries of the European Union and 15 countries of the Southern and Eastern Mediterranean. UfM's mission is to enhance regional cooperation, dialogue and the implementation of projects and initiatives with tangible impact on our citizens, with an emphasis on young people and women, in order to address the three strategic objectives of the region: stability, human development and integration.*

*Regional cooperation efforts in the fields of higher education, research and innovation as well as vocational training and mobility play an essential role in achieving*

*a Positive agenda for the Youth in the Mediterranean because of their potential on increasing employability, promoting intercultural dialogue and preventing extremism. The activities of the UfM in the area of Higher Education and Research aim to contribute to the Global Development Agenda, particularly to the achievement of the 2030 Sustainable Development Goal (SDG) 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all, the SDG 8-6: Reduce the proportion of youth not in employment, education or training (NEETs) and SDGs where research and innovation play a crucial role.*

# Special Contribution

## Humanities and Higher Education: Synergies between Science, Technology and Humanities – The Role of “la Caixa” Foundation

Àngel Font

“la Caixa” Foundation is fully committed to improving education and research. *The Fourth Industrial Revolution* or digital revolution is posing important challenges. The education system must progress and identify what will be valued in the labour market. From the perspective of cognitive knowledge, science, technology, engineering and mathematics (STEM) will be key disciplines, as will be attributes that are less replaceable by technology, that is, exclusive to the human being, such as creativity, motivation, innovation, cooperation, intuition, ability to communicate and undertake, persuasion and originality.

“la Caixa” Foundation is aware of the relevance of generating synergies between science, technology and humanities in order to be prepared for the future. This entails investing directly in education and research but also in facilitating a space for cultural dissemination, teaching and debate. “la Caixa” Foundation works and will continue to work to offer programs that will help with this huge transformation. Some of the most relevant projects that it funds in this area are the following.

### Fellowships

Training excellence, research and innovation are crucial for addressing future challenges. There is no doubt that more research implies more social progress. Since 1982 “la Caixa” has been offering fellowships for postgraduate studies abroad, and for doctorates and postdoctorates later on.

Created in 1982, the most traditional of the different programmes is devoted to funding postgraduate fellows to study abroad (120 fellowships in 2018). This programme provides the finest Spanish students with access to the best universities in Europe, North America (USA and Canada) and the Asia-Pacific region (Austral-

ia, China, Singapore, Japan, India and South Korea). These fellowships are for a maximum duration of two years. Since its inception, this international programme has generously funded more than 3,400 fellows to take postgraduate studies in any discipline, including the arts and music.

In 2018, “la Caixa” launched a new postdoctoral fellowship programme to attract and retain the best talent in Spain. Thanks to this programme, 30 researchers of excellence of all nationalities are currently developing their top-level, innovative scientific careers in Spanish universities and research centres.

In 2018, the “la Caixa” fellowship programme also offered other types of grants, such as the doctoral programme in Spain (20 in total) and INPHINIT doctoral programme (57), co-funded by the European Commission through its Horizon 2020 MSCA COFUND programme. These programmes are also aimed at researchers of all nationalities with the dual objective of attracting and retaining the best research talent. Both these doctoral and postdoctoral fellowships are therefore offered in two categories. The first is ‘Incoming’, which is aimed at attracting talent to Spanish research centres accredited with excellence in the fields of life sciences and health, technology, physics, engineering and mathematics. The second is ‘Retention’, which aims to retain the best researchers in all disciplines wishing to conduct their research at any university or research centre in Spain. In both cases, these are three-year fellowships.

The doctoral and postdoctoral fellowships in Spain include workshops on technology transfer, professional development and cross-cutting skills in order to enhance professional development and improve career opportunities for researchers. Additionally, this training programme aims to provide researchers not only with tools, but also with the proper awareness and skills to engage with society in order to deliver a common



good. These sessions are taught by representatives of leading companies in these fields. The training is also complemented by networking activities to encourage collaboration between “la Caixa” fellowship holders.

## Research

Support for leading centres through calls for pioneering projects is a key element for addressing the main challenges of the future, such as health. 2018 brought the first edition of a private call for research projects in biomedicine and health that made the Foundation one of Europe’s leading philanthropic research entities.

Accordingly, 20 research programmes of scientific excellence and great potential value and social impact were chosen in the first Call for Research Projects in Biomedicine and Health. The aim of this open, competitive call is to promote projects of excellence in the fight against diseases with the biggest world impact, such as cardiovascular, neurological, infectious and oncological diseases. “la Caixa” Foundation allocated a total of 12 million euros to the call, to which the Government of Portugal added 2.2 million.

In addition, “la Caixa” Foundation gives support to research centres of excellence. For instance, the foundation is one of the main donors and founders of the future SJD Paediatric Cancer Centre in Barcelona, together with other foundations, thanks to which Hospital Sant Joan de Déu began operations in 2018 on what will be one of the biggest paediatric oncology centres in Europe.

“la Caixa” also works hand in hand with IrsiCaixa and ISGlobal, two research centres focusing on AIDS and infectious diseases respectively. “la Caixa”’s commitment to the long-term support of IrsiCaixa and ISGlobal continues to yield great results. A total of 489 scientific articles were published by the two centres in 2018.

IrsiCaixa is leading research for the eradication of HIV/AIDS and their related diseases. Major advances have been made in experimental treatments against AIDS using stem cells. Recently, a group of scientists from IrsiCaixa discovered that filoviruses, a family that encompasses such viruses as Ebola, share with HIV a pathway to cells in the immune system, and has designed antibodies that totally block this pathway in human cells. The work was published in June 2019 in the journal *Nature Microbiology*.

For its part, in 2019 ISGlobal was awarded accreditation as a Severo Ochoa Centre of Excellence by the State Agency for Research. This distinction recognizes the excellence and scientific contributions of national and international research centres, their social and business impact, and their ability to attract talent. ISGlobal is the first global health centre in Spain to receive the distinction, which aims to finance and accredit public research centres and units that include frontier and highly competitive research programs and are among the best in the world in their respective areas. The awarding of this four-year grant involves one million euros of funding per year, in addition to preferential access to scientific facilities, flexibility in the recruitment of researchers, and fundraising. The aid received will allow ISGlobal to create three new research groups: mobile health technology for diagnosis and risk assessment; data science and mass data (big data), and impact assessment on health and implementation science.

ISGlobal is committed to improving health in a globalised world and hence devotes substantial efforts to investigating the effect of climate change on health. A new study led by ISGlobal has added new evidence: exposure to polluting particles during gestation and the first years of life is associated with a reduction in cognitive abilities. According to the research, which was published in *Environmental Health Perspectives*, the cognitive abilities that are most affected by pollution are working memory, a cognitive system that stores information for later use and that is fundamental for learning, reasoning, problem-solving and understanding language, and executive attention, one of the three networks involved in the capacity for attention, as well as the ability to detect and resolve conflicts.

## Innovation

The CaixaImpulse programme, which bridges the gap from laboratory to market and society, promoted 78 programmes in 2018 and has created 13 spin-offs since its launch, providing solutions that benefit human health. CaixaImpulse aims to transform the scientific knowledge arising from non-profit research centres, universities and hospitals working on innovative projects in the field of biotechnology or life sciences into services and products that can generate value for society. This is achieved by creating new companies or by technology transfer agreements, such as licenses.

## Knowledge brokering

The transfer of research into policy and practice is a complex process that both policymakers and researchers struggle with. A potential solution is to use individuals or organisations as knowledge brokers, whose role is to make research and practice more mutually accessible. “la Caixa” Foundation has various instruments that support knowledge brokering.

### “La Caixa” Social Observatory

This programme focuses on studying and understanding social problems, and making them known to the public and specifically to policymakers and practitioners who deal with urgent social issues. One of the main subjects discussed at the “la Caixa” Social Observatory is education. It does so from a broad perspective and regularly publishes articles written by top experts discussing the main evidence in this area. Some examples of available articles are:

- Parental involvement in education: a tool for change.
- Training for employed people: the need for expansion and improvement.
- The new generation of digital technologies in Spain.
- Public and private universities: evolution of productivity and impact of the crisis

### European School of Humanities

The *European School of Humanities* is a programme supported by “la Caixa” Foundation through offices at Palau Macaya. It promotes awareness, training and cultural debate, with four main levels of activity:

- General courses on the humanities directed at a non-specialised audience, in order to offer a complementary space to university education.
- Expert seminars on specific aspects of European humanist culture, linked to the present and from a perspective that complements the political and journalistic debate.
- Public conferences and debates by both national and international cultural professors and researchers.
- Creation of a reference web site to disseminate the materials created by the School and to build a community around it.

The *European School of Humanities* adopts the European cultural space as its own framework, with the idea of establishing a European outlook on affairs and creating the conditions for greater European cultural transversality. In a world undergoing a rapid process of change, the humanities are more necessary than ever as a point of reference to evaluate these transformations; Europe and the humanities as coordinating elements of a school aimed at citizens and promoting citizenship.

Europe as a perspective, Europe as a referential territory, and European cultural mind-set as the object of study: Humanities (including economics) as those scientific, cultural and artistic disciplines that have human experience as the central object of study.

### Social Research Call

In 2019, “la Caixa” Foundation launched a new call for social research projects of excellence that rely on data to provide robust quantitative evidence and insights about current and emerging social challenges from an original and innovative approach. This call was open to researchers from all disciplines who focus on current or emerging social challenges, shedding light on social phenomena and providing a better understanding or measurement of social interactions in the context of Spain. This project makes 1.3 million euros available to 100,000 euro projects of up to 24 months duration.

# Editors' Conclusions and Recommendations

David Bueno, Josep Casanovas, Marina Garcés, Josep M. Vilalta

This report was not produced in abstract form, but has instead raised questions in the real context of higher education in the world. We did not want to perform a speculative exercise on what the relationship between the humanities, science and technology should be in the ideal world, but instead we have addressed active members of the academic, cultural and institutional community around the world to find out what is happening, what changes they perceive, what their limits are and what their potentialities are. What synergies are occurring? Which are not occurring? Why not? Which views do we share and which are driving us apart? What initiatives are being experienced? And what recommendations, proposals and good practices can we share at this early stage of the 21<sup>st</sup> century so that all these words do not end up being no more than good intentions?

A report like this, produced over two years of dialogue with colleagues in as many countries and disciplines as we have been able to bring together, is not about self-congratulation. In fact, it is quite the opposite. It needs to serve as the springboard towards the demand and desire for change that most of us participants share. We have found that when asked about the role of the humanities in the context of current changes, everyone has good things to say. From politicians, to technicians, regulators, academics from different fields and financiers, everyone is convinced that humanistic education and cultural experience are key factors for a more dignified, fairer and more democratic society. The problem is that the reality of the education and research system is far removed from these good intentions. Specific decisions in terms of funding, salaries, teaching hours and social assessment of the humanities and culture are sending out a contrasting message: that the humanities are dispensable and a complement, even an ornament. We have produced this report from the conviction that this situation must be changed both in theory and in practice and that there are important reasons for doing so. This report should therefore be viewed as the open expression of a commitment shared by many different voices.

The reasons for these changes that we want to help to promote relate to the biggest challenges and changes of our time. We have arranged these into three core areas:

1. those that have to do with environmental and climatic issues, which put our relationship as human beings with all other living beings and resources on the planet in crisis, and which are calling for a reappraisal of the very conditions for life (habitability, survival and diversity),
2. those that have to do with scientific and technological changes, which are presenting new possibilities in terms of robotics, artificial intelligence and big data, as well as developments that are still hard to imagine in the fields of biomedicine and life sciences, and
3. those derived from the cultural changes in a world where the West and patriarchy are no longer the sole hegemony, as we shift away from the Eurocentric, chauvinistic paradigm that has prevailed among mankind until now.

These are not three separate sets of questions. Rather, all three overlap as we redefine the boundaries of a way of understanding civilisation that has been based on the continuous and unlimited spread of its power, its dominion and its ideas for the future. As a global world, we are experiencing the limits of a finite planet and of a mortal species, we humans, who are the cause of the widespread threat to our own living conditions, together with those of other living beings and ecosystems on this planet. It is not that the planet is too small for our aspirations. The planet is neither big nor small, it is what it is. What we may need to reconsider is our aspirations, their meaning and their consequences, as well as the way in which these aspirations are to be put into practice.

We have learned, throughout the modern era, progress does not work as a straight line along which we advance in stages. The path we are taking is full of potholes and new abysses that we ourselves are causing. Society as a whole is participating in this process, albeit with different privileges and responsibilities. We could try to draw a general map of these interactions, but what interests us is to understand what role and responsibility the world's higher education system has to play when it comes to contributing to a better appraisal of mankind's hopes and expectations.

## General considerations

We are not interested in the question about how the humanities should be adapted or modernised on the basis of scientific or technological changes. There is a very large market of 'new humanities' that only seem to add apparently innovative adjectives to a legacy that they do not question. This report takes a different point of view: we want to focus on the need to think together, from all areas of knowledge, about the shared problems of our time. What role can the humanities play in this common challenge? This is not only a question for humanists. The different sciences and different technological practices also have a vision of the world that they transmit and often impose through institutions and the market. So, it is a question that we all have to ask together. And 'all together' also means from the different levels and responsibilities of the university system, from senior governors to students, scholars, assistants and users, who are increasingly more diverse, fleeting and unstable.

Thinking together about the relationship between the different fields and practices of knowledge and the specific situation of the humanities within the context of current changes has led us to question the higher education system as a whole. And although it is beyond the scope of this report, this also means the education system all the way up from elementary, primary and secondary education, for they are the foundations for higher education, which to a large extent conditions what they do. The shared questioning that has come out of this report has led to three general considerations that we would like to emphasise:

- First of all, that in most of the opinions we have gathered, the humanities are no longer viewed only as a series of disciplines but as a way of addressing and understanding human experience in all its manifestations. Their existence and focus conditions the conception of the general paradigm of knowledge that we are developing in other areas and disciplines of knowledge. So, it is not a case of working out how we can keep a place for subjects like literature, history, philosophy, art and so forth, but of how we can guarantee and accompany sufficiently consistent education in all these fields, and how this can have an impact on the knowledge system as a whole.
- This means, secondly, that the question about the place of the humanities in the system has led us to the need

to rethink everything. This means that the report, as a whole, may sometimes have too abstract or general a tone. We should make it clear that this is not because we have avoided being too specific, but because the specific problems we face today have to do with the rules of play that are determining the global higher education system as a whole. Changing just one part is the start of changing everything.

- Thirdly, despite the differences in local political, cultural, economic and other contexts, the higher education system appears to be far more similar around the world than we thought, both in terms of its problems and of the solutions being tested. This is something we have perceived as the different contributions arrived and that it is reaffirmed when the full report is read, to quite a startling extent. This speaks to us of a system that despite being institutionally heterogeneous, nationally diverse and economically very unequal is today a global system where changes spread very quickly and have an immediate effect on the specific ways that each place works. The danger of this is that any trend soon becomes strong and apparently irreversible. The positive side of this is that if we properly coordinate the focus of critical debate and its follow-up, then the drive for major change will also catch on quickly. We hope this report will help to do that.

GUNi decided to make this desire to put everyone on the same page to be its first stance, and entrusted the coordination of the book to three people from different fields and backgrounds: a biologist, a philosopher and an engineer. The personal and professional relationship between these three coordinators throughout the period in which the report was being put together was in itself an unusual experiment given the way the university system usually works. There are commissions that involve representatives of different disciplines, but each of these is usually only there to represent their own area and play their own separate part. In this case, the challenge was to generate an integrative shared framework and formulate the questions together from the beginning, bringing together languages that are not always easy to share, and also receiving the responses together, as well as proposals made by the members of the international editorial committee and the contributing authors to the report.

After two years of collective effort, this final document collects some of the most important conclusions that we have reached. They are not a complete summary

of the report. What we present hereinafter is a reasoned sequence of some of the ideas that we want to put forward as a starting point for later studies, as thought-provoking material for readers and, above all, to contribute to the debate and the transformation of a higher education system that must not shirk its present and future responsibilities. We have grouped the conclusions around the following questions:

- What education?
- What knowledge?
- What humanism?
- What research?
- What impact?
- What institutions?
- What equality?
- What professions?
- What ethics?

## What education?

- C1. Education means access to a dignified life for everyone and for society as a whole. We need to distinguish between education for instruction and for training. Education does not aim to create people who are able to function better, but people who are aware of their place in the world and their relationships with others and with the environment. This is the only way that can we speak of true skills that contribute to higher levels of both personal and collective freedom and dignity.
- C2. The education system has increasingly focused on the training of skilled professionals. This tendency becomes clearer as we advance through the education process, from primary school to higher education. The entire education system needs to be rectified in order to reliably promote the principle whereby education is a right and a common good. UNESCO's *Rethinking education: towards a global common good?* (2015)<sup>(1)</sup> report, published as part of the debate on sustainable development and the Post-2015 Agenda, defends this new humanist view of education and the need to overcome "dichotomies between cognitive, emotional and ethical aspects" and "promote awareness of and a sense of responsibility for others" (UNESCO, 2015).
- C3. Education involves the entire education system, from the first years and throughout life. We stress the importance of a general base and the cross-cutting presence of the humanities in all areas and levels of education. We cannot advance with the production of more cross-cutting knowledge if from the outset we are learning each subject in such a segmented, disciplinary and self-referential way. Integration of the fields of knowledge begins with a good basic education that offers the chance to move freely between different problems and languages, and to use them in an interdisciplinary manner in order to solve all kinds of questions or problems. The humanities are not just a part of the education curriculum. Instead, they are an important part of the basic ability to relate the meaning of the different learning experiences that we will have throughout our lives.
- C4. Similarly, several contributions have highlighted the importance of artistic education in all areas of knowledge, including within university courses and even research. Artistic education does not mean general culture about the history of art or more access to cultural products or events. It means learning to be actively aware of the methodologies of creation and research that contemporary artistic practices can contribute to all areas of knowledge.
- C5. Education right now is highly focused on methodological innovation in the classroom, although this has not reached all higher education institutions. A recurring argument in the different articles is that such changes are necessary in order for them to truly respond to the challenges of our time. A lot of innovation merely consists of the uncritical incorporation of new technologies, which do not always satisfy true educational interests, but rather the interests of the corporations that promote them. It is clear, from all points of view, the university system needs to think hard about the way it teaches and how people should be educated in the world today. And this question will not be answered by making changes to teaching dynamics and channels. We need to diversify the spaces and types of learning at university while creating environments that 'conjoin' perspectives, both inside and outside of higher education institution. Higher education institutions must also encourage a critical and analytical spirit among professionals and citizens, and skills based on the four pillars of education: learning to know, to do, to be and to live together.

1. <http://www.unesco.org/new/fileadmin/MULTIMEDIA/FIELD/Cairo/images/RethinkingEducation.pdf>

C6. Regarding universities and education there is a shared concern in many parts of the world about the loss of value and recognition of teaching within the higher education system. The notion of an 'academic' today privileges those people who work in research, which is the most valued activity. Meanwhile, the role of teachers has become unstable and is the lowest of functions. Universities hence face the paradox of being education institutions in which teaching is increasingly less valued and where the value attached to researchers has left the relevance of teaching in the shadows in terms of the creation of quality knowledge.

## What knowledge?

- C7. Knowledge is not neutral content, but the ever-changing result of a set of practices that produce certain visions of the world and of ourselves, and which therefore condition the direction taken by new knowledge and views of the world. Talking about knowledge is talking about these practices, their complexity, their prejudices, their power relations and their consequence. So, a critical approach to the historical past is also essential in order to understand the events and contexts that have brought us to where we are.
- C8. Knowledge is therefore not the result of a single point of view or a privileged vantage point. Higher education institutions cannot be that either, nor aspire to neutrality. One of the clearest views among the contributions to this report is the defence of epistemological plurality in all fields, including those of science and technology. This means, first, a historical review of how certain hegemonic conceptions of knowledge have been reached on the basis of the dominance of the West and patriarchy on all the cultures and populations of the world. Defence of epistemological pluralism, secondly, means welcoming it and putting it into practice within the higher education system by opening it up to inclusive paradigms of knowledge. This implies not only studying the cultures of others (other ethnicities, cultures, genders and social classes) but considering them from reciprocity and from their legitimacy.
- C9. One of the most serious problems faced by the current hegemonic system of knowledge is hyper-specialisation and its effects on our experience and conception of the world and of ourselves. We need to distinguish between necessary specialisation and banal specialisation, guarantee good basic education in all fields, and work towards more holistic perspectives and the convergence of knowledge. It is not easy to strike a balance between these two dimensions and everyone cannot know everything. The important thing is to work on shared visions and practices that mediate between languages, goals, procedures, infrastructures and assessment systems.
- C10. Dualisms are the foundations of modern western culture and the knowledge system has been organised on the basis of two oppositions: the science/arts opposition and the theory/practice opposition. Learning to think about common problems and integrate thoughtful, resolute, speculative and transformative approaches involves overcoming these two dualisms.
- C11. We are living in a knowledge society where there is alarmingly growth in resistance to knowledge, contempt for analysis and certainty and deliberate production of confusion and ignorance as a way to control public opinion, even among the most educated. We need to develop strategies that contribute to affirmative yet also pensive and critical knowledge. Confidence in knowledge can only grow if it is exposed to shared and open criticism, from calculated reasoning.
- C12. In this knowledge society, higher education institutions no longer hold the monopoly on the creation and dissemination of knowledge, which is increasingly more widely distributed. HEIs will have a greater role in teaching critical and analytical skills to citizens and future professionals, as well as developing, complementing and disseminating knowledge in close collaboration with other parties (organisations, institutions, companies, administration, civil society and the students themselves).
- C13. Many of the articles indicate that interesting crossovers between disciplines are already happening, driven by the possibility of answering old questions with new technologies. It is not just about having new tools, but about the way these new tools change our perception and concept of what we are studying. This is the case, for example, with the current crossover between archaeology and biology (archaeo-genetics), which is generating a new idea of our past. We need to move forward with the creation of multidisciplinary work teams that really do have the capacity to work together, something that courses are not doing very often at present, and where there is a particular lack of input from the humanities.

- C14. The knowledge economy is as extractivist as the other areas of the capitalist economy. Cognitive extractivism is focused today on data mining, following on from other forms of knowledge extraction (biopiracy, unfair south-north transfer, seizure of ancestral knowledge and so on). We need to work on developing a social knowledge economy that responds in a complex and coordinated fashion to the principle that knowledge is a common good, as well as on forms of exchange, appraisal, ownership and institutionality that are consistent with this principle. Experiences with intellectual property, commons and open forms of socialising knowledge are manifold and in recent decades have been reflected in many both practical and theoretical proposals that the university system has kept at a distance from its decision-making and assessment centres. Many members of academic communities are now calling for serious attention and responses to this challenge.
- C15. We cannot speak of knowledge if it is not capable of generating meaning. Knowledge is that set of relationships that allow us to make a significant experience out of our environment, respond to it and transform it. Such interpretation of experiences should not be confused with processing of information. All knowledge needs a context and certain tools in order to be interpreted. So, the humanities or a humanistic and social approach to science and technology are fundamental.

## What humanism?

- C16. The humanities often speak in the name of human experience and give it an ever open and changing meaning. They are shaped with a view to answering the question "Who are we?" There is no single 'we', nor is it homogeneous. Every collective subject that says 'we' (be that a scientific community, an institution, a group, a nation, users of a particular technology, or whatever) is a complex, heterogeneous reality in which tensions and antagonisms are crossed. The sciences and different technological practices must also ask this question and open up their inner tensions, since science and technology are not homogeneous either, and nor do they speak for the same 'we'.
- C17. Modern humanism had put the ideal of man in on a higher plane than other living beings, and anthropocentrism has also placed the human race in an exceptional and superior position over other animals. Both humanism and anthropocentrism are based, moreover, on a rigid dis-

inction between the human and non-human worlds, be that the natural world or the artificial world (the human being as something separate and superior with respect to nature and things). At present, science and technology, philosophical thinking and contemporary humanities are all working towards a review of the links between human and non-human, natural and artificial. This is happening in studies of the brain and intelligence, in the field of life sciences and in the development of technologies that are blurring the boundaries between these 'kingdoms'. The meaning of this re-encounter between man and nature, and between nature and culture, is not clear, hence the relevance of the debates in Post-humanism and Trans-humanism. The developments could be dangerous and dogmatic, of a neo-authoritarian and technocratic nature, or the opposite could occur, whereby an opportunity will arise for us to re-connect reciprocally and integrally with that which was previously separate and hierarchized. The conclusion here is that the debate on these issues must be shared by all the agents involved, in a theoretical and practical manner.

## What research?

- C18. There is a very widespread desire for implicated and committed research. Research systems have often created very closed circuits of citations and self-reference, which ultimately make the research system (projects, publications, impacts and so forth) self-fulfilling and unaccountable to society and bereft of any duty to share the problems that it works on with the affected groups and contexts. Recent developments have included, among others, the concept of Responsible Innovation and Research (European Commission) to better align the research process and its results with the values, needs and expectations of modern society in accordance with criteria based on ethics, equality and participation. In this regard, there has been an increase in the concepts and practices of citizen science, co-creation and participatory research, which seek to encourage a variety of actors to engage in the research process. However, the system in general is far from embracing these changes and academics often have a dual agenda when it comes to getting their knowledge and research practices to reach beyond the most research-producing circuit. Different ways of creating and valuing this implication need to be devised, from the humility of being aware that the most decisive social changes do not come from academia, which must therefore learn to receive, listen and accompany.

- C19. One of the problems with the segmentation of research is that the basic academic architecture still operates by faculties and departments for all purposes and huge efforts are required in order to overcome these divisions (management of staff, projects, funds and so on). There is an indispensable need to set up cross-cutting research centres, organised around problems more than disciplines and connected with local and international contexts.
- C20. Research methods are also far too standardised. Such rigid assessment procedures make it very difficult to experiment with more creative research and take risks. This is a problem that affects all areas of knowledge, so it is another challenge that we can confront together. It would be interesting to incorporate methodologies that have been employed of late in less formal environments, such as the worlds of arts, social activism and education, and which promote reciprocity, research-action and bottom-up dynamics.
- C21. Research has serious communication problems. Who is researched for and how is research reported? Communication is not easy, not even within the academic system itself, as it is hard for research to be passed from one field to another. Congresses and publications are aimed at extremely closed communities around the same disciplines and specialisations. We need to create other channels to report and share research that, while maintaining the same level of rigor and demands, is expressed in a more accessible language to specialists in other fields, thus creating more cross-cutting contexts of exchange.
- C22. Along similar lines to the previous conclusion, research needs to be transparent and accessible to society. Some universities and institutions are already committed to the shift towards open science but, as some of the contributions to the report point out, we must ensure that these ideas are more than a mere statement of good intentions and are instead plans for real change on a number of decision-making levels and that will have an effect on the way research is evaluated and funded. There is also abundant (and good quality) research that is done outside of higher education institutions or research centres, in high level science and technology companies. This implies the need to establish stable and even 'regulated' ties between the two worlds to enable permeability, reciprocity, trust and fair play, all based on a more holistic view of public and private research in universities and companies.

- C23. One of the biggest difficulties when it comes to generating a more dynamic relationship between the humanities and other scientific and technological practices is the issue of research funding. There are major differences between the procedures, budgets, and public and private organisations that are interested in funding research and they operate within highly disproportionate budget brackets. If we are to shift the focus towards committed, transparent and open research that can create new spaces for debate between disciplines and with society, we must also review the mechanisms for its proper funding and prevent the humanities from being relegated to a merely voluntary or decorative role in any project that is considered important.

## What impact?

- C24. Rankings culture has had a strong impact on the crisis of the humanities in the current university system. This competitive focus of the academic system has resulted in a loss of appreciation of epistemological diversity and a reorientation of humanistic research towards products that are comparable to those of the most valued science (in English, based on data analysis and quickly publishable in cited journals). Publication in specialised journals as a key element for measuring research quality is out of keeping with the pace and dynamics of humanistic endeavour, where the ideas and contributions with the greatest impact often occur outside the system of specialised journals and in timeframes that can be very slow and disjointed.
- C25. It is essential for research assessment systems to be developed that are capable of gathering the effects of experimental, creative, transparent and open research in all of its diversity of expressions. Impact is not synonymous with utility or performance. Impact is not a place in a ranking. Impact is to generate appreciable and necessary change in relation to shared problems, contexts and needs. If the university system ignores everything that does not generate value in a certain and highly restricted way, then all these activities depart the academic setting (for cultural institutions, social entities, independent institutes, and so forth) and it is the university itself that loses richness, diversity and relevance.
- C26. The main impact of the humanities is to link knowledge to the existing society, to analyse and explain changes, to raise and overcome problems and to interrelate differ-



ent social components. They are therefore essential for building communities and fostering mutual exchange.

## What institutions?

- C27.** Higher education institutions are institutions of knowledge that play a key role in society's development. The way they are valued by administrations and by society differs from one local context to another. But there is a general tendency for them to be abused by administrations and disconnected from society's interests. Universities are public and/or public service institutions and, as such, we must defend their social importance, in their different institutional formats, and ensure that that importance is respected in equal measure to their responsibilities. This commitment is the condition by which their value must be defended and, at the same time, the excessively utilitarian tendency that universities have been suffering in recent years must be reverted.
- C28.** The balance between university autonomy and accountability to society is not easy to achieve. Universities need to have a sufficient level of autonomy in order to do their work in the best possible conditions, but they should also use this autonomy to meet the needs of the societies in which they operate. This balance has been increasingly tipped in recent years, along with a crisis of academic freedom around the world, even in 'consolidated' democracies, where the authorities have threatened to close institutions and restrict some areas of knowledge. That is why we must reaffirm the democratic spirit and values of higher education, but always under the umbrella of responsibility.
- C29.** Universities cannot be closed environments. They need to operate as ecosystems of relationships and as cultural agents linked to their local and global contexts. They must host, support and continue communities of practices associated to shared problems, for example by fostering social innovation. This means demolishing the new ivory towers and putting an end to self-replicating complacency and moving towards porous, welcoming and reciprocal forms of institutionality. The relationship between the university and society has often been reduced to a relationship between the (often public) research system and its applications to the corporate world. This university-society relationship needs to be changed to include all those aspects that make this bond a collective right, of non-university stakeholders too, and ensure commitment to society as a whole.
- C30.** Universities are also places of experience where the body, sensitivity and coexistence of the people that use them (the whole university community and its professionals) can partake in a learning and knowledge experience that affects and transforms their lives and their surroundings. This means that university and higher education centres in general have to be more student-focused, following the path that has already been taken at primary schools in many parts of the world, and must reorient their activities, spaces and dynamics towards a shared quest to find responses to their challenges and concerns.
- C31.** The organisation of universities around the world continues to be dominated by the departmental, faculty structure, despite the exceptions and attempts at change. Horizontal collaboration between departments must be encouraged, by means of convergence strategies based on intellectual cross-pollination between peers. Rather than top-down changes to structures, it is important to lay the bases for a conceptual and epistemological negotiation that is bottom-up and between peers. This is how we can guarantee that the structural changes to our universities are made on solid foundations and have real effects on the ways that knowledge and experience are produced.
- C32.** Interdisciplinarity (or transdisciplinarity) also means interinstitutionality (or transinstitutionality). One problem when it comes to a more humanistic approach to science and technology as a whole is that at universities it is generally very difficult to forge organised and on-going relations with other types institutions, despite the existence of rare but highly successful experiences. The humanities and the arts, on the other hand, are deployed in a very wide range of institutions (museums, theatres, libraries, cultural centres, small enterprises, cultural and entertainment companies, and others). In the context of the knowledge society, where knowledge is increasingly distributed, universities viewed as relational ecosystems must learn to work in a streamlined manner within the logic, timeframes and decisions of other institutions.
- C33.** The international community, led by the United Nations, has pledged to work towards the 2030 Agenda and the Sustainable Development Goals. Many universities have adhered to these and are guiding their teaching, research and functions in accordance with the goals. This is an opportunity to position academic activity in terms of cross-cutting commitment, based on real

learning situations with inter-institutional and inter-disciplinary repercussions. However, we must ensure that such commitment to the SDGs is more than a mere statement of intent, as has been the case with previous goals set by international organisations, but is instead a path towards action.

C34. In the framework of a global and interdependent world, we need to strike a new deal between higher education institutions and societies that takes into account the dual nature of these institutions' commitments to the local needs of the societies in which they operate and to global challenges. We must recognise that higher education institutions are places where many and often contradictory demands coincide. As set out in HEIW6, the most appropriate approach involves an integrative vision: "Universities need to be key institutions at the regional level. They must seek to contribute to the development of immediate society through teaching, research and knowledge transfer, and involve themselves in establishing regional strategy in conjunction with local authorities, social agents and civic representatives. But they must also aspire to be globally engaged institutions that educate open-minded, critical and aware citizens, and whose research activity helps to define global lines of action leading to a fair and sustainable world"<sup>(2)</sup>.

## What equality?

C35. Universities, as institutions, continue to have a serious problem with the participation of women in positions of senior responsibility and at the highest levels of decision. At a time when gender studies and equality plans are being intensely developed in much of the world, university governance structures also need to respond to the challenges raised by this turn in affairs.

C36. The role and presence of women in the university system has changed a lot in recent decades. In fact, studies tell us that there are many women working in the university system now and many female students are taking courses that do not always get them as far as they could. However, the presence of women is highly unbalanced in different local contexts, by areas of knowledge and in terms of status, decision and representation within the

2. Adapted from the introduction to the abridged version of *Higher Education in the World Report 6 - Towards a Socially Responsible University: Balancing the Global with the Local*, page 53 <http://www.guninetwork.org/report/higher-education-world-6>

system. The further we delve into the hierarchical structure of the system, the fewer women we find. The barriers to such promotion are mainly organisational and social, and start to brew during childhood, through social references that are often transmitted subconsciously.

C37. The meaning of feminist struggles is no longer solely about equal rights, salaries and recognition, but also the need to readdress the relationship between life and work, the value of caregiving and the value of a working career. Many women could but do not want to carry on the same life they have had until now and that many of their male colleagues continue to have, while many men are beginning to reappraise their own relationship with the different spheres of personal and academic life. The pursuit of effective equality today therefore means reappraising the conditions of an academic career, one's relationship with life (which is not only about balance with family life) and the sense of ambition. Change of these mind-sets is also an academic task in which all disciplines must be involved.

C38. There is no equality without social justice. Universities have historically oscillated between being elitist, segregating institutions and becoming spaces for the democratisation of knowledge and contributing to greater equality and social justice. We currently perceive a worrying new wave of segregation and elitism among universities, with differences depending on local contexts. In increasingly more complex and unequal societies, universities committed to the task of making a pensive, critical and emancipatory knowledge system possible need to serve as agents responsible for working towards greater equity and justice.

C39. The problem of equality also involves a cultural aspect that is affected by the linguistic hegemonies of each era. Culture has always been developed in a context of tension between *linguae francae* (such as Latin, French or currently English) and the diversity of the languages that have forged the different cultures and their social ties. The *lingua franca* must not be a language of domination and hierarchisation of knowledge, nor must it impoverish the epistemological and cultural ecosystems of each setting. That is why universities must safeguard non-invasive coexistence between the use of languages for communication and fostering the use of local languages as drivers of academia and culture at the highest level.

C40. The environment is an intrinsic part of social justice. The climate crisis and the radical alteration of ecosystems,

with the extinction of species, the draining of resources and the devastation of habitats not only require technical responses but also an endeavour shared by academics, people of culture, companies, administration and civil society in general in order to resituate ourselves in relation to the world in which we live.

## What professions?

- C41.** The university system must educate creative, thoughtful, critical and committed professionals who are capable of perceiving the relevance of their research in relation to its contexts and other opinions, and who are competent enough to foster the changes required on a personal and collective level. To do this, the professionals working at universities (lecturers and researchers) must also meet these conditions, and pass them on to new professionals. That is, they must also be creative, thoughtful, critical, committed and self-changing, and be aware of the need for trans-disciplinarity and trans-institutionality.
- C42.** One of the challenges of the modern university system is to prepare and train people for professions that do not yet exist. It is not enough to have good applied or technical training, as students must also be provided with tools to redefine their skills and abilities as necessary throughout life. The consequences of this for curricula, the attitude to be transmitted and the skills to be developed are much greater than universities have been assuming until now. In many cases, this challenge is only reflected in the capacity to adapt to a changing, flexible labour market. But we need to go further and train people with a critical capacity and an understanding of the world in which they will be developing their personal and collective projects, and help to decide on the direction that this future is going to take. The humanities, as a diverse production of the meaning of past and future human experience, are an indispensable tool.
- C43.** The other major challenge for universities in the current scenario of global capitalism is the increasing loss of jobs, linked to radical changes in the methods and means of production and distribution, due to the digital revolution and robotisation, and the declining importance of labour as a production factor and generator of value. There is talk of 'workless' capitalism, which does not mean a system where everyone works less, in equal conditions, but rather the expulsion of a large part of

the population from all walks of working life and condemning them to a residual role. The world's universities need to tackle this situation from their local and global conditions and work to reappraise the sense and value of the knowledge and professions that they teach. Moreover, serious thought needs to be put into the meaning of an active life beyond identity-employment and the new forms of income, solidarity and justice that will be needed in the world that is being shaped right now.

- C44.** Meanwhile, the present of the global university system is one of increasing and already structural instability of a large part of faculty, meaning both teaching and research staff. The realities of this instability are highly diverse depending on local contexts, but the trend is widespread and is conditioning long-term academic careers. In the field of the humanities, where sources of finance are more limited and there are fewer external resources, this situation is making it especially difficult to work beyond the short term and to make long-term plans. This is also severing intergenerational links and access by social classes that do not have resources of their own with which to get by in such insecure circumstances.

## What ethics?

- C45.** Universities cannot ignore the need to awaken ethical awareness among future citizens and professionals in every field. The most technical and scientific professions also have ethical implications that should not be ignored or delegated. Technologies themselves have consequences for ethical action and implications. Moreover, new technologies based on biomedical engineering, artificial intelligence, data science and biotechnology have immediate consequences, a high impact on everyday life and a scope that is hard to assess in real time. Ethics, therefore, must not be treated as a complementary subject but as a present and necessary condition throughout any kind of education.
- C46.** In order to sustain an ethical view of any scientific or technological activity, that view needs to integrate human experience in all of its dimensions and place it in continuum with the natural world and the artificial universe. We are constantly making decisions that affect human beings and our links with other natural or artificial beings. This seems obvious today in such fields as medicine, which has reached extraordinarily high levels of patient depersonalisation and where there are urgent calls for new reflection on the human condition and on

life and death. But the same goes for other scientific activities, including the social sciences, where human behaviour ends up being reduced to disincarnate and non-implicated objects of study. There can be no ethics without context and decisions are never responsible if they do not deal with the consequences outside of their own delimited space.

C47. An ethical life also requires emotional implication. Universities have generally turned a deaf ear to the emotional lives of the communities around them, and all studies show that the most important ideas and decisions arise from highly specific emotional states. It is therefore important for academic activity to also be viewed as an activity that alters and transforms our emotions with epistemological but also ethical and political consequences for our surroundings.

The report has sought to inspire and guide debate on the present and future of the humanities and the synergies between the humanities, science and technology in the context of higher education in the world. It is based on the notion that we are at a crucial time of major global changes in which the world's education systems are confronted by a process whereby their roles in and contributions to society are being redefined, both locally and globally. The report, and these conclusions, should not be regarded as closed documents but, quite the contrary, as open documents that are expected to serve as a starting point for fostering urgent debate of its issues around the world, within each reality and each specific context.

Throughout these conclusions, a series of questions have been addressed and 48 main conclusions have been listed. This number is by no means definitive and readers will probably be able to draw other conclusions. The report has also fed on practical experiences and innovative initiatives from institutions, academics and practitioners around the world. We are well aware that each institution works in a given context, so we are not insisting that these experiences have to be adopted, out of respect for the richness of cultural diversity and contrasting ways of perceiving the world, but we do believe that they can serve as a source of critical analysis to inspire everyone with an interest in advancing towards an integrative concept of knowledge to work together to establish the synergies required for higher education to achieve its utmost humanising capacity.



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# Higher Education in the World 7

## Humanities and Higher Education: Synergies between Science, Technology and Humanities

*Higher Education in the World* (HEIW) is a collective project that considers key issues and challenges facing higher education and its institutions worldwide.

Societies are witnessing profound changes with clear implications for the future; these environmental, scientific, technological, cultural and social transformations are presenting transcendental challenges in terms of thinking and rethinking the meaning and value of human experience, and even of what it means to be human. These challenges can only be tackled through a holistic approach involving the humanities, science and technology. Together, they must necessarily play their part as both drivers and critics within the framework of these transformations.

With contributions from 130 experts from around the world, the 7<sup>th</sup> Higher Education in the World Report *Humanities and Higher Education: Synergies between Science, Technology and Humanities* aims to provide the academic community, policymakers and decision-makers within higher education and wider society with a diagnosis and analysis of the current state of affairs, and offer proposals that can broaden our horizons towards a much needed integrated approach to knowledge.

Beyond protectionist nostalgia and catastrophism, the HEIW7 Report clearly advocates reappraisal and transformation, these being the two keywords that best describe the conceptual framework of the project. Far from being a speculative exercise, it addresses active members of the academic, cultural and institutional community around the world to find out what is happening, what changes they perceive, what their limits are and what their potentialities are. In summary, this report should be viewed as the open expression of a commitment shared by many different voices and as an open document that is expected to serve as a starting point for fostering urgent debate of its issues, within each reality and each specific context.

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