Trust and Truth

How They Impact the Complex Relationship between Science and Society

Ana Mari CAUCE & Yves FLŰCKIGER (Eds)

GLION COLLOQUIUM

ISCA Livres

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THE GLION COLLOQUIUM

The Glion Colloquium was founded in 1998 by Luc E. Weber (University of Geneva), Werner Z. Hirsch (UCLA), and James J. Duderstadt (University of Michigan). The objective of the Colloquium is to allow leaders of renowned universities to meet and discuss major questions related to the development of science and higher education, as well as governance and leadership of research-intensive universities. The colloquiums are organized biennially by a small, independent association based at the University of Geneva, Switzerland, and by an international Program Committee designated every other year to set up the program and invite participants. Over the years, a variety of financial support and funding options have been identified. These include research and cultural international foundations, global corporations, and Swiss universities, as well as the Swiss State Secretariat for Education, Research and Innovation. To date, more than 200 prominent leaders from higher education worldwide, including active and recently retired university leaders, as well as politicians and business leaders, have participated in one or more colloquiums. The Glion Colloquium plays a pivotal role in shaping the strategic direction of our universities, focusing on enhancing their societal contributions. This is a unique concept, free of any influence, where the presentation and discussion of ideas take center stage. At previous gatherings, participants have considered topics such as the rapidly changing nature of research universities, trust in science for and with society, university governance, the interaction between universities and society, collaboration between universities and business, the globalization of higher education, and how universities prepare to address the changes and challenges characterizing our times. Participants are invited to submit contributions in advance that reflect their views and experience, with the aim of stimulating discussion. The Glion Colloquium sessions are held in camera to guarantee an open and genuine exchange. To ensure the widest possible international dissemination of the analysis and recommendations resulting from the contributions and discussions, the revised contributions are published

7-8 months after each colloquium in a volume that is freely distributed to numerous university leaders worldwide and also sold commercially. This book is the 15th in the series. Nine of these were published by Éditions Economica in Paris. Beginning with the 11th book, the Organizing Committee has chosen to pursue self-publication and a print-on-demand model, most recently in partnership with the Swiss self-publishing online platform ISCA from Éditions Slatkine in Geneva (www.isca-livres.ch). The Glion Colloquium website offers searchable PDFs of the books and their respective chapters, which are made available shortly after publication (www.glion.org) and on the Open Archives of the University of Geneva (https://archive-ouverte.unige.ch/).

VOLUMES

15. *Trust and Truth – How They Impact the Complex Relationship between Science and Society*, Ana Mari Cauce & Yves Flückiger (Eds.), Glion Colloquium, ISCA-Livres (2026).
14. *The New Road to Success: Contributions of Universities towards More Resilient Societies*, Ana Mari Cauce, Yves Flückiger, & Ivanka Popović (Eds.), Glion Colloquium, ISCA-Livres (2024).
13. *Universities as the Fifth Power? Opportunities, Risks and Strategies*, Ana Mari Cauce, Yves Flückiger, & Bert van der Zwaan (Eds.), Glion Colloquium, ISCA-Livres (2022).
12. *The University at the Crossroads to a Sustainable Future,* Luc E. Weber & Bert van der Zwaan (Eds.), Glion Colloquium (2020).
11. *The Future of the University in a Polarizing World*, Luc E. Weber & Howard Newby (Eds.), Glion Colloquium (2018).
10. *University Priorities and Constraints*, Luc E. Weber & James J. Duderstadt (Eds.), Economica (2016).
9. *Preparing Universities for an Era of Change*, Luc E. Weber & James J. Duderstadt (Eds.), Economica (2014).
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5. *Universities and Business: Partnering for the Knowledge Economy*, Luc E. Weber & James J. Duderstadt (Eds.), Economica (2006).
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Declarations

1. Rhodes, F. H. T., *The First Glion Declaration: The University at the Millennium*, Glion Colloquium (1998).
2. Rhodes, F. H. T., *The Second Glion Declaration: Universities and the Innovation Spirit*, Glion Colloquium (2009).

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Edited by

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FROM THE DESK OF THE EDITORS: ACKNOWLEDGEMENTS AND THANKS

The Glion Colloquium held its 15th meeting from 25 to 29 June 2025, in Glion-above-Montreux, Switzerland. Twenty leaders of prominent universities or university organizations took part in the meeting, with more than one-third being female presidents. The event drew representatives from four continents. The Program Committee proposed the following topic for discussion: *Trust and Truth – How They Impact the Complex Relationship between Science and Society*.

The Glion Colloquium, known for its in-depth discussion of topics and contributions from each participant, once again produced significant outcomes from this four-day meeting. This was due not only to the active preparation and participation of all the participants; the Colloquium was also enhanced immeasurably by the valuable contributions of our esteemed invited speakers: Farida Shaheed, United Nations Special Rapporteur on the right to education, and Dr. Alessandro Curioni, IBM Fellow, Vice President of IBM Research Europe and Africa and Director of the IBM Research Lab in Zurich. The Colloquium concluded with a presentation by Roland Bouffanais, Associate Professor at the Global Studies Institute and the Department of Computer Science, University of Geneva, and Livia Schubiger, Professor of International Relations and Data Science, ETH Zurich.

The 15th Glion Colloquium was successfully organized under the auspices of the University of Geneva. The event was made possible thanks to the generous support of the Swiss State Secretariat for Education, Research and Innovation (SERI), IBM Research Zurich, the Swiss Federal Institutes of Technology of Lausanne (EPFL) and Zurich (ETH Zurich), the Universities of

Geneva (UNIGE) and Zurich (UNIZH), the Fonds Général of the University of Geneva, and the Hirschmann Foundation. We would like to express our deepest gratitude to all of these organizations and individuals for their invaluable contributions to the success of this event.

Many thanks go to the Scientific Committee of the 2025 Colloquium, whose excellent work over the last two years made this event possible: Prof. Nana aba Appiah Amfo, Vice-Chancellor, University of Ghana (Ghana); Prof. Ana Mari Cauce, President, University of Washington (USA); Prof. Yves Flückiger, President, Swiss Academies of Arts and Sciences and Rector Emeritus, University of Geneva (Switzerland); Prof. Joël Mesot, President, ETH Zürich (Switzerland); Prof. Sari Lindblom, Rector, University of Helsinki (Finland); Prof. Subra Suresh, President, Global Learning Council and Former President, National Science Foundation (USA); Prof. Michael Spence, President and Provost, University College London (UK); Prof. Nagahiro Minato, President, Kyoto University (Japan); Prof. Luc Weber, Founding President, Glion Colloquium (Switzerland); Dr. Gerlinde Kristahn, Secretary General, Glion Colloquium (Switzerland).

We would also like to express our great appreciation for all those who contributed to the Colloquium and to the production of this book, especially Dr. Gerlinde Kristahn, Secretary General, who plays a pivotal role in the Glion Colloquium Association and organization. We would like to express our deepest gratitude to Luc Weber (Founding President) and Marianne Weber, whose extensive experience and unwavering dedication to this project were instrumental in organizing the Colloquium. We would also like to thank Luciana de Souza and Victoire Berrebi for their support during the Colloquium in June, and Munizha Ahmad-Cooke for her thorough editorial assistance.

The 15th Glion Colloquium would not have been possible without the involvement of these most competent people and generous institutions.

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PREFACE

The rapid technological, demographic, economic, and environmental changes of the last decade, including the rise of AI, increased reliance on social media for information, changes in workplace culture, and the energy transition, have led to increasing economic uncertainty, political polarization, and distrust in traditional institutions, including our universities and the research that we conduct. The theme of the 2025 Glion Colloquium, *Trust and Truth – How They Impact the Complex Relationship between Science and Society*, is especially timely given its impact on the relationship between science and policy and the ability of higher education to truly serve the public good. The speed at which these new developments are affecting us, resulting in protests on our campuses, political interference in our functions, and a number of high-profile dismissals or resignations amongst our peers, led to especially lively, passionate, and, at times, heated discussions, as well as creating a high level of camaraderie and trust amongst participants who were all feeling a high degree of pressure and varying degrees of distress.

The complex relationship between science and society, and the ways in which it is affected by public trust and its various manifestations, was the topic of presentations and discussions that were both nuanced and emotionally charged, as evident in the contributions in this volume. Four overarching and interrelated themes are presented, all focused on how we can adapt, manage, or restructure relationships and/or structures within our universities to address the present and future challenges we will face as we strive to build trust in the service we provide to society and navigate this challenging landscape.

BUILDING TRUST WITHIN AN INSTITUTION

Trust-building begins at home, with the students, faculty, and staff who are both members of our community and our representatives to the larger community that we serve. The contributions of both Ángel Cabrera and Nana Aba Appiah Amfo, Mammie Nyamekye Nortey, and Felix Ankomah Asante focus

on the importance of centering the student experience, with an emphasis on innovation inside and outside the classroom, entrepreneurship, and career preparation, while also embracing inclusivity and social mobility. They describe their work in creating a welcoming environment for all in support of creating trusting relationships and engagement.

Affordability is key to this goal, as emphasized by Sari Lindblom, Hanna Snellman, and Anu Kantola, who advocate tuition-free education, and Audrey Leuba and Gerlinde Kristahn, who argue for the importance of providing a full range of support structures to promote health and well-being amongst students, who have been experiencing increasing levels of distress in this post-Covid and politically charged environment. Much discussion focused on how best to promote psychological "safety", but not at the expense of risk-taking. In this regard, Andrea Müller, Klaus Jonas, Michael Schaepman and Anna Däppen-Fellman present strategies to not only tolerate but encourage "intelligent failures".

Numerous contributions also highlight the inherent tension between traditional metrics of excellence that reward exclusivity as a pillar of excellence and the focus on inclusivity, more highly valued by the public at large. There was a great deal of discussion among participants about how to navigate these tensions, as our faculty can sometimes, if not often, view the focus on career preparation as being at odds with delivering a more broad-based education rooted in critical thinking, the arts, and social sciences.

In a similar vein, the need to deliver high-quality education at an affordable cost can be at odds with providing faculty and staff with the resources they need for success, including providing adequate pay and benefits such as childcare, especially for universities in urban environments where the cost of living can be high. While this was a tension felt by virtually all the presidents or chancellors at the meeting, the contributions by Nagahiro Minato and Édouard Kaminski note how economic issues in their countries of Japan and France, respectively, are leading their governments to re-think the higher education landscape, including a more intentional differentiation amongst university missions, with a smaller number engaging in the types of research conducted at a truly global scale of excellence. Henrik Wegener's contribution also notes how, as early as 2007, Denmark began to merge national research institutions in pursuit of sustainable excellence.

A great deal of discussion and several contributions, including Ana Mari Cauce's description of her presidential journey and Michael Spence's discussion of his relationship with faculty leadership, discuss more specifically the importance of continual communication and engagement between key university stakeholders and the highest level of university leadership. As Spence notes, the nature of academic work requires a certain level of skepticism toward authority that leaders need to recognize and navigate, drawing upon their authentic voices and lived experiences.

THE COMPLEX RELATIONS BETWEEN TRUST AND TRUTH IN A GLOBAL COMMUNITY

University leaders across the broad range of institutions, countries, and viewpoints represented at the Colloquium all agreed that it is critical for our universities to establish trust with those we serve outside of the university. This begins with the cities, regions, and countries in which we are located, but also extends to the broader global community, which will also be affected by the research and students that our institutions produce. Various contributions cite research suggesting that trust in our institutions has been declining for at least a decade, especially in the United States. Such concerns are heightened when questions are raised about how the conclusions or policy implications of our research can become politicized or compromised by outside interests, especially in this age where, as Linda Doyle notes, disinformation, misinformation, and "malinformation" are circulated through social media and partisan news outlets, making all our work more difficult. This concern is also articulated by Joël Mesot and Roman Klingler. Questions about AI and the lack of an agreed ethical framework for how to use it in research and education add to the suspicion and distrust. But, as Alessandro Curioni notes, any instrument can be misused, and we don't trust tools, we trust people, re-emphasizing the importance of critical thinking and values-based education.

Philipp Langer and Ana Fontcuberta i Morral further note that truth in science is nuanced, as science is an evolving process. At the heart of scientific methods are the constant questioning of the status quo and a realization that facts may change upon closer examination and scrutiny, as we saw with Covid, where scientific advice changed over time. This is a strength of science, not a weakness, but it means that for our scientific communications to be effective, we must make sure we are clear about the uncertainty that may exist, while also providing better education to our citizenry on the nature of science and the scientific process. Too often, changes over time can be interpreted as a lack of expertise or outright dishonesty due to hidden vested interests.

There was a clear consensus amongst participants that key to trust in science is truly independent review or advisory boards made up of experts that are not beholden to either government, university, or industry interests. Several contributions highlight the work of the European Commission's Scientific Advice Mechanism (SAM), set up in 2015 to provide independent scientific advice and policy recommendations to European institutions. Wegener notes that it is important to distinguish science policy as done by such mechanisms, and science for policy, which is what universities can do. Yves Flückiger and Marianne Bonvin highlight the work of the Swiss Academies of Arts and Sciences and their code of conduct and independent boards, the work of the United Kingdom and its "Science in Public" initiative, and work by UNESCO and the Open Science

Framework (OSF). Several contributions also describe the ethical codes and independent boards within their own universities. These efforts are particularly noteworthy given developments in the United States in the summer of 2025, where grants that had been approved by independent review boards at funding agencies such as the National Institutes of Health and the National Science Foundation were under threat because of political considerations. As Mesot and Klingler note, when science is under attack anywhere, it affects us everywhere, given the strong interconnections amongst the global scientific community.

TRUST AND TRUTH IN RELATION TO SUCCESS AND THE CAREER PATH

There was consensus among presidents and chancellors that faculty should be encouraged and rewarded for conducting research that is collaborative, community-engaged, and solution- or policy-oriented, and there was much discussion about how to best adapt the reward structures within academia to better support these goals. Discussion also focused on how the lack of outlets for publishing negative or null results, or research replication studies, also adds to the lack of transparency and trust in the research enterprise. University leaders are in a position to modify some of these reward structures, providing more support and rewards for community-engaged research. Cauce points to an Impact Ecosystem model being developed to support such work among faculty and students, and Leuba and Kristahn describe the eco-leadership at the University of Geneva, where sustainability is a core value embedded throughout the enterprise. We all agreed that university leadership does matter, but expressed frustration that some needed changes were beyond our sole control, such as the reward structure for replication research or the publication of negative or null results. These need to be addressed by the scientific community and our professional organizations more broadly, although university leadership can play a role in calling for changes and rewarding the faculty who help bring it about.

Toomas Asser and Lauri Randveer also point out the importance of academic freedom and the need to guard against special interests, whether dictated by commercial or political interests. While there was some discussion of the limits of such freedom and where and when it might be appropriate to curtail protest, there was full agreement on the importance of making room for diverse perspectives, especially in such polarized times. Many noted how an important part of our educational work, which adds to truth and trust, is encouraging healthy disagreement and constructive discourse among diverse groups, and faculty play a special role in modeling how that can happen in their classrooms.

Concerns were also expressed about the likelihood of us encountering even more competition between research institutions, given the decline in funding

for research, as well as the demographic decline in the college-aged population already being felt in some countries like Japan, which will soon be experienced in almost all developed regions of the world. There was also particular dismay expressed by leaders of universities in the United States, where the combination of the decline in research funding and a government expressing outright hostility toward certain types of research, such as work on climate change, as well as a disdain for scholarship on diversity, including research on health disparities, is driving more postdoctoral students and faculty toward universities in other countries. Although other countries are apt to benefit from this potential exodus of faculty and future faculty, it was gratifying to hear the conversation also focus on ways to work together to support emerging scholars and keep all our institutions, as well as the global ecosystem for research, strong.

TRUST AND TRUTH REGARDING THE STRUCTURE OF THE UNIVERSITY SYSTEM

Communicating the results of our research in ways that are clear and easy to understand, as well as educating the public on how science works, was something all participants were committed to. As Doyle notes, we need to attend not just to the sender and message, but to the receiver. But the contributions throughout the volume also make clear that we need to go beyond clear communication and fully engage with society, which requires us to examine and often modify the way in which we are structured. Some wonderful examples of this are provided by Lindblom, Snellman, and Kantola, describing how the university museum is structured for outreach; Langer and Fontcuberta i Morral, who describe the work taking place at CERN, and structures put in place at EPFL, such as the Innovation Park, to make both science and the university more generally accessible to the public; and Cauce, who describes how a university center in Alaska brought together disparate stakeholders in opposition to mining efforts in a pristine environment and also focused on the importance of internal restructuring to allow for more interdisciplinarity to deal with the complexity of the issues confronting us.

The discussion at Glion and the chapters of this volume make it clear that these four main themes are interrelated. For example, the focus on students and active learning and engagement described by Amfo, Nortey and Asante also helps to break down university-community boundaries. The ARTIFY program, which focuses on strengthening artistic capacity across disciplines and promoting diversity and inclusivity through art, culminated in 2024 with a week-long exhibition that brought many community members onto campus. The focus on sustainability on campus, as described by Leuba and Kristahn, reinforces sustainability practices off campus as well, and the values and practices learned

by students follow them in their journeys beyond the university. Indeed, one of the major ways in which universities impact society is through our graduates and the knowledge, skills, and values that they acquire during their time in our universities.

Contributing to the liveliness and passion in both the formal and informal discussions during our time together, was the consensus that our research universities are in a unique position to help address the range of complex problems vexing society, including climate change, growing social and health inequalities within and between our countries, political polarization, and the need for ethical frameworks to govern emerging technologies that are so intertwined with our daily lives. The link between scientific advancement and societal development is longstanding, and there is no question that we have much to offer at this critical juncture in time. As Deborah Terry and Paul O'Farrell so eloquently note, this is precisely why we must get better at articulating not only what we are good at, but also what we are good for.

Changes are needed to maximize this potential, including breaking down barriers to interdisciplinary research and creating structures that can better support authentic engagement with the communities we serve. Almost every contribution in this volume provides examples of efforts underway to support these goals, some in their early stages, some more mature. Through continued conversation and collaboration, we can continue to learn from one another and move forward together. As these chapters show, the commitment to doing so is very real.

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Chapter 1

Truth and Trust in Science: Establishing Credibility for Building More Resilient Societies

Yves Flückiger & Marianne Bonvin

INTRODUCTION

In an era marked by complex global challenges, from pandemics to climate change and geopolitical instability, science plays a critical role in informing public policy and guiding societal decisions. Yet, for science to effectively fulfill this role, it must not only strive for truth but also cultivate trust. The credibility of scientific knowledge depends as much on rigorous methodologies and empirical accuracy as it does on the public's confidence in the institutions and individuals who produce it. Truth and trust (and their interdependence) lie at the heart of science's role in society. Both are equally essential. While truth is fundamental to building trust in science, it alone is not enough.

This chapter explores the dynamic relationship between truth and trust in science. It examines how scientific integrity, open communication, institutional responsibility, and policy engagement can help foster public trust, an essential component of democratic resilience. By drawing on international examples and the Swiss experience, the chapter provides practical insights into building a credible and trustworthy scientific ecosystem that can better serve society in times of uncertainty.

CONCEPTS OF TRUTH AND TRUST IN SCIENCE

Science has always been a pillar of knowledge, continuously evolving to explain and predict the world around us. However, science is not merely about discovering facts; it also involves ensuring that these facts are presented truthfully and that the public trusts the findings. Truth and trust are two foundational elements in science, often seen as intertwined but conceptually distinct.

Truth refers to the accurate representation of reality, yet because perceptions of reality differ across individuals, cultures, and geographies, it can often be understood as a relative concept rather than an absolute one. Scientific truth relies on empirical evidence and rational inference, a methodological process that involves hypothesis testing, peer review, and validation through replication. Scientific truth is inherently provisional because it is always open to revision in the light of new evidence or improved methodologies. However, the pursuit of truth is what drives scientific progress, making transparency, reproducibility, and openness essential to its integrity.

The truth-seeking nature of science is based on a self-correcting mechanism. When errors or falsehoods are identified, the scientific community can revise previous conclusions to reflect the most accurate understanding of the world. This process is critical for ensuring that science remains reliable and truthful. However, the complexity and specialized nature of scientific knowledge can make it difficult for the public to engage directly with the truth claims of science. As such, the importance of trust becomes evident.

Trust in science goes beyond the mere acceptance of scientific facts; it reflects confidence in the processes, institutions, and people who produce scientific knowledge. For non-experts, trust is often placed in scientists and the broader scientific community based on their expertise, reputation, and the perceived reliability of scientific institutions. Trust is essential because individuals rarely have the time or expertise to independently verify scientific claims. Instead, they rely on scientists, institutions, and intermediaries (such as the media) to convey accurate and trustworthy information. This role of trust even applies to scientists themselves. To be part of large and complex enterprises, such as a space exploration program, individual researchers cannot personally review the entire body of work of their colleagues from adjacent fields and even from their own fields.

The relationship between truth and trust in science is complex. While truth is an objective ideal, trust is a subjective experience shaped by multiple factors, including past experiences, values, and societal context. Misinformation, political manipulation, scientific misconduct, and the use of AI driven by opaque algorithms or biased datasets can all undermine trust, even when the underlying truth itself remains unchanged. Moreover, the contemporary landscape presents challenges to trust in science. The rise of social media and information echo

chambers, political polarization, and increasing skepticism toward institutions have contributed to growing distrust in scientific authorities.

Addressing these issues requires not only the pursuit of truth but also active efforts to build and sustain trust. Such trust must be cultivated both within the university community and externally, with the broader public and political actors, recognizing that it takes time to build yet can be lost in an instant. Moreover, it is crucial that universities do not delegate the responsibility of producing truth to AI.

Trust in science helps citizens and governments to make informed decisions, and most importantly, to put decisions into practice and to carry the cost of measures and collective actions. Trust in science, together with trust in institutions, is a cornerstone of social trust, which allows a democracy to withstand crises.

MEASURES TO CREATE TRUST IN SCIENCE

Creating and maintaining trust in science is a multifaceted endeavor that requires the engagement of various stakeholders, including scientists, higher education institutions, policy-makers, and the broader public. Several measures can help foster trust in science, including upholding academic integrity, enhancing scientific communication, promoting open research data, and building connections between scientists and society.

Academic Integrity

Academic integrity is foundational to building trust in science. It refers to the commitment of researchers and institutions to uphold ethical standards, transparency, and honesty in their work. Violations of academic integrity, such as plagiarism, data fabrication, and manipulation of results, undermine public trust and can have far-reaching consequences for the credibility of scientific findings.

To build trust, universities and research institutions must enforce rigorous codes of conduct and provide education on ethical research practices. Researchers must adhere to principles of integrity, ensuring that their work is transparent, reproducible, and free from conflicts of interest. Public accountability, including open peer review processes and accessible research data, further reinforces trust in academic integrity.

Scientific Communication

Effective scientific communication is critical for bridging the gap between scientific experts and the public. The complexity of scientific knowledge often creates barriers to understanding, which can lead to misunderstandings or

even skepticism about scientific findings. To counteract this, scientists must communicate their work in ways that are accessible, transparent, and engaging for non-expert audiences.

Improving scientific communication involves a multi-pronged approach. First, scientists need training in how to communicate complex ideas simply, without sacrificing accuracy. This includes using accessible language, visuals, and analogies to explain key concepts. Second, institutions must engage with media organizations to ensure accurate reporting of scientific developments. Journalists and science communicators play a critical role in shaping public perceptions of science, so cooperation between scientists and the media is crucial.

Additionally, public engagement through forums, social media, and educational outreach can help demystify science and make it more relatable to people's everyday lives. When the public feels more connected to the scientific process, they are more likely to trust the findings that emerge from it.

Open Research Data

Transparency is a cornerstone of trustworthy science. The principle of open research data (ORD), which encourages the sharing of data, methodologies, and results, is increasingly recognized as essential to fostering trust. Open research data allows for the independent verification of findings, making science more accountable and reproducible.

By making research data available to the broader scientific community, as well as to the public, scientists demonstrate a commitment to transparency. Open data also promotes collaboration across disciplines and institutions, helping to advance knowledge more quickly and efficiently. When the research process is open and accessible, it reassures the public that scientific claims are based on verifiable evidence, thus reinforcing trust.

However, we must be aware that in the current geopolitical opposition between democracies and autocracies, "free" scientific data and results can be (mis)used by scientists working for the Russian or Chinese government, just like during the Cold War. Adding to this the risk of spying on industrial secrets, it rather seems that knowledge security and ORD are currently on a collision course. This is a classic dual-use dilemma in science policy: ORD fosters transparency, innovation, and accelerated discovery, but it also raises risks when adversarial or autocratic regimes may exploit such data for purposes contrary to democratic and ethical norms.

Rather than a binary open/closed model, we should use a tiered access framework which means fully open data for research with minimal risk of misuse (for example, climate modeling, astronomy) and controlled access for sensitive data (for example, genomics, AI training datasets, materials science

relevant to dual-use tech), where access is granted only to verified institutions or individuals.

We also need to reinforce ethical and legal frameworks by including in data use agreement clauses that explicitly forbid certain uses (for example, military or surveillance applications) and specify legal consequences. At the same time, we should promote international ethical norms via frameworks such as the UNESCO Recommendation on Open Science (UNESCO, 2021), encouraging countries to align on standards.

But the best solution would certainly be to promote asymmetric openness, sharing data among trusted democratic partners through federated research alliances and using strategic limitation of access for adversarial regimes in domains of geopolitical sensitivity, while still promoting internal openness.

Policy and Political Engagement

Politicians and policy-makers play a crucial role in shaping public trust in science. When politicians undermine scientific expertise or spread misinformation, public trust can erode. To foster trust, it is essential that policy-makers respect scientific evidence in their decision-making processes and resist politicizing science for partisan gain.

Building trust in science among politicians and the broader political community requires fostering a culture of respect for scientific evidence. This can be achieved through advisory panels, independent scientific bodies, and transparent policy-making processes that incorporate scientific advice. Ensuring that scientific findings are communicated clearly to policy-makers, free from manipulation or misrepresentation, is essential for maintaining credibility.

University and Institutional Responsibility

Higher education and research institutions have a critical role in creating trust in science. As the primary sources of scientific education and research, higher education institutions must ensure that they foster an environment of transparency, ethical research practices, and public engagement.

Trust can be strengthened when universities leverage their capabilities and expertise to support neighboring communities, thereby demonstrating their tangible value to society. They must promote sustained dialogue between science and politics, developing genuine "science-for-policy" practices that connect academic knowledge to decision-making. At the same time, institutions should actively reach out to those who feel distant from or resistant to science, ensuring inclusiveness in both research agendas and public dialogue.

Within their own communities, universities must go beyond providing safe spaces to also create brave spaces that empower students to confront difficult truths, engage in open dialogue, and grapple with complex, even uncomfortable,

ideas. When activism becomes the only perceived route to change, it often signals that student concerns have not been meaningfully acknowledged or addressed with the seriousness they deserve.

For this reason, institutions must recenter their mission around their students and their employees as citizens of the academic community, placing their lived realities at the heart of academic life. This also means ensuring that every community member experiences a genuine sense of belonging within the institution, reinforcing both individual commitment and collective trust.

Finally, interdisciplinary research that tackles real-world challenges remains a vital pathway for demonstrating the relevance of science to society. Coupled with a strong focus on training scientists in communication and ethical practices, these measures ensure that future generations of researchers will be well equipped to engage effectively with the public and to uphold trust in science.

EXAMPLES OF GOOD PRACTICES FOR BUILDING TRUST

To foster trust in science, several successful initiatives and practices can be highlighted. These initiatives demonstrate how transparency, communication, and ethical practices can work together to build trust.

The Open Science Framework

The Open Science Framework (OSF) (n.d.) is a collaborative platform that promotes transparency and openness in research. It allows researchers to share their data, research methods, and results with the broader scientific community and the public. OSF aims to make scientific research more reproducible and accountable, helping to build trust by ensuring that scientific claims are based on verifiable evidence.

The "Science in Public" Initiative (UK)

The Science in Public Research Network (n.d.) in the UK is designed to improve the communication of scientific ideas to the general public. By offering training for scientists and creating opportunities for public engagement, this initiative helps demystify science and build a stronger relationship between the public and the scientific community. This kind of outreach helps to combat misinformation and promotes trust in scientific expertise.

Citizen Science Projects

Citizen science initiatives, where members of the public are invited to participate in scientific research, are an excellent way to build trust in science. By

involving people directly in the scientific process, these projects make science more accessible. They also allow the public to ask questions, participate in research, and gain insight into how science works. Examples include initiatives like Zooniverse, where volunteers help analyze data, or environmental monitoring projects, where local communities gather important data on climate change impacts. These collaborations foster a sense of ownership and trust in the scientific enterprise.

The practice of citizen science also has a profound impact on researchers themselves and sometimes involves including non-scientists in selecting research questions. Thus, it can help align research priorities with the priorities of the public, a key element of trust being whether scientists are pursuing goals that are important to society at large.

Independent Scientific Advisory Groups

In most countries, independent scientific advisory groups, committees, or commissions provide non-partisan, evidence-based advice to governments on matters ranging from public health to environmental policy. In a committee, individual biases are alleviated, and reciprocal learning emerges from combining personal experience and perspectives.

The success of these groups depends on their independence from political influence and their commitment to transparency in communicating findings. For instance, during the Covid-19 pandemic, some countries benefited from the clear, evidence-based guidance provided by independent advisory groups, which helped bolster public trust in science-based policy decisions.

The example of the UK during the Covid-19 pandemic is not necessarily the best to illustrate a trust-based dialogue between scientists and public authorities. In fact, several prominent researchers were dissatisfied with the government's official Scientific Advisory Group for Emergencies (SAGE), which they perceived as too politically compliant and lacking in independence. This led them to establish Independent SAGE, a parallel advisory body that aimed to offer more transparent, evidence-based advice. This situation in the UK serves as a cautionary tale for our work in Switzerland: how can we ensure the scientific legitimacy and independence of advisory groups in a way that prevents the fragmentation of expert voices and the emergence of rival groups?

THE CASE OF SWITZERLAND

Switzerland has been progressively reinforcing public trust in science through initiatives led by the Swiss Academies of Arts and Sciences, emphasizing academic integrity, citizen science, and ORD, and promoting the dialogue between science and politics.

Recognizing the fundamental role of scientific integrity, the Swiss Academies have made substantial efforts to ensure that research is conducted ethically, transparently, and responsibly. By setting high standards and promoting a shared code of conduct, they reinforce a research culture where transparency, rigor, and accountability are central. This commitment has also fostered a framework that guides researchers in maintaining integrity throughout their work, from data collection to publication.

Citizen science is another key pillar in Switzerland's approach. By involving the public directly in scientific research, Swiss institutions are building bridges between academia and society. Citizen science projects enable individuals to contribute to data collection, analysis, and even hypothesis development in areas like environmental monitoring, public health, and urban development. This collaborative approach demystifies scientific processes and fosters a sense of shared responsibility, helping citizens feel personally connected to science and its role in shaping society.

ORD further exemplifies Switzerland's commitment to making scientific knowledge accessible. By promoting open-access policies, the Swiss Academies encourage researchers to share data and findings freely, promoting collaboration and transparency. This approach enhances the reproducibility of research, reduces redundancies, and allows for faster progress in addressing complex challenges. Through ORD, Switzerland supports a collaborative and transparent research environment that benefits not only scientists but also policy-makers, educators, and the public.

Regarding independent advice, the Swiss Academies of Arts and Sciences have created dozens of committees, working groups, and commissions advising the public on a variety of domains, from energy security to education, the management of national parks to medical ethics. These groups publish factsheets and reports and meet with executive and legislative authorities in various formats. Together with their partner scientific organizations, the Academies are developing a network of individual experts to advise the federal and cantonal authorities in various crisis situations.

Together, these initiatives demonstrate Switzerland's dedication to fostering an inclusive and trustworthy scientific community, where knowledge flows openly and responsibly between researchers and citizens. This commitment by the Swiss Academies of Arts and Sciences lays a strong foundation for public trust and engagement in science, essential for informed decision-making and societal advancement.

CONCLUSIONS

This chapter provides a detailed exploration of the roles of truth and trust in science, incorporating the measures required to foster trust and highlighting

good practices that can serve as models for building confidence in scientific research and its outcomes.

Truth and trust are inextricably linked to the practice of science. While truth remains the goal, trust is what allows science to have a meaningful impact on society. To build and maintain trust, scientists, universities, policy-makers, and communicators must work together to uphold high ethical standards, engage transparently with the public, and communicate scientific knowledge in accessible and meaningful ways.

There is no widespread public distrust, either globally or domestically. A survey conducted across 68 countries found that a large majority of people support the involvement of scientists in decision-making. While the overall picture remains very encouraging, the survey also displays room for improvement. For instance, while 78% of the people estimate that scientists are qualified and 75% consider the scientific method as the best way to find out if something is true or false, only 57% believe that most scientists are honest, and 56% perceive them as concerned about people's well-being. Furthermore, only 42% consider that scientists are open to feedback. Finally, while no country has low trust in scientists on average, active distrust by even a small minority can have an outsize impact, for instance, by blocking collective action (Cologna et al., 2025).

The challenges posed by misinformation, political polarization, and skepticism require proactive efforts to reinforce trust in science. Upholding integrity, embracing open research practices, and improving scientific communication are critical steps toward fostering a culture of trust. Ultimately, when the public feels connected to the scientific process and sees it as transparent, inclusive, and ethically driven, trust will naturally follow.

As the world faces complex challenges like climate change, global pandemics, and technological advancements, trust in science will be essential for informed decision-making and collective progress. By embracing these principles and practices, the scientific community can continue to serve as a trustworthy source of truth in an increasingly uncertain world.

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Chapter 2

From Ideas to Impact: Promoting Student Innovation and Entrepreneurship at the University of Ghana

Nana Aba Appiah Amfo, Mammie Nyamekye Nortey & Felix Ankomah Asante

INTRODUCTION

In the rapidly changing landscapes of the global economy, there is an increasing recognition of the importance of fostering entrepreneurship and innovation among university students. In countries like Ghana, where youth unemployment rates are notably high, educational institutions are expected to play a pivotal role in equipping students with the skills necessary to drive economic progress and social change. The University of Ghana has taken significant strides in this direction, particularly through its Student Venture Support Programme (UG-SVSP). This initiative reflects the recommendation of Brobbey et al. (2022) to systematically examine the factors shaping students' entrepreneurial intentions, thereby informing targeted support for their transition from students to entrepreneurs. It seeks to nurture entrepreneurial talent by equipping students with the resources, knowledge, and networks needed to turn their ideas into successful business ventures.

This chapter offers a comprehensive overview of the UG-SVSP, examining its objectives, structure, and the impact it has had on student innovation and

entrepreneurship. The chapter will also highlight noteworthy initiatives that have emerged from the program and discuss the broader implications for the university and the nation as a whole. By showcasing the journeys of successful student ventures, we illustrate the transformative potential of integrating entrepreneurship into the academic experience.

BACKGROUND AND CONTEXT

The University of Ghana (UG) is the oldest and leading public university in the country, originally established as the University College of the Gold Coast in 1948. Over the years, it has grown into a premier institution renowned for its academic excellence, research contributions, and commitment to national development. In the current socioeconomic climate, there is a pressing need for young graduates to possess not just traditional academic qualifications but also practical skills in entrepreneurship. This need has led to the implementation of programs designed to cultivate innovation and entrepreneurial thinking among students.

The Research and Innovation Directorate (RID) of UG, which has the mandate to promote, coordinate, and facilitate research and innovation activities in the university, is the coordinating unit for this program. Embedded in this mandate is the responsibility to drive innovation and nurture the growth of sustainable businesses born out of UG. In 2022, the university approved an Innovation Policy (University of Ghana, 2022) to guide and support innovation at UG. In addition, the policy seeks to foster a coordinated innovation culture among students, faculty, and staff by providing guidance on innovation mentoring while benchmarking with international best practices. These key objectives, coupled with the policy principles to improve conditions for stakeholders to harness their innovative acumen and foster partnerships, have underpinned the RID's commitment to foster a culture of innovation and support the growth of entrepreneurship at UG.

By adopting a dual approach that combines academic and practical support, the university has introduced non-academic programs such as innovation challenges, hackathons, and incubation programs, while also establishing dedicated spaces like the Makerspace, the Kofi Annan Enterprise Hub for Agricultural Innovation (KAEHAI), the Post Harvest Innovation Hub, and the University of Ghana Business School (UGBS) Innovation and Incubation Hub. These initiatives are designed to encourage students to explore and develop their entrepreneurial potential through both theoretical learning and hands-on experience.

With the rapid pace of global development, the quest for universities to increasingly adopt entrepreneurial approaches and integrate innovation programs into students' educational journeys has become essential (Lehmann et al., 2024; Kayyali, 2023). By fostering creativity and innovation, students are

encouraged to think critically, become more aware of their surroundings, and develop a solution-oriented mindset.

THE IMPORTANCE OF INNOVATION AND ENTREPRENEURSHIP TRAINING

The landscape of tertiary education is evolving; universities are increasingly adopting entrepreneurial approaches to better prepare students for the challenges of the modern workforce. At UG, the UG-SVSP has emerged as a flagship initiative designed to enhance student innovation and entrepreneurship. This two-month program challenges students to work in multidisciplinary teams to turn the problems observed in their communities into business interventions. It comprises 10 masterclasses, pitch competitions, technical and soft skills mentoring, and pitching for funding and additional mentoring. The masterclasses are co-delivered by industry experts and faculty from UG and typically include topics such as design thinking, intellectual property protection, business development, building strong partnerships, and fundraising.

THE NEED FOR INNOVATIVE EDUCATION DELIVERY

The significance of innovation in the training of students is twofold. Firstly, it necessitates the adoption of innovative methodologies in teaching, learning, and research. Secondly, it requires the provision of opportunities and an enabling environment that fosters student innovation. The UG-SVSP recognizes these needs and works to align with the university's vision of achieving "global impact through innovative research, teaching, and learning" (University of Ghana, 2024, p. 8). The initiative's strategic priorities emphasize a transformative student experience that nurtures impactful research and builds strong partnerships across various sectors.

Given the worrisome youth unemployment rate in Ghana, which stands at 19.7% as reported by Monica Lambon-Quayefio et al. (2023), the importance of entrepreneurial training becomes even more critical. Through programs like the UG-SVSP, students acquire practical skills and support, enabling them to launch viable businesses that benefit themselves and their communities, ultimately contributing to national economic growth.

The importance of innovation at UG aligns with its vision "to achieve global impact through innovative research, teaching, and learning, using a technology-driven and people-centered approach" (University of Ghana, 2024, p. 8) and its five strategic priorities: (i) transformative student experience; (ii) impactful research; (iii) commitment to our faculty and staff; (iv) engagement and partnerships; and (v) sustainable resource mobilization and stewardship (University

of Ghana, 2024). The innovation ecosystem at UG supports the attainment of the strategic plan in three key dimensions:

1. Encouraging student innovation: promoting a transformative student experience by fostering creativity and critical thinking. The Student Venture Support Programme (SVSP) successfully completed business-building training for four cohorts, impacting 123 student teams and 420 students between 2022 and 2025. Also, the ARTIFY program upgraded the artistic skills and developed the business operations capacity of eight artists in 2024. Additionally, the Idea Challenge, in 2025, trained 20 students in design thinking and problem solving using a one-day in-person approach. The winning team received a cash prize to further fund their ideas. Finally, from 2025, the university's Thesis Innovation Awards will support current students and recent alumni to transfer their theses into business cases with potential to be developed into businesses.
2. Building strong partnerships: opening up collaboration with stakeholders from various actors in the innovation ecosystem spanning several sectors of the economy and jurisdictions, addresses the priority of building strong partnerships and engagement. Our innovation partners have included Imperial College London, the University of Las Palmas, Nubuke Foundation, the Kwame Nkrumah University of Science and Technology, the University of Cape Coast, the University for Development Studies, and Impact Hub Accra. The Ministry of Environment, Science and Technology has been our policy partner. These partnerships are intentionally developed to strengthen diversity, promote inclusivity, and expand reach nationally and globally.
3. Resource mobilization: pushing implementers of innovative programs across the university to seek funding and generate income ensures the priority of sustainable resource mobilization. So far, GBP 260,000.00 has been mobilized through grants from the British Council and Imperial College London to support SVSP delivery between 2022 and 2025. The KGL Foundation supported ARTIFY with GHS 200,000.00. Between 2024 and 2025, USD 200,000 was secured from the Mastercard Foundation through an ongoing partnership with the Kosmos Innovation Centre to equip the UG Makerspace. In response to growing demand for innovation programs, the university launched the UG Innovation Fund in 2024 with GHS 100,000 seed capital. The fund supports the Innovation Unit and is sustained through internal revenue, industry partnerships, and future commercialization.

Additionally, the mission "to create an enabling environment that makes the University of Ghana increasingly relevant to national and global development through cutting-edge research and quality teaching and learning" (University of Ghana 2024, p. 8) is reflected in the university's commitment to innovation. The long-term goal for innovation at UG includes generating other streams of income through avenues such as commercialization and equity from startups.

The University of Ghana, through the RID, has adopted an innovation pipeline strongly linked to entrepreneurial training. Starting from the ideation process, it supports students in conceptualizing solution-oriented businesses. Through programs co-created with industry partners, students receive a comprehensive overview of how to start and manage successful business ventures.

Currently, UG's innovation ecosystem is nascent. As it continues to grow, there is a need to incorporate the full spectrum of entrepreneurial training. This includes supporting students in identifying market opportunities, creating business plans, managing finances, developing marketing strategies, navigating legal aspects, and pairing them with domain expert mentors. This holistic approach is expected to equip them with the capabilities to become successful entrepreneurs.

The University of Ghana fosters a collaborative environment where multidisciplinary teams drive innovation and problem solving. Recognizing that not all students have taken entrepreneurship courses, especially those from non-business disciplines, the institution emphasizes a learning approach that integrates diverse expertise. The innovation unit at the RID bridges theoretical training with practical industry insights, ensuring that students develop skills that are both academically rigorous and applicable in real-world contexts. This approach allows students from various fields to contribute their unique perspectives while gaining essential business and innovation knowledge through hands-on experience.

OVERVIEW OF THE STUDENT VENTURE SUPPORT PROGRAMME

The UG-SVSP is UG's flagship innovation programme, characterized by a dynamic two-month incubation initiative designed to mobilize students into small teams, and equip them with the essential skills and knowledge to transform their ideas into viable businesses. The program culminates in a pitch competition, where three winning teams receive additional mentorship and support to further develop their concepts.

The UG-SVSP was launched in July 2022, initially as the Innovation for African Universities Programme. Since its inception, the program has aimed to mobilize students into multidisciplinary teams, equipping them with essential skills and knowledge to transform their ideas into businesses. One of the hallmark features of this initiative is a dynamic two-month incubation program that leads to a competitive pitch event, where student-led ventures have the opportunity to present their innovative concepts to a live audience, a panel of judges, and potential investors. This unique format not only allows students to gain invaluable experience in pitching and fundraising but also to learn from judges who bring industry skills and insights.

Structure and Activities of the UG-SVSP

The structure of the UG-SVSP is intensive and multifaceted. It includes:

- Kickoff meetings: meetings with key external and internal partners, including Imperial College London, the UGBS Innovation and Incubation Hub, and the RID, to align expectations and responsibilities for the upcoming program cycle.
- Selection process: a call for student innovators and entrepreneurs is issued, requesting submissions within a certain timeframe. After careful review, a shortlist is established. Each venture is required to have a team of up to four members from different disciplinary backgrounds.
- Venture support training: a series of training workshops focusing on essential entrepreneurship topics such as design thinking, strategic planning, fundraising, business fundamentals, and pitching techniques.
- Demo Day: a pivotal event where student ventures showcase their business ideas in front of a panel of judges, which fosters creativity and collaboration among participants.
- Mentorship for winners: successful teams receive tailored mentoring from Impact Hub Accra and other industry partners, providing them with the guidance necessary for further business development.
- Industry immersion: participants have opportunities to visit successful enterprises to learn from best practices and operations in a real-world context.
- Institutional support: UG assists with business registration, intellectual property registration, participation in entrepreneurial seminars, and provides avenues for the piloting of their innovation on campus. This is in addition to the continuous provision of mentors within the entrepreneurial ecosystem.
- Founder exchange with Imperial College London: an immersion trip was organized for seven venture founders from the 2023 cohort of the SVSP to Imperial College London, to interact with other ventures and founders there. They had the opportunity to interact with stakeholders in the UK and to pitch to potential investors. Similarly, an immersion trip was organized for six venture founders from Imperial College London to Ghana. This allowed them to interact with other ventures, founders, and stakeholders in Ghana, and to witness the Demo Day for the third cohort.

Notable Ventures and Achievements

As the UG-SVSP continues to run its programs, several student-led ventures have emerged to make impactful improvements in their respective fields. We cite a few below:

- Aadins Farms & Consult: a vegetable production and marketing venture, successfully engaged in agricultural production. This utilized university farmland for crop production.
- Fihankra ComTech: a personal safety and safety training startup which focuses on emergency response technologies gained traction by piloting its services on university campus grounds.
- Featherycare: a venture that uses artificial intelligence (AI) tools for early detection of disease in poultry received support to participate in a two-week training at Harvard Innovation Labs, enhancing its business acumen.

These ventures highlight the potential impact of the UG-SVSP on the entrepreneurial landscape, as they not only provide economic opportunities but also contribute toward the national development goals of Ghana.

Expansion and Collaboration

Recognizing the success of the initial phase of the UG-SVSP, plans were laid to expand the program to other universities, leading to the establishment of a national network of student ventures. The transformation of the program from solely supporting UG students to involving universities such as the University of Cape Coast, the Kwame Nkrumah University of Science and Technology and, most recently, the University for Development Studies marked a significant milestone in fostering collaboration among institutions. Each participating university selected top student teams, culminating in a shared final pitch competition that brought together the best from all schools.

This expansion emphasizes the critical need for universities to collaborate, share resources, and collectively enhance the entrepreneurial ecosystem in Ghana. This collaborative model serves to strengthen networks among diverse institutions while creating a more robust platform for student entrepreneurs.

The Role of Partnerships

The success of the UG-SVSP is also attributed to its partnerships with various organizations, including the British Council, Impact Hub Accra, and Imperial College London. These collaborations have provided vital resources, funding, and expertise necessary to support the program's objectives. Such partnerships not only enhance the quality of training provided to students but also facilitate

knowledge exchange and networking opportunities that further equip students for the global marketplace. Specifically, Imperial College London provides guidance during the program design and has supported the program with funding over the last two years. As ecosystem builders, Impact Hub Accra supports the co-creation of the playbook for the program. Its members are part of the vetting committee and play an active role in facilitating the training sessions. Recent partners such as MDF West Africa and innovation consultants have supported the delivery of the masterclasses across all partner institutions. From within UG, the UGBS Innovation and Incubation Hub is involved in the vetting. It further handles enrollment and onboarding of the student teams into the program. Additionally, the Hub coordinates the training and organizes Pre-Demo Day.

FIHANKRA COMTECH – ADVANCING SAFETY THROUGH INNOVATION

This section puts the spotlight on one of the companies from the first edition, Fihankra ComTech Ltd, a company that seeks to advance safety through innovation. Fihankra ComTech Ltd is a safety-focused startup dedicated to developing emergency response technologies and producing safety training content tailored to the African region. Over the past three years, the company has collaborated with a diverse range of emergency service providers, including the fire service, clinical psychologists, emergency room doctors, security professionals, veterinary doctors, and road safety and cybersecurity consultants. These partnerships have facilitated the creation of over 100 safety training modules designed for schools, businesses, and institutions. The company delivers these training programs through its EdTech platform and TravGuard Portal, which enables organizations to implement large-scale safety training initiatives while monitoring compliance effectively. Currently, Fihankra ComTech has expanded its impact across the continent. Presently, it operates in four African countries: Ghana, Namibia, South Africa, and Kenya.

Fihankra ComTech's journey started in November 2020. Originally known as Community Watch Ghana, it is an initiative developed by a team of three then third-year undergraduate students. Their objective was to design innovative security solutions for Africa, which they initially conceptualized for a pitch competition. Following success in the pitch competition, the team secured seed funding and formally registered Fihankra as a limited liability company. This milestone marked the transition from concept to development, focusing on creating Minimum Viable Products (MVPs), including mobile applications and a panic button prototype. Product testing commenced during this phase.

To strengthen its operational foundation, Fihankra joined the UGBS Innovation and Incubation Hub and participated in the International Association of Universities (IAU) program. Through this incubation program,

the company refined its products and received business development support. Between February 2023 and July 2024, it moved to the pilot testing and market launch phase. During this phase, Fihankra officially launched its products and services, implementing pilot programmes, refining its marketing strategy, and focusing on sustainable revenue generation.

With an established market presence since September 2024, Fihankra has advanced its service offerings to align with industry needs. The company continues to scale its operations, focusing on strategic marketing and sustainable revenue generation. Through its multidisciplinary collaborations and innovative approach, Fihankra ComTech Ltd is contributing to enhanced safety awareness and emergency preparedness across Africa.

THE ARTIFY PROGRAM

In addition to the UG-SVSP, the university launched a complementary initiative, known as ARTIFY, which aims to amplify the arts as a business. This program offers a structured training module that equips participants with skills for planning art exhibitions and fostering gallery partnerships. The inception of ARTIFY underscores the multifaceted approach that UG has adopted in promoting creativity and commercialization of talent among its student body.

The ARTIFY project Unleashing Youth Creative Potential for Job Creation through Arts was established to address the absence of formal fine arts programs at UG. Despite UG's reputation as a leading academic institution, it currently lacks a dedicated fine arts curriculum, leaving many talented student artists without structured guidance to refine their skills and establish careers within the creative arts sector. To bridge this gap, the RID, in collaboration with the KGL Foundation, launched ARTIFY. This enterprise seeks to empower student creatives and youth in surrounding communities by equipping them with artistic and entrepreneurial competencies necessary for sustainable career development.

Objectives and Implementation

The primary objective of ARTIFY is to enhance the creative and business skills of aspiring artists within UG and neighboring communities, enabling them to thrive in the contemporary art landscape. The project's specific goals include:

- Strengthening artistic capacity across multiple disciplines
- Equipping participants with business development and intellectual property (IP) knowledge
- Promoting diversity and inclusivity through artistic expression
- Establishing sustainable art spaces and facilitating market access

To recruit participants, ARTIFY launched an open call in June 2024, targeting UG students and young artists from nearby communities. The selection process followed a rigorous multi-stage approach:

- Open call: interested applicants submitted their portfolios alongside responses to specific questions assessing their artistic vision and entrepreneurial interest.
- Longlisting: from 77 submissions, 30 applicants were selected based on artistic quality, motivation, and potential for business-oriented growth.
- Shortlisting: through an evaluation process conducted by RID and Nubuke Foundation, the pool was narrowed to 15 candidates.
- Final selection: eight participants (four females and four males) were chosen to form the first ARTIFY cohort.

Training, Artistic Development, and Exhibition

The training program, themed ARTIFY: Amplifying Art as a Business, was conducted over a 15-day period in September 2024. The curriculum comprised five structured modules:

- Introduction to the art world: this module involved analyzing the global and local art ecosystem.
- Art practices in Ghana: this entailed an examination of the evolution of Ghanaian art from 1887 to the present.
- Writing for the artist: this module was aimed at developing artist biographies, statements, and professional portfolios.
- Intellectual property: this allowed participants to gain an understanding of copyright, trademarking, and monetization of creative works.
- Entrepreneurship: this provided a guide for translating artistic talent into sustainable business ventures.

Participants also engaged in a one-week residency at the RID, where they received hands-on mentorship from established artists and industry experts. The residency provided access to essential art supplies and included visits to six prominent galleries, including Nubuke Foundation and Artists Alliance, offering firsthand exposure to professional art environments.

The ARTIFY program culminated in a week-long exhibition held at the UG Balme Library from 26 November to 2 December 2024. The exhibition featured 24 original artworks produced by participants, which were subsequently sold to the public. Revenue from the sales was distributed equitably, with 50% allocated to the artists and 50% reinvested into the ARTIFY program to ensure its sustainability. The exhibition attracted over 250 attendees, including UG leadership, art enthusiasts, and members of the media, further amplifying the project's visibility.

ARTIFY has successfully laid the groundwork for fostering creative talent at UG and beyond. The initiative aligns with the university's strategic priorities, particularly in enhancing the student experience and promoting sustainable resource mobilization. By equipping young Ghanaian artists with the necessary skills to transform their creative talents into viable careers, ARTIFY represents a crucial step toward strengthening the country's creative sector and empowering youth for personal and economic development. Encouraged by its success, project stakeholders are exploring opportunities to extend similar initiatives to other creative disciplines, such as fashion.

WEAR UG DAY

Inspired by the ARTIFY program, UG decided to focus on identifying and developing fashion talent as a key for its 2024 Wear UG Day. Wear UG Day was introduced in 2023 as part of the University's 75th anniversary celebration. It entails members of the UG community, including students, faculty, staff, alumni, and affiliates, proudly wearing UG-branded attire as a means of fostering a sense of belonging and institutional pride. It is intended as a brand promotion strategy. What follows presents details of the 2024 event and the associated fashion show. It emphasizes the process leading to the fashion show, the accompanying panel discussion, post-event media engagements, and subsequent activities aimed at enhancing the visibility and impact of the event.

The Process Leading to the Fashion Show

The planning for the fashion show incorporated a systematic approach to participant engagement and preparation. Initially, invitations for participation were disseminated across the university's student body via email and WhatsApp platforms, targeting aspiring student designers. Following this, an interview process was instituted to evaluate the candidates' design experiences, creativity, and overall readiness. Selected participants received orientation, alongside materials necessary for their designs, specifically six yards (approximately 5.49 meters) of the UG@75 commemorative cloth. Throughout the design phase, participants documented their processes by submitting videos detailing their progression from initial concepts to finished pieces. This structured sequence not only ensured the active engagement of student designers but also fostered a meaningful connection to the university's branding.

Fashion Show and Panel Discussion

The 2024 Wear UG Day culminated in a fashion show that showcased the innovative work of seven student designers, whose collections creatively integrated traditional Ghanaian aesthetics with contemporary fashion sensibilities.

This event served as a critical platform for the assessment of design talent within the university and highlighted the broader theme of sustainable fashion. Concurrently, a panel discussion was convened to explore the fashion industry's contributions to national development, sustainability practices, and the cultivation of career opportunities within the sector. The panel comprised esteemed experts who provided multifaceted insights into the dynamic relationship between fashion and societal advancement, thereby reinforcing the event's educational value.

Post-Event Activities

In the aftermath of Wear UG Day, a series of media engagements were orchestrated to amplify the visibility of the event and its participants. Notably, the designs were featured in interviews across several prominent radio stations, providing a platform for designers to discuss their works and the overarching themes of the event. Additionally, a masterclass was conducted during the Youth School at the Annual New Year School and Conference (ANYSC) in January 2025, where the student designers and artists were invited to share their experiences and insights with over 150 high-school students, further facilitating their professional development within the fashion and creative industries.

In summary, Wear UG Day 2024 engaged the UG community through a well-coordinated blend of creative expression, academic discourse, and professional development, thereby underscoring the university's commitment to promoting sustainable youth entrepreneurship and its cultural heritage in fashion.

Events such as the 2024 Wear UG Day celebration spotlighted student creativity through a fashion design competition, reinforcing the idea that entrepreneurial spirit can manifest across various disciplines. These instances exemplify how the university is creating a multifaceted approach to fostering innovation and entrepreneurship that extends beyond conventional business sectors.

CONCLUSION

In conclusion, the UG-SVSP exemplifies a forward-thinking initiative that aligns with the university's vision of fostering innovation and entrepreneurship among its student population. By providing comprehensive support through training, mentorship, and collaborative networks, the university is cultivating a generation of student entrepreneurs equipped to tackle pressing economic and social challenges in Ghana. The program's impact is already being felt within the community, nurturing successful ventures that contribute to local and national development. In addition, the program empowers students with the mindset and tools to transfer their knowledge to younger learners, particularly high-school students, through established initiatives like the Youth School at the

Annual New Year School and Conference. This peer-to-peer model fosters an innovation mindset in the next generation.

Moving forward, it is critical for UG to continue expanding its entrepreneurial programs, fostering partnerships, and integrating innovative practices into the fabric of its academic culture. As the university navigates the complexities of the modern economic landscape, its commitment to empowering students through entrepreneurship is not only enhancing its societal relevance but also shaping a brighter future for the youth of Ghana.

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Chapter 3

The Truth is Rarely Pure and Never Simple: A Not So Simple Discussion of Truth and the Role of the University

Linda Doyle

INTRODUCTION

Oscar Wilde (1854-1900), a graduate of Trinity College Dublin, was known for his wit. In his play, *The Importance of Being Earnest*, the character Algernon says, "The truth is rarely pure, and never simple". These words could be written for today's world – a world of overwhelming volumes of information, powerful generative AI tools, and all-pervasive social platforms for sharing the information.

This chapter provides a model for looking at truth – or, more specifically, looking at what it means for information to be true or "to tell the truth" – that accepts the fact that truth is neither pure nor simple. It builds on known classifications of information, namely disinformation, misinformation, and malinformation, but extends these further to take account of the "receiver" as well as the "transmitter" of the information. The latter perspective is driven by my own engineering background. The resulting model both acts as a foil for discussion on the nature of truth as well as providing a structure for discussing the many ways universities can play a positive and proactive role in combating disinformation, misinformation, and malinformation.

THE MODEL

In very simple terms, telling the truth is about conveying accurate information to others. Over the past decade, terminology has emerged to define information and the intent with which that information is conveyed. Hence, information has come to be classified as *misinformation*, *disinformation*, and *malinformation*.

- *Misinformation* refers to false information shared without intent to deceive. It can be the product of misunderstanding. The conveyor believes the information to be true.
- *Disinformation* is false information shared deliberately with the intent to mislead. In other words, the false information is deliberately created and shared. It can, and is often, used in a strategic and targeted manner to disrupt and obfuscate.
- *Malinformation* consists of accurate information used with the intent to mislead or cause harm. The information can be presented selectively or taken out of context to achieve this.

These terms are often confused and used incorrectly, but used properly, misinformation, disinformation, and malinformation can be effective as they are more helpful than simply saying material is untrue. But, of course, it is not as simple as that.

As an engineer and a telecommunications engineer in particular, I tend to think more in terms of transmitters and receivers. In the telecommunications world, the term *information* has a very specific technical meaning, and I will not draw on that definition as it would complicate the use of the word information so far, but I believe focusing on the transmitter and receiver elements of a system makes sense, and also helps us to think further about truth-telling.

From a telecommunications perspective, the terms misinformation, disinformation, and malinformation are associated with the intent of the transmitter. The receiver does not fully feature in these definitions. There are many ways to illustrate this, but I will draw on a film by artist Ray Eames and her architect husband Charles Eames, called *A Communications Primer* (Eames & Eames, 1953). The film was created because they both felt that architects should understand the impact of communications systems on the world. A powerful scene offers a metaphor for how "truth is received". We see in one frame an abstract painting depicting a triangle. This is followed by the next frame (the film is shot in stills) of seven people looking at that painting. Superimposed on their heads is what they actually see, each seeing a different shape, in other words, a reflection of how *they* see the artwork (Eames Office, 2015-2021). The painting is constant; the interpretations diverge.

These scenes remind us that communication is not only about the sender and the message, but also about the *receiver*. What is transmitted is not always

what is received. And what is received is shaped by experience, culture, bias, education, emotion, and trust. The Eames image helps us visualize contested information in particular, where all viewers are engaging in good faith, yet reaching different conclusions.

With this transmitter-receiver mindset in mind, I return to the classifications of information and offer instead a systems view depicted in Figure 1. It should be noted that this diagram would not pass scrutiny by engineers – it is simply informed by an engineering way of thinking! In Figure 1, there are three key "actors". The first is the *generator-transmitter*. The generator-transmitter creates the information with the intent to inform, misinform, disinform, or malinform. The second actor is the *amplifier-propagator*. This entity can passively or unwittingly pass on the information or can actively participate in line with the original intention. The final actor is the *receiver-consumer*. This entity can simply receive and accept the information that is incoming in a passive way. Alternatively, it can consume that information actively by processing, analyzing, evaluating, and engaging with the information that is incoming. The receiver sits in a specific context – as mentioned already, it is shaped by experience, culture, bias, education, emotion, and trust; all of this impacts how the information is understood and interpreted.

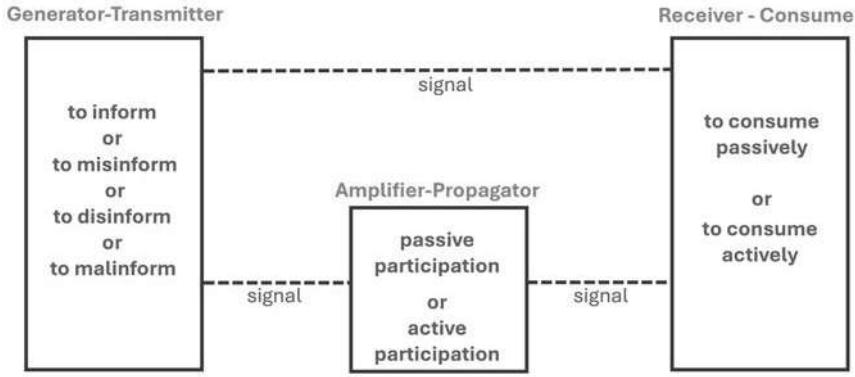

Figure 1 – A model for explaining the not-so-pure and simple truth

Each of these actors can be an individual, an organization, or, in fact, a machine or a combination of these. The role of the machine is particularly challenging across these three elements – the generating machine of Gen AI and the propagating machine of social media platforms can play any and all of these roles and can very easily generate, amplify, and consume large volumes of misinformation, disinformation, and malinformation.

NAVIGATING THE TRUTH

So how should a university help navigate a world of misinformation, disinformation, and malinformation, where truth is made ever less simple with the machine in that loop? The typical response is to ensure that our students *develop critical thinking* skills. But what does that mean, and how do we achieve that?

Research-intensive universities are perfectly poised for this challenge. Apart from the fact that there is a growing body of research on misinformation, disinformation, and malinformation, which itself drives our understanding of the field, the research process intrinsically deals with all three of the actors mentioned in Figure 1. Researchers fundamentally understand their role as generator-transmitters, as this is at the core of research and research dissemination. Research integrity and data integrity policies, ethical expectations, and social norms around research standards and reputation are crucial to ensuring the research world works well. Researchers also understand the role of the amplifier-propagator in how they cite others' work and are careful to nuance the context in which those citations happen. Researchers also understand well the receiver-consumer role, having developed the techniques for verifying sources, questioning outputs, as well as allowing for multiple interpretations. They do not always get it right, but they are trained to deal with all of these issues. As Generative AI becomes part of this process, researchers are also expanding and changing research processes to use the opportunities afforded by Gen AI as well as work to meet the challenges.

Ideally, we want our students (and staff) *not* to be generator-transmitters of misinformation, disinformation, or malinformation. We want them to be active rather than passive amplifier-propagators (and not actively working to harm, but the opposite), and we want them to be active consumers, that is, to critically engage with the material, understand the intent of other generator-transmitters as well as understand and distinguish the scope for a multiplicity of perspectives on the information.

Universities have always worked to address these challenges, bringing the research process to the fore and carrying out what we call research-informed teaching, a particularly crucial aspect. We must, however, work harder still to nurture and shape these behaviors, given that "the machine" is so prominently in the loop.

TOWARDS A SYSTEMATIC ANSWER

There is much research on how to influence behavior and this chapter does not claim to offer expertise on this front. Instead, it turns to one theory for classifying forces that can be brought to bear on behavior. This theory is known as the Pathetic Dot Theory. The Pathetic Dot Theory, also known as the New Chicago School theory, is a socioeconomic theory of regulation developed by Lawrence Lessig (2006). Lessig argues that four modalities – law, social norms,

market forces, and architecture – regulate behavior. These modalities are interconnected and influence each other, shaping how individuals and societies act, as shown in Figure 2. One of the key reasons for drawing on this theory is that it was born out of Lessig's interest in shaping behavior on the Internet and, hence, can have resonances with current challenges.

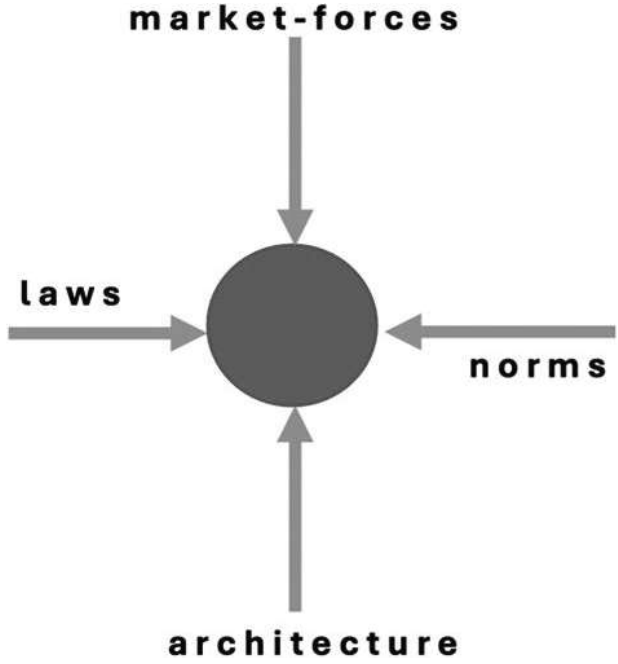

Figure 2 – Four forces that can be used to shape behavior

Three of the four modalities in the Pathetic Dot Theory are more easily understood. It might be worth lingering on architecture here as a better understanding is needed to progress with this approach. Lawrence Lessig himself used the phrase "code is law" in the digital world to convey that the architecture of technology – the software code itself – functions like law: it regulates what we can and cannot do, often more powerfully than traditional legal rules. He was mainly speaking about the power of the Internet. I like to use a physical example to illustrate this point, namely the Camden Bench. The Camden Bench is a concrete public bench first installed in the London Borough of Camden in 2012. At first glance, it looks like a minimalist, modernist block, but its design is highly intentional. It was created by a design firm working with the local council to reduce anti-social behaviour without needing explicit policing. No enforcement is needed; the architecture itself does the regulating. Homeless people cannot sleep on it because of its shape. In addition, the shape is not good

for skateboarding and the material is not suitable for graffiti. In other words, the rules are architected into the fabric of the item.

The best way to show how law, social norms, market forces, and architecture can regulate behavior is by way of an example – the example of motivating occupants of a car to wear seatbelts. From the perspective of the law, it is legally required to wear a seatbelt; not doing so leads to fines or penalty points. From a social norm perspective, most people now see wearing a seatbelt as responsible and automatic and would socially expect that rule to be followed. From a market forces perspective, insurance premiums may be higher for drivers or passengers who do not comply, and hence there is a financial imperative. And, finally, from an architecture perspective, cars are designed with loud beeping alerts if seatbelts are not fastened, and many will not start properly without them.

In providing a systematic answer to how we shape the behavior of our students as ethical generator-transmitters, amplifier-propagators, and receiver-consumers, we can ask the following questions:

- What kinds of laws are useful in a university to drive the desired behaviors?
- What social norms need to be worked on and developed within the university?
- What do market forces mean within a university?
- How do we use these market forces to get the desired outcomes?
- What does it mean to "architect" solutions in the university within the curriculum and potentially in digital and even perhaps physical space?
- What forces or modalities work best to drive the behaviors we want?
- Where in the system should we focus?

In other words, how do we push the dot around to get the behaviors we want? What follows is a discussion under each of the four headings. The suggestions are not exhaustive and merely provide a starting point for consideration.

Laws

The most common approach taken by universities in making laws or policies that relate to misinformation, disinformation, and malinformation is an indirect approach. In the main, laws and policies tend to relate to the use of Gen AI, which, as mentioned already, can be a powerful actor in the space, rather than specifically, for example, dealing with disinformation. General academic laws around plagiarism, cheating, and academic conduct have, in many universities around the world, been updated to take account of Gen AI. Universities have updated academic integrity policies to explicitly take account of the use of AI tools. The most common approach is to require responsible and transparent use of Gen AI tools. For example, in some universities, academic work, including research projects, must now include a declaration of what, and how, AI tools

have been used. Most universities have expanded their misconduct definitions to include unauthorized use of Gen AI and the use of Gen AI without attribution, treated as plagiarism. Academic misconduct, of course, can result in expulsion.

Laws and policies relating to research integrity are also relevant here. **Research integrity** refers to the commitment to honesty, accuracy, transparency, and accountability in conducting and reporting research. It is about doing research responsibly and ethically, ensuring that the work can be trusted by peers, the public, and future generations. Whether explicitly stated or not, this goes to the heart of dealing with misinformation and disinformation. In many universities, there are rules in place for transgressing in this space. Breaking these rules has implications for publication opportunities, for example.

Norms

There are norms associated with different research practices and norms around expectations of behaviors in examinations, for example, not to cheat. Codes of honor, for example, call for trust and honesty. There are norms around group-work behavior, and though students can find it challenging if everyone in a group is not playing an equal role, it is nonetheless expected that the workload is shared. These norms can help drive ethical and transparent behaviors more generally.

However, broadly speaking, norms around obligations in a world of misinformation and disinformation are at a very underdeveloped stage despite some general understanding of concepts such as "fake news" and the pitfalls of material generated with AI tools. To develop norms, it is crucial to take this understanding to a much deeper level. For example, students are not necessarily aware of the role they play as generator-transmitter, amplifier-propagator, and receiver-consumer, and generating an environment in which that awareness is a norm could be beneficial. For example, a student using AI in their work and submitting that work to a member of staff for evaluation might not necessarily see themselves as a generator or propagator of misinformation or disinformation.

The reality is that these new norms can only be instilled by role-modeling and education – hence, modules that are designed to target deep understanding of misinformation and disinformation (for example, Calling Bullshit, 2017-2019). But there is much more scope, for example, to unpack the roles in Figure 1, and these modules do need to be widespread and part of all courses. The norms of course, which invalidate the kind of ethical behavior we seek, do need to be counteracted and are beyond the scope of this chapter.

Market Forces

There are several market forces at play in a university. Market forces work in either of the following two ways: it will cost you if you do not behave, or, if you behave well, more can be gained. The latter usually works best.

Accessing the university in the first instance requires some kind of currency. There are often conditions put on gaining access, such as achieving a certain grade, language competence, or a mathematics requirement. There is also the possibility of including dedicated exams that require more sophisticated knowledge of the generator-transmitter, amplifier-propagator, and receiver-consumer roles and responsibilities.

One of the big market forces for academics is research funding. It motivates academic staff directly and is also a crucial measure of university success. We have very strong examples of where research funding opportunities are linked to behavior change. The most striking is the Athena SWAN accreditation. To be eligible to apply for European and, in some cases, national funding in the future, universities have to attain an Athena SWAN Silver accreditation. There is potential to develop ideas that draw from this model.

This is not meant to be read as naïve: developing any of these kinds of instruments to create the market incentives to behave in a particular way is complex and challenging, not to mention the fact that it is likely easier to incentivize the opposite behavior. We know, for example, that certain types of fake news can be more financially profitable than others.

Architecture

The final way we can influence the system is to better architect in the first place, in order to get the desired behaviors. It involves asking the question, "What structural changes best ensure certain behaviors?"

A simple example is the assessment process. We know that many current assessment processes, such as those involving continuous assessment or project work, are vulnerable to abuse through misusing Gen AI. Structuring an assessment process to be by oral examination only means that the process itself delivers the desired behavior – students need to depend on only their own intellect. This is neither practical nor affordable nor suitable for all types of material. It is used simply as an example of a solution that is architected to deliver a behavior.

There are other architectures that are physically broken, even before Gen AI came into existence. One that springs to mind is the architecture of academic publishing. Academics create, review, edit, and curate material – all for free for the publisher, and then pay to read this material in the non-open-source world. Open science and open research approaches are an attempt to "re-architect" this, as are efforts like public feedback and more inclusive practices around review. This remains an ongoing challenge and the re-architecting of the system

has a long way to go. But again, it speaks to the possibility that academia can re-architect systems and create its own platforms.

Whether it is possible to think like this in terms of new, curated social media platforms, open-source generative AI models, or other digital infrastructures, remains to be seen. Academia once played a crucial role in the infrastructure of the internet and changed the world. And, in fact, the smartphone, which is a powerful machine, has much public research to be thankful for.

CONCLUSIONS

While the language used in this chapter may be too academic and mechanical to be of use in everyday descriptions, it does further the process of being able to talk about truth-telling and information sharing in a less simple but nonetheless systematic manner.

The examples here are somewhat simple and work is needed to explore how we intervene more deeply as universities. And, of course, the fact that truth does not appear to matter as much is not at all dealt with here. The structured extension of classifications and definitions to help deepen understanding of "truth-telling", which borrows from a telecommunications world, as shown in Figure 1, misses one additional key aspect: it does not focus on the "noise" or "interference" experienced by the signal on its journey. The generated and transmitted information may be truthful, yet it is open to manipulation and interference on its journey. The interference with elections and various forms of cyber manipulation are examples here. The conversation could be extended to include these elements.

However, there are some takeaways. Firstly, there is no silver bullet in striving for truth or truth-telling. Multiple forces, however described, need to be brought together. Secondly, whatever the mechanisms used to fight against misinformation, disinformation, and malinformation, we need to work together as a sector, not just to learn from each other, co-creating rules, developing norms, and collectively using our market forces, but also to collectively architect solutions. The latter has the potential to be powerful and, together, we can create platforms and structures that universities can get behind, such as new platforms for information sharing and new approaches to academic publications.

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AUTHORSHIP

This chapter has been entirely written by a human (me). I am the lead author, owner of the creative ideas, and responsible for bringing the different elements of this chapter together. I, however, did brainstorm with ChatGPT-4. I led the brainstorm, but the responses gave me some new ideas. Therefore, this chapter has been produced partially by a team effort, where one member of the team is a machine.

Chapter 4

My Presidential Journey: Building Trust to Create Impact

Ana Mari Cauce

In the last few decades, we have all borne witness to the increasingly global reach of our research universities and the expanding impact of our research. The role that we played in the rapid response to the global Covid-19 epidemic – where a novel virus was identified and vaccines and treatments were developed in the span of less than a year – is a wonderful example of how quickly universities can be activated and how, by working together, our research can make a difference that truly matters.

Research universities also play a critical role on the educational front as an increasing number of tomorrow's jobs will require university-level knowledge and skills. In my state of Washington, a recent report estimates that by 2031, almost 75% of jobs will require a college degree (Washington Roundtable et al., 2024). Thus, it is extremely concerning that, at least in the United States, trust in our universities has been eroding sharply and is at a 15-year low (Neietzel, 2025). Now, more than ever, our universities need public support so that we can produce both the research to inform the policies and practices that can lead to the solutions our communities need and the skilled workforce to enact them.

Within the U.S., the context that I know best and will be referring to, those who consider themselves political liberals are most concerned about rapidly rising tuition and student debt, as well as what they see as our universities' growing ties with corporate interests. Meanwhile, conservatives depict us as liberal indoctrination machines, dismissive of workforce needs, hostile to conservative viewpoints, and valuing diversity over merit. And our country's president has repeatedly claimed that climate change and research about it are a "hoax", and

his administration has put forward various proposals that would severely cut back on funding for both research and student support (Smith-Schoenwalder, 2025).

The urgency of this moment is real, and the attacks on higher education have been the strongest and most significant that I have seen in my almost four decades in academia, but the problem is a longstanding one. While cleaning out my office in preparation to step down from my position as President of the University of Washington (UW), I ran across an issue of *TIME* magazine from 2013 in which a special section, drawing from discussions among presidents of research universities at the TIME Summit on Higher Education, focused on how to persuade our government and the public to invest in research universities. Presentations focused on the importance and relevance of our research and its return on investment; the "brain drain" of faculty talent out of the U.S.; the balance between our missions of research, teaching, and service; how we can use technology to enhance learning; and how we could respond to forces such as commercialization. Sound familiar?

As a response to these narratives, many of us are engaged in work to better explain the relevance of our universities and their research, and there have been several very promising efforts to publicize and enhance the public impact of our work more clearly. These include efforts by the Association of Public and Land-Grant Universities (APLU) (2019) and the National Academies of Science, Engineering, and Medicine (2025) to encourage public impact and community-engaged research, as well as The Pew Charitable Trusts' Presidents and Chancellors Council on Public Impact Research (Olneck-Brown, 2024), which I will refer to later. There is also a growing focus on students and cost containment, and how to better harness innovative technologies like AI in a responsible fashion. But stumbling upon this magazine made it clear that, unlike in the past, we must be planning for more than how to survive this moment. Community engagement and trust-building with the public at large must become part of our DNA and both present- and future-oriented.

In this regard, it is worth reflecting on the fact that trust in community colleges has not eroded as strongly as it has for research universities. Whereas they are more generally located in or near cities, vocationally focused, and primarily serve students from their local communities who commute to campus, research universities are often found in more remote "college towns" and draw from students across the country and world. There is also often a reluctance among our faculty members to focus explicitly on job preparation. The stereotype of the "ivory tower" underscores that we have long been viewed as inward-focused and disengaged from society at large, unless it is for our own convenience.

Too often, a university's engagement with local organizations or elected government officials revolves primarily around raising funding. Just as problematic is the critique that we become involved with communities only as a convenience

and in a manner that has been characterized as "extractive" (McHugh et al., 2024). For example, a student or faculty member approaches a school or a community agency solely to collect data for a research project, with no plans to offer anything in return, eroding goodwill.

Thus, for a university president, the job of building trust begins at home, within our universities – with our faculty, staff, and students who represent us in the community, and with elected officials, members of the business community, civic organizations, and residents of our city, county, and state whose tax dollars support us. The need to engage in such work was quite clear to me when I began in my position in 2015, following a series of presidents who had served for terms shorter than their contracts, departing for more lucrative positions, leaving behind strained relationships with faculty and student governance structures, and with state elected officials and legislators. During their terms, we had come to be viewed by many members of the public as not only elite but elitist, in part as a result of our own behavior, which included an over-emphasis on improving our rankings and a dismissive attitude toward transfer students from our state community colleges. Within the university, a faculty unionization effort was in full swing, and the relationship between administration and the Faculty Senate was strained. There was also much distrust between students and administration, the aftermath of a series of very large tuition increases that began following the recession of 2008. Putting policies and structures in place to create lasting bonds of trust and cooperation with these constituencies has been central to my presidency, informing my time management and policies, and I hope lessons learned can be instructive to others, even under better circumstances.

PRESIDENTIAL ENGAGEMENT AND PRIORITIES

I began my term as an Interim President in March 2015 in my 29th year as a faculty member at the UW, having held a range of administrative positions, including chairing two departments, being Dean of Arts and Sciences and serving as Provost. This is highly unusual in the U.S., where presidents almost always come in from other universities, and it shortened the "getting to know you" period with both the community inside and surrounding the university. While it meant that I already had some critics and known flaws, it also meant that I knew who I could rely on for honest advice.

Faculty, Student, and Staff Engagement

One of my first decisions was to become personally engaged in monthly meetings with Faculty Senate and Student Senate leaders, as well as quarterly meetings with the Professional Staff Organization leadership, something that previous presidents had relegated to others. I also made it a point to attend

full meetings of the Faculty Senate, rather than just giving opening comments, and went to Student Senate meetings once a quarter for a question-and-answer session. I also gave the Student Body President and members of the Faculty Senate Executive Council my personal cellphone number so they could text if there was an urgent or timely issue to be addressed. More than once, it helped to quell the rumors that circulate from time to time about plots on the part of the administration to trample upon faculty or student rights.

While these meetings and associated engagements took a considerable amount of time, the payoff in trust was worth it. After a period in which students, faculty, and staff ran for leadership positions to thwart administrative agendas, we now began to attract faculty, staff, and student leaders who desired to engage constructively.

The Provost was a key partner in all these efforts. An important structural change I instituted was to develop an Executive Office with partially shared staff to ensure that we were on the same page and could not be pitted against each other. We began a tradition of joint monthly Cabinet meetings, which included the chancellors from our other two campuses and all the vice presidents and vice provosts, and I also attended bi-monthly Provost-led Council of Deans meetings to give a brief President's report and engage in a Q-and-A session. On a less formal basis, the Provost and I arranged semi-regular lunches or dinners not only with deans, but with faculty from across the university. These meals did not include an agenda. Building these relationships in a proactive manner helps greatly when problems arise. The time to figure out your priorities or to identify your supporters is not during a crisis.

Engagement with Elected Officials

Being a long-term resident in the region was certainly helpful in my engagements with elected officials, as we could talk about how much our city and state had changed over the last decades. For example, I had seen firsthand the transformative growth in our region, much of it for the better, but affordability had become a significant issue when it came to recruiting faculty and staff. I was able to buy a small home for $30,000 while still an Assistant Professor, but if I put it on the market now, I suspect it would fetch about $500,000, which is out of the reach of most incoming faculty. Legislators were also hearing complaints from many of their constituencies about the lack of affordable housing for middle- and even upper-middle-income families, and it was something we could work on together. I participated directly with staff from our Regional & Community Relations office and with the Washington State Housing Finance Commission and the Seattle Housing Authority (SHA) in strong, sustained efforts to develop and secure additional middle-income and affordable housing options within easy access to campus, helping our faculty, staff, and healthcare workers, but also the citizenry at large. Although our supply of affordable housing options

is still well below our needs, such initiatives proved that we could be a partner on a growing number of issues in our region, including transportation, safety, and social service initiatives. And, while my visits with our state legislators in Olympia, our state capital, were often about funding for the university, this was not the sole focus, and my meetings were not always about asking them to help us, but rather on working together to improve our shared community.

We also have an Office of Federal Relations located in close proximity to legislative offices in Washington, D.C., our nation's capital, to help cultivate relationships with our federal elected officials. I make at least yearly visits to their offices to build partnerships on a range of issues, including initiatives on cybersecurity, quantum computing, clean energy, and healthcare. In addition to formal meetings, when I am in Olympia or D.C., or when elected officials are in Seattle, we try to make time for more informal lunch or dinner dates, and I invite our local and national elected officials, as well as tribal leaders, to football and basketball games, making for quality time in relaxed settings. These engagements cannot ensure that there will not be difficulties or points of contention, and we have seen both high and low points in terms of funding. We have not been immune from budget cuts during times of economic scarcity or from the tensions between the present administration and higher education. Still, our key legislators have been some of our staunchest advocates, in part because of the strong relationships that we have developed and cultivated.

Corporate Relationships

Over the last decade, both faculty and student groups have expressed growing concern about the influence of corporations on our universities, and it is certainly important to have appropriate practices and policies to avoid potential conflicts of interest. Nonetheless, corporations are places of employment for those who live in our communities and a key part of the economic and civic health of our communities. In my time as President, I have visited corporate headquarters and met with leadership at Alaska, Amazon, Boeing, Costco, Microsoft, Nordstrom, Starbucks, and T-Mobile, who all have headquarters or regional offices nearby. Through our various campuses and colleges, we are also involved in many partnerships with them, focused both on workforce development and on research that can lead to innovations. We are lucky to have graduates who want to stay in our region, an advantage of being in a very livable urban setting, and we want to make sure that they have the skills necessary to be competitive in our global job market. This involves developing internships with our local companies where students can learn important skills, often while being employed, and inviting local businesses to job fairs so that students can learn more about job opportunities, and companies can learn more about our amazing students. CoMotion, our center for innovation, plays a key role in working with our faculty and students to develop industry connections to

transform their ideas into economic and societal impact. We are consistently rated as one of the top universities in the world in terms of technology transfer, patents and licensing, and innovation (CoMotion, n.d.).

None of this would be possible without deep, sustained partnerships built on trust and shared goals. The recognition by local companies of the importance of our work was made especially clear in 2019 when Microsoft and Amazon spearheaded a legislative initiative where they essentially taxed themselves on the condition that the money be used in support of institutions of higher education, with our university a key beneficiary (Nickelsburg, 2019). We are blessed to have very civic-minded industry leaders.

Government-to-Government and International Relationships

Located at the edge of the continent in one of the most trade-dependent states in the U.S., strong international relations are especially important to us. Most of our companies serve global constituencies and have both local and international offices. Developing strong partnerships with universities and agencies headquartered in other countries is key to both our research and teaching. Hand in hand with the Gates Foundation, headquartered in Seattle, we also have a strong global health mission centered on collaborations in Africa, Asia, and Latin America. While the status of some of this work is in flux, given the retreat from foreign aid on the part of the Trump administration, we have routinely had hundreds of faculty and staff who primarily work overseas. We are also a top producer of Fulbright scholars and have one of our country's largest study-abroad programs, with centers in Rome and Spain.

Long-term, ongoing engagement has been critical to our success. Our study center in Rome has been in operation for 40 years, and our center in Spain will soon turn 15. Our work in Asia began in 1909 through our then Department of Oriental Studies, long before partnerships in Asia were common. More recent, but now a decade old, is our Global Innovation Exchange (GIX), a joint program of our Foster School of Business and our College of Engineering that offers a master's degree in engineering and technology with Tsinghua University and Microsoft as founding partners. During the initial phase, we worked very closely with Tsinghua; I visited their campus three to five times and even received an honorary degree. Given the rising tensions in U.S.-China relations, we continue to offer a joint degree, but our programs are working more in parallel, and we have a growing number of students from European and other Asian countries, broadening the partnership (Global Innovation Exchange, n.d.; Redden, 2017).

It is especially helpful to have strong ties with your international alumni in maintaining these relationships. For example, we have nine alumni associations in Asia that meet regularly and in concert with our Seattle-based UW Alumni Association. Once a year, they all get together at an event called CONVERGE,

which often attracts 300 to 400 attendees, including a growing number of second- and third-generation UW graduates.

Whether we are talking about local, national, or global relationships, it all starts with showing up and staying engaged. The increasingly short tenure of university presidents in the U.S. is likely a part of the trust problem. I can distinctly remember streaming our most recent past president's first press conference at his new university and feeling like a jilted lover; he had said so many of the same things to us. I can only imagine how other members of the community might have felt, especially since this was now the third time in a row our president did not complete a term they had started. Trust-building is not just about occasional transactions or engagements, even if they are positive and benefit both parties; it is about building a genuine relationship, and that takes time, energy, and genuine commitment.

Sustaining Relationships to Ensure Continuity and Trust

While building a trusting relationship takes time, it can be destroyed in the blink of an eye. For this reason, it is important to set up structures to ensure they are well tended following presidential engagements. Working closely with your Vice President of External Affairs, a position common across U.S. universities, is key. At the UW, we also have directors of federal relations, state relations, and regional and community relations that report to External Affairs. More recent additions include a Director for Spokane and Eastern Washington Relations to ensure that we are responsive to the needs across all of our state, and I have added a Director of Tribal Relations to improve and grow our bonds with indigenous communities. We also have a separate Vice Provost for Global Affairs, with their own office, and an Assistant Vice President for Corporate and Foundation Relations who reports through our University Advancement office. Their job is to wake up every morning with the goal of ensuring that our constituent relationships remain strong and that we engage in quick and proactive measures when conflicts and tensions arise. Representatives from these offices also meet weekly with my Chief of Staff to go over the broad array of requests I routinely receive for participation in local, national, and international conferences, visits, and events, to make recommendations about where my time is best used for maximal impact.

COMMUNITY ENGAGEMENT AT THE UNIVERSITY OF WASHINGTON

The role and posture of the President is key in setting the tone, but most community engagement occurs outside of the Executive Office and in the departments, colleges, and clinics where our research and education take place.

We define community engagement as the collaboration between the university (students, faculty, staff, and alumni) and our extended communities (local to global) for the equitable and mutually beneficial co-creation and exchange of knowledge, insights, creativity, resources, and capacities to address critical social issues. And we have guidelines and principles to ensure that all our units appropriately represent the university and our shared values.

Principles to Guide Our Work with Communities

In recognizing the complexity and challenges inherent in community engagement, we strive to approach each task with humility, adaptability, empathy, and ever so much patience. Ethical community engagement takes time to both initiate and maintain and must be based on principles of reciprocity, accessibility, cultural awareness, assessment and accountability, and longevity and trust.

We must also recognize and address the power differential and privilege that we hold relative to each community partner and prioritize benefits to the community over and in addition to our own. This requires us to move away from transactional and solely outcome-oriented engagements and instead prioritize building deep, meaningful, and long-term relationships with community members, valuing the process of engagement in addition to its outcome.

It is also important to incorporate "strategies to question our own attitudes, thought processes, values, assumptions, prejudices and habitual actions to strive to understand our complex roles in relation to others" (Bolton, 2010). We should also encourage and support the use of multiple languages and dialects in university communications, materials, and engagements as appropriate.

We must be future-oriented in our work, considering both the current and future needs of people and the planet. Building trust requires us to honor the strengths, ways of knowing, lived experiences, perspectives, and contributions of all partners, establishing clear shared expectations. We must be responsive to partners' needs and facilitate clear, accessible, and timely communication. Where relevant, the university must also acknowledge past harms and work collectively to repair and rebuild in meaningful ways.

From Principles to Practice and Impact

In the last Glion volume (Cauce, 2024), I highlighted the UW's work in developing the Rainier Valley Early Learning Campus, which is now a reality thanks to investments from both donors and from King County, the City of Seattle and Washington state. Planning for it began in 2018, and despite concerted and sustained work, it will not open its doors until almost a decade later, illustrating just how labor-intensive true university-community projects are. But getting it right is worth it, and lays the foundation for additional joint projects in the future (College of Education, 2025).

Another wonderful example of a UW program that exemplifies what it means to be generative in community engagement is our College of the Environment's Alaska Salmon Program in Bristol Bay, which I visited in the summer of 2024 (Alaska Salmon Program, n.d.). It has been operating there for over 70 years, since before Alaska was even a state. Like the Rainer Valley Early Learning Campus, it combines research, education, and community service. Besides tracking the salmon population, it is studying the bay's ecology to understand how this affects the number and health of the fish. This region is hugely important to keeping salmon populations healthy – in 2024, more than 50 million sockeye salmon returned to the rivers flowing into Bristol Bay.

What makes this program uniquely effective is its deep partnerships with the community. While there, I broke bread not only with students and faculty, but with members of local indigenous tribes, state legislators, heads of commercial fisheries, and community activists. They all told me how important this field station is to the economic and ecological health of the community. For example, the large-scale, longitudinal research studies they have conducted over decades were crucial in providing clear evidence that the Pebble Mine, an open-pit gold and copper mine that had been proposed, would alter this habitat that is critical to over half the world's sockeye salmon.

This research was not conducted with a specific policy purpose in mind. But, because it was done in a community-engaged manner, it was key to bringing together a variety of community leaders, like tribal elders and heads of commercial fisheries, seemingly odd partners, but both deeply invested in advocacy to keep the bay healthy for salmon. This type of continued and sustained partnership and advocacy undoubtedly played a determining role in blocking the initiative (Wild Salmon Center, 2025)

Research can make the biggest difference when it is embedded in communities where it can catalyze collective action, and community trust is key. Long-lasting, deeply engaged work that generates trust and true partnership is key to driving our research to impact.

In today's highly polarized environment, where social and traditional media can seem to act as a megaphone that rewards the loudest and most uncompromising voices, finding avenues for the expression and discussion of more nuanced positions and complex truths that can lead to common ground can feel almost impossible. Yet, success stories like these show that we can make a difference when we step outside our bubbles and put in the time and energy to listen to each other with open minds and open hearts. Who would have thought that heads of commercial fisheries, indigenous communities, and ecological scientists would be coming together? But more often than we realize, we can find common ground on critical issues when difficult conversations take place in an environment where trust already exists.

Universities, including our own, must do better in our engagements with the community if we want to build trust, not only in our institution, but in the

research that we conduct. Our failings are seldom due to bad intentions, but faculty, staff, and students too often take on community-engaged work without proper professional training and little in the way of institutional resources or guidance. Our institutional policies and processes can also be administratively burdensome to both our faculty and students and to our community partners. And too often, tenure and promotion criteria can create disincentives for engaging in such work. Indeed, pre-tenure faculty are routinely told they do such work at their own peril – something I heard repeatedly from my own colleagues, even as a faculty member in clinical and "community" psychology!

It is for all these reasons that we are partnering with a range of stakeholders across our three campuses and their surrounding communities, building upon lessons learned through our Population Health Initiative (Cauce et al., 2022) and the UW's underlying Impact Ecosystem model (Cauce, 2024) – the way we plan, structure, and enact work to promote the conditions where impact-oriented research, education, and engagement can thrive – to develop a comprehensive infrastructure to support and sustain authentic university-community engagement and public impact research. This project is developing infrastructure to better connect our faculty, students, and staff with partners they can collaborate with, and is also bringing together key players to:

- Develop a consortium model to support the broad range of current UW units that already have strong community-based partnerships. These include, but are not limited to, the Community Engagement and Leadership Education Center; Consulting and Business Development Center; Clean Energy Institute; EarthLab; Evans Policy Innovation Collaborative; Urban@UW; Institute for Health Metrics and Evaluation; Institute for Learning and Brain Sciences; Latino Center for Health; UW Bothell Office of Community-Based Learning and Research; and UW Tacoma Office of Community Partnerships. We have much to build on beyond the key examples I have elaborated on in this chapter.
- Incubate and operationalize key recommendations from the Carnegie Foundation's Community Engagement Elective Classification working group and the work of the APLU and The Pew Charitable Trusts (Hastings & Olneck-Brown, 2025), including sharing stories of community engagement; fostering stronger internal coordination to share work in progress and best practices; offering more explicit support in promotion and tenure criteria for community-engaged work; and aligning fiscal and administrative practices to support efficient and effective collaborations.
- Compiling and releasing community organization needs assessments to support units in different schools and colleges to align their educational and research programs with community-articulated needs.

Just as importantly, this project is working closely with campus and community partners to co-create a range of resources and tools that include, but are not limited to:

- Designing trainings and other programs specific to effective practices for community-based participatory research and related topics for students, faculty, and staff.
- Supporting immersive community-based internship, volunteer, practicum, capstone, and other opportunities for students and community members.
- Piloting resources for community partners, including operational support to develop necessary memorandums and agreements.
- Offering faculty support (FTE, buyouts) to develop and launch community-based educational and research projects.

While we secured funding for this infrastructure development, a key risk to launching this project as a permanent center – and one that would likely be top of mind for key community stakeholders – is the ability to sustain it beyond startup. Authentic community engagement requires long-term, bi-directional relationships, which can be difficult to develop and maintain in just three to four years, the typical length of a grant. As a result, we opted not to launch a permanent center unless resources were available to sustain it over the long run. Any such resourcing commitment will likely be made up of two major components: philanthropic support drawn from a to-be-created endowment, and an extension of existing central initiative operating funds from university administration. Such a center would likely also pursue grant funding to supplement these two components, but that funding would likely be for specific projects rather than core operating support.

NEXT STEPS: MOVING FORWARD TOGETHER

In this chapter, I have focused on the work we are doing within our university, but we are also involved in working together with a growing number of other universities, like those represented at the Glion Colloquium, who are also committed to building trust in our institutions and in our research through community-engaged public impact research. For example, we are collaborating with our Big Ten peer universities to highlight how we collectively make America healthier, safer, and more prosperous through a new advertisement that will air during sporting events (Huddleston, 2025). The Big Ten Deans of Public Policy are presently working to launch a network of public impact labs that create tools, trainings, and intellectual resources to accelerate civic innovation. I have been especially energized by my involvement as a member of The Pew Charitable Trusts' Presidents and Chancellors Council on Public Impact

Research, working on recommendations for how universities and the funding community can improve the way research informs and benefits communities. Their focus on working directly with presidents and chancellors on creating incentives for those engaged in the work, and on culture change and sustainability, is exactly what we need at this moment. A wonderful example is their work creating the Impact Funders Forum, where they are working with other foundations in support of research that will lead to real-world solutions and public engagement and impact (Olneck-Brown, 2024). They also co-sponsored a webinar on strengthening scientific partnerships in support of public well-being together with the Glion Colloquium, with speakers from across the globe (The Pew Charitable Trusts & Glion Colloquium, 2025) and had their Director of Scientific Advancement attend a portion of this year's meetings.

I have been known to joke that my background as an adolescent psychologist is the best preparation possible for the presidency of a university, but the truth is that I have relied much more on my training as a community psychologist. Almost all of my own research has been community-engaged, and I am keenly aware that creating real incentives for this work will not happen through a series of public relations campaigns or events, even if they are carried out over several years. Structural change will be required to rewire both internal and external incentives, including from funders. As is clear throughout the chapters in this volume, there are a range of ways in which to build trust and belief in the value of our universities, all of which are important. This will require multiple approaches and constant vigilance, assessment, and reflection. The work is not easy, and it will not always pay dividends in the short run. But the rewards and gratification that come in the long run are very real, for our institutions and for society at large.

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Chapter 5

Gaining the Trust of the Professionally Untrusting

Michael Spence

David Watson opens his book *The Question of Morale: Managing Happiness and Unhappiness in University Life* with a picture that, for many in university life, sums up the problem of trust:

> There is a comforting tale that vice-chancellors (VCs) of UK higher education institutions (HEIs) like to tell each other. 'Go around your university or college,' they say, 'and ask the first 10 people who you meet how their morale is. The response will always be "rock bottom". Then ask them what they are working on. The responses will be full of life, of optimism and of enthusiasm for the task in hand.' The moral of the story is that the two sets of responses don't compute; that the first is somehow unthinking and ideological, and the second unguarded and sincere (Watson, 2009, p. 1).

Brave would be the modern university president who quite so summarily dismissed this paradox, but few would be those who do not recognize it as at least quite widespread in their own institutions. The problem of trust in universities and, in particular, of trust in university leaders, seems as endemic as it did when Watson was writing in 2009 and, perhaps, as it has always been. This chapter argues that this problem of trust is the almost inevitable result of features of academic professional identity formation, of modern academic career preparation and structure, and of the broader social and political cultures in which many universities are currently operating. To this list, we all, as university leaders, can add fresh reasons of our own to be distrusted!

To some extent, therefore, Watson's paradox is almost irresolvable, and the problem of trust will always be with us. Mistrust is almost a badge of academic honor. I was greeted in my first meeting of the Academic Board in my current institution, before I had had a chance to make any mistakes of my own, with the words, "Welcome, Provost. You should know we have a history of getting rid of Provosts at UCL!"

But keeping in mind the sources of mistrust listed in the previous paragraph, I believe that it is possible to build confidence slowly in a university and its leadership. None of the strategies for doing so outlined in this chapter is anything other than the obvious, but it is careful attention to all of them as a whole that is crucial, and that is surprisingly lacking in many university contexts. My focus here will be on building trust amongst academic staff in a university. This is partly because I believe that it is amongst them that trust is most difficult to build; it is also because, in important ways, they tend to set the culture of trust or distrust in an institution as a whole.

THE PROBLEM

Four features of academic life arguably make trust more difficult than it might be in some other professional contexts. The first is that academics are steeped in what, to misuse the famous tag of Paul Ricoeur, we might call the hermeneutics of suspicion. So much academic work is built upon demonstrating the falsity, or at least the incompleteness, of previous claims to understanding. It is true that good work can apply existing insights, but originality is the quality most highly prized, and work that demonstrates the futility of existing approaches to a problem and strikes out in a wholly novel direction is often regarded as paradigmatic of academic excellence. The decisions of university leaders are often taken in contexts of impartial information and competing goals; they usually involve compromise, and they will rarely stand up to the forensic examination of academics used to dissecting claims for all their internal contradictions and inconsistencies. They will rarely survive the withering power of the hermeneutics of suspicion.

Second, this same paradigm of academic excellence paradoxically means that academics often have real confidence in their own ability to solve problems. Having demonstrated the difficulty with existing approaches to a problem, academic work strikes out to propose better solutions. Once a better solution is identified, academics will usually defend it with some vigor. Academic plaudits rarely go to the epistemically humble, to those who too easily admit that an approach that they have been advocating turns out to be simply wrong. More common is the person who admits that an existing approach needs modifying or has yet to yield the results for which they hope. Not unknown is the person who pursues a particular argument even beyond the point at which others find

it fruitful. Seen from the perspective of someone in a particular part of the university, from which the complexity and diversity of the institution as a whole, and the many different pressures under which it is operating, are both invisible, the problems with which university leaders grapple can seem straightforward to solve. And the hermeneutics of suspicion turned on the work of university leaders is rarely turned with such force on what an academic sees as the "obvious" solution to some problem of university administration.

Third, while universities are in many ways complex organizations with coordination and planning problems shared with other types of complex organizations, their organizational culture is somewhat distinctive. It is characteristically more *gemeinschaft* than *gesellschaft*. A university president may see themselves as the CEO of a multi-billion-dollar turnover organization (as may external members of their governing body, more accustomed to working in a commercial context), but their colleagues are far more likely to see them as something more akin to the elected chair of a workers' collective. The history of universities and self-governing communities of scholars, and the "republic of letters" ideal that describes so much of what an academic sees as highest in university life, means that positional authority structures are weak. Recognition of the positional responsibilities and insights, or even, where relevant, the expertise of university leaders, is rarely the starting point for an academic to whom the solution of a problem is "obvious", as it might be in some other types of workplace.

Finally, academic careers in most, though not all, disciplines are essentially solitary affairs. They are not solitary in the sense that they do not often involve working in teams, but they are solitary in the sense that success consists in being the principal investigator with the strongest reputation. This is partly because in a highly competitive environment, while the difference between good work and poor work might be well understood, the difference between good work and excellent work, or excellent work and outstanding work, is much more highly contested. Academics can become essentially sole traders in their own reputations, with promotion, grant success, and the ability to move from one institution to another that is more highly ranked, with all the additional resources and access to talent that can entail, often largely dependent on the strength of the individual researcher's reputation. Academic leaders tend to be invested in the success of their institution. Individual academics are much more invested in the development of their own reputation, for which the success of their institution is at best ancillary.

Of course, to some extent, this depiction of academic work and professional formation is both an unfair caricature and also somewhat similar to the work and formation of at least some other professionals. But if this caricature is even partly fair, it is clear why trust in the leadership of institutions is so difficult to build. Making decisions for institutions involved in a huge variety of types of activity (from the study of classical Greek to running farms, veterinary

hospitals, and large-scale scientific facilities), in academic communities that often see themselves as primarily accountable to their discipline rather than the institution, while those decisions are critiqued by large numbers of academics trained in the hermeneutics of suspicion, confident in their capacity to find solutions, paying little regard to a decision-maker's professional expertise or positional responsibility, and operating essentially as sole traders, is not a job for the faint-hearted.

Moreover, this problem of trust inherent in academic life is arguably exacerbated by certain features of the culture, at least of the Western liberal democracies. The general decline in trust in institutions in these countries is well documented, but one feature of university populations makes this particularly acute.

The UK charity More in Common describes its work as involving work in four priority countries, "on both short and longer term initiatives to address the underlying drivers of fracturing and polarization, and build more united, resilient and inclusive societies" (More in Common, 2022). In the UK, their analytical work is built around seven segments of the population based on clusters of attitudes to social issues. In February 2025, they released a report specifically focused on the segment that they call "progressive activists". This segment constitutes 8-10% of the UK population but is over-represented in the not-for-profit and public sectors. They are highly educated and well represented in university populations. One characteristic of this group is that they are extremely fixed in their views and intolerant of others who hold different perspectives. The report found:

> Progressive Activists have a tendency to require comprehensive ideological alignment in their campaigns. In fact, public opinion rarely aligns perfectly along fixed ideological lines. … Yet nearly half of Progressive Activists would be unwilling to campaign for a cause they believe in alongside a Conservative (More in Common, 2025, p. 16).

Amongst those who require comprehensive ideological alignment, trust is arguably even harder to build than it is amongst the population more generally. This is because, amongst such a group, there is little trust spillover, little trust credit, from the making of a decision that they strongly endorse, to the making of a decision that they find more problematic.

Another characteristic of this group is that they expect institutions, even businesses, to take a public stand on matters of social justice unconnected to their core business, and are supportive of disruptive workplace protest. For universities committed to the pluralism of a diversity of views on campus and to refraining from an institutional position on contested issues of public debate in a way that might chill free speech and academic freedom on campus, the

expectation that the university should take a public stand can be particularly difficult to handle. Often it will come indirectly in the guise of claims about how the university conducts its own business, such as policies concerning the management of a university's endowment, or the rules for letting rooms to outside groups. When combined with disruptive workplace protest, it can seem that a proportion of the university community is always dissatisfied with, indeed angry at, university leadership in ways that undermine the fabric of trust in the institution, even amongst others not a part of the progressive activist group, but perhaps sympathetic to their views on particular issues.

In this context, it might be thought unsurprising that votes of no confidence in academic leaders are a common feature of university life. It might be thought more surprising that trust can ever be built!

BUILDING TRUST

With all the caveats of the preceding section, I do think that it is possible to build trust between academic communities and their leadership.

In addressing these issues, we shall come to the issue of developing a culture of trust more generally, but we should start with the issue of trust in leadership capacity for the delivery of a particular change or project. This is because there is feedback between success in the delivery of particular projects and trust more generally. These four strategies for maintaining trust through a complex change project may seem elementary, but they are so often overlooked in practice that it is worth underlining them. These strategies are, incidentally, additional to an assumption of reasonably competent change implementation, a lack of which will undoubtedly undermine trust.

Trust and the Successful Change Project

The first strategy concerns the process for deciding on a particular change. It is absolutely essential that there is clarity about where in an institution such decisions are made and the scope of the change that is proposed. Given the nature of the university as a collective, it is essential that this decision-making process is as inclusive as possible, and this is sometimes at odds with the requirement that there is clarity about which individual or decision-making body takes responsibility for the final decision to proceed with a change and its scope. Too many universities, therefore, wander into change projects the origins and scope of which are unclear. Where a decision is made by a body such as a management committee or governing body, it is essential that there is a culture of collective responsibility. Nothing undermines trust as much as a practice (not uncommon in universities) in which members of a body that has made a difficult decision informally begin to eschew any responsibility for the decision of the body as

a whole. This requires ongoing work on the decision-making culture of management committees and governing bodies, and is at odds with the sole-trader mindset of many academics. As a part of clear structures for decision-making, it is also essential that accountability for implementation is clearly allocated to an individual or small group of individuals at the point at which the decision to proceed is made and that this accountability, and the scope of the change for which they are accountable, are widely known.

A second strategy involves a clear, management-jargon-free account of the purpose of any change, the benefits of which to the institution are evident. I think it is important that the benefits to the institution are stressed rather than claiming that the change will benefit every individual member of the university. Too many change projects promise a sunny upland in which "we" will all be better off, and nothing attracts more quickly than this the academic hermeneutics of suspicion. In most changes, there will be winners and losers; the important thing is that the institution as a whole is a winner. In line with this second strategy is a requirement that there are, from the outset, clear measures of what would count as success, whether this be improved student, teacher, or researcher satisfaction scores, cost savings, greater income, or something else altogether. In academic environments, project leaders often attempt to sell a vision of the benefits of change, while altogether resisting precise measures of success. This is because benefits are often extremely difficult to quantify *ex ante* and academic communities can pay enormous attention to questions of accuracy. But to refuse to do so, and to be seen as accountable for the delivery of particular benefits, undermines trust from the outset of a project.

A third strategy is related to this second one. This involves setting realistic expectations about the likely success of the project from the beginning. In large, complex institutions such as universities, no change project is ever completely successful. For some people, a change project will yield considerable improvements; on the work of others, it will have little effect; usually, there is a group for whom the change project will create real difficulties and whose situation will require particular attention once the change is in place. This is not often admitted by change teams at the outset of a project when they are in "sales mode" for the work that they are about to start. But failure to create realistic expectations sets such teams up for failure in a community that will be keen to use every story of difficulty in an individual case as "evidence" that the whole project is a "disaster", no matter how many people's situations it improves. It also robs people for whom the change has been difficult of the reassurance that their situation will be addressed. In low-trust environments, the person whose experience of the change is positive is unlikely to get a hearing (or, indeed, to be brave enough to speak up), while the person whose experience is less positive can become a cultural hero, typical of "everybody".

A fourth strategy is again related and again surprisingly often overlooked in university change processes. This is the strategy of celebrating success (within the limits of plausibility). Because of the noise around the negative case, university leaders often are tempted either to trumpet the successes of a change project in ways that sound hollow and triumphalist, or to put their heads down and to allow the narrative that the change has been a "disaster" to become embedded. Both of these approaches undermine trust, the one because it invokes cynicism and the other because it fails to recognize the hard work of those who have brought change and to demonstrate that a project is not a "disaster" in the way that some might claim.

Building a Culture of Trust

These four strategies in relation to change projects are important because the way in which change is planned and delivered is so important in building a culture of trust. Without them, it is too easy for a community to fall into narratives of leadership malevolence or incompetence, the former facilitated by a lack of clear project purpose and the latter by unclear expectations regarding what constitutes competent delivery.

If again we assume a basic competence in academic leadership, it is my firm conviction that building a culture of trust in an academic community is almost all about effective engagement and communication, about the conversation between university leadership and the university community. This is obviously true in all organizations, but it is particularly true in academic communities as places more *gemeinschaft* than *gesellschaft*.

On questions of engagement, communication, and the process of building trust, there are again four things that I think it is important to emphasize.

First, be really careful to remember that a university community is composed of many different audiences. The figure of the progressive activist described in the opening section of this chapter looms large in the imagination of every university president. And every university also has its "official opposition", the small group of people, sometimes involved in a staff trade union and sometimes not, who see it as their primary work to defend a vision of the university as an academic collective against the ravages of what they see as "corporate managerialism", a disease that they see as endemic to the modern university. The governance structures of an institution sometimes give this official opposition a particular kind of voice and even authority. It is really easy for university leaders, and even internal communications teams, to get into a communications and engagement bubble with the progressive activists and the official opposition and to forget the much broader internal audiences, both academic and professional staff and also student audiences, that make up the immediate university community (I put to one side the role of quasi-internal audiences such as alumni). This can create a posture of defensiveness in a university leadership that is inimical to

building trust. It is essential not only that the university leadership engages with as wide a variety of internal audiences as possible, but that it keeps them in mind when dealing even with those issues high on the agenda of a particular group.

Second, university leaders need to communicate both with honesty and with an authentic tone. An important first step is to be bravely open about diagnosing the problems that leadership is addressing. Many universities are concerned that exposing a difficulty in the life of an institution, a difficulty that is financial or cultural, for example, will negatively impact its reputation in the broader community. But the truth is that with a diffuse community of academics protected by the norms of academic freedom in their public criticism of their institution, and often having little loyalty to the university as such, it is impossible to hide its problems. Indeed, the uninformed version of any difficulty that academics are likely to share in the absence of clear information is likely to be much more colorful than the truth. Moreover, the broader public is usually far less interested than university leaders assume it to be. Clear, honest, evidence-backed articulations of a difficulty with which the university is grappling are an important vehicle for establishing trust (as are similarly clear, honest, and evidence-backed articulations of when and why attempts to address those issues have failed or only partially succeeded).

Another part of this attempt to establish an honest and authentic tone has to do with university leaders communicating in their own voice. In an academic community, academic leaders must sound like academics! The tone of their communications should be deliberative and, while clear, should never speak down to the university community. This is important because many academic leaders rely wholly on communications staff to write or script their various messages to the university community. Inevitably, communications produced in this way will be more corporate, neutral, and "safe". Mistrust in a university usually starts in the academic community, and academics have a very low tolerance for "spin" or for the sense that they are being addressed by a "manager". A university leader must sound in some ways like a peer to engender trust. Using a word that sends staff to a dictionary is not a problem in a university communication. Using a word that sounds like management jargon is fatal. This may seem at odds with the imperative to remember that a university leader has many audiences with which they must communicate, but I think all of them internal to a university expect, or at least give permission, for a university leader to sound academic.

Similarly, a university leader, while careful not to chill speech in an institution by opining about matters of public discussion, should not be shy of revealing their own passions in the life of the mind. It is valuable for a university leader to be seen as a human being and to have broader intellectual interests than just university business narrowly conceived. I know of one university president, a mathematician, who would regularly include math problems in

staff updates, a practice of which even the innumerate amongst the staff of the university were very fond. They had a strong sense of "knowing" him, though in practice, he was rather reclusive.

Third, as well as an attention to audience and the establishment of an honest and authentic tone, university leaders need to create multiple modalities for engagement with the university community. In the pressure of a job that is both externally and internally facing, opportunities for (particularly unstructured) internal engagement can easily be squeezed out. Some of the modalities that I use or have used include: weekly updates to our governing body on issues of the day and what I have been doing that end up being informally cascaded through the institution; regular departmental visits; open hours for staff and students; lunch or meetings with groups of staff chosen at random specifically to hear about their work and what is concerning them at the time; engagement through internal social media vehicles; formal town halls; regular all-staff and all-student messages about issues of the day from a more reflective standpoint; away days and overnights with extended leadership groups; being seen to respond to every email from anyone in the institution; video messages; and so many others. Even ensuring that you are regularly seen around campus in places where students and staff eat and drink can be important. At the University of Sydney, I discovered, to my great surprise shortly after arriving, that the fact I had opened the blinds to my office when former incumbents had kept them closed was taken to be of great cultural significance! The crucial thing is that opportunities for engagement with staff must be formal and informal, transactional, and also more reflective and general.

One crucial modality is to ensure that staff and students are hearing the important strategic messages of the university not just from the university leadership, but also from third parties. These third parties can be external. At the University of Sydney, staff could be suspicious of a positive message from the university leadership as just one more example of management spin, but if they read the same good news story about the university in *The Sydney Morning Herald* it would be taken as incontrovertible truth. The same is true, of course, for messaging through internal third parties. A town hall in which only academic leaders present a proposal will land poorly; a town hall in which the presentation is partly led by rank-and-file academic or professional staff will land much more effectively.

Perhaps the most important mechanism for building trust, however, has to do not so much with communication as with management style. I think it is crucial to build a leadership-team culture of genuine consultation, that welcomes pushback, that is capable of changing tack when a proposal or a project is poorly received and that demonstrates respect across the many layers of university hierarchy. This is not easy in a university environment in which the confidence of academics means that effective consultation is often seen as "doing what I

regard to be the obvious thing", when groups that regard themselves as the official opposition will be keen to represent the university changing position as a sign of "victory" or of leadership failure, and when university cultures, so egalitarian in theory, can often be extraordinarily hierarchical. It is also not easy when university leaders often stand between academic communities that value lengthy processes of engagement and regard the institution as a kind of cooperative, and external members of governing bodies who value "getting things done" and are wont to regard the institution as a kind of corporation. I once led a major strategic consultation process in which we publicly abandoned an important proposal to which it was known that I was very committed because it did not land well in the institution; significantly, it became much easier to get approval for many other potentially controversial proposals in the strategy because of the trust that being seen to have listened had engendered. But although not easy, building this kind of management culture is a *sine qua non* in building trust in universities. The most honest, authentic, and varied modes of communication and engagement will never build trust if they are all broadcast and unidirectional.

CONCLUSION

In various ways, I have suggested the necessity of an engaged and responsive leadership culture and honest and authentic communication in building trust within a university. That would sound simple were it not for the ways in which the professional formation of academics creates an impulse towards mistrust.

It would even sound more straightforward were it not the case that mistrust in university leadership is increasingly not only a feature of life inside, but also outside universities. This is partly because of the profile of the progressive activists in and around university communities. But governments concerned about the growing cost of education and research in environments in which research is increasingly expensive and a larger proportion of the population goes to university are also not averse to the casual criticism of university leaders. University presidents' salaries, their alleged failure to manage effectively the tensions on campus reflective of tensions in the broader community, their inability to ensure that the university provides everything from adequate mental health provision to effective guarantees of a ready-made career for all their graduates, in short the failure of the universities to deliver on many, often poorly defined, expectations beyond their traditional ones, makes for easy criticism by government and other commentators, both on the right and on the left. And that, in turn, exacerbates the problem of trust within the university.

This challenge of leading in a low-trust environment both inside and outside the university might almost make the rational university leader despair and look for a better job elsewhere! But, in my own case, if ever I come close to that point,

I visit a department and hear the excitement of a young researcher as they talk about their work (that infectious excitement about which David Watson writes), or I preside at a graduation and see the pride not only of graduates but of whole families, and I am convinced that I have just about the best job in the world.

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Chapter 6

Reconnecting Knowledge and Society: The University's Role in Polarized Times

Philipp Langer & Anna Fontcuberta i Morral

INTRODUCTION

Trust within and towards Science

As Hendriks et al. (2016) point out, trust is of fundamental importance for science: trust is pivotal in *doing* science and in the scientific community. As scientists, we trust our colleagues' hypotheses and results, we understand the scientific process and tools, and we can use them to verify their statements. The same authors assert:

> [T]rust is also fundamental for the *public understanding* of science. Laypeople depend on the knowledge of scientific experts when developing a personal stance on science-based issues and arriving at decisions about them. Laypeople only possess a bounded understanding of science, but nowadays they are able to rapidly access all kinds of scientific knowledge online. To deal with scientific information, laypeople have to trust in scientists and their findings (Hendriks et al., 2016).

In this contribution, we focus on the second aspect of trust in science, which is particularly relevant in current times.

The scientific method begins with identifying a question, followed by formulating a hypothesis that can be tested through experimentation. It is an active and iterative process, where any hypothesis may be disproven by future evidence. In other words, a theory accepted as true today may be proven incorrect tomorrow. The very nature of science lies in the effort to construct a complete understanding of a given phenomenon or question by assembling countless individual pieces – like puzzle fragments or pixels – that together form a coherent picture. As scientists, we discover one piece at a time, examine it from all angles, and engage in ongoing debate to determine how it best fits within the broader framework – often without immediately recognizing its correct placement.

The complexity and nuance of this process can be difficult to grasp from outside the scientific community. This is especially true in polarized segments of society, where truth is often viewed in stark black-and-white terms. Such perspectives can significantly influence how the public perceives and trusts science.

SCIENCE QUESTIONS ARE UBIQUITOUS

As citizens, we are increasingly confronted with science and technology-related questions in our daily lives. People commonly ask: "What are the effects of smartphone and tablet use on my children?" or "Are vaccines safe?" Some questions have even broader societal implications, for example: "What type of energy source – hydroelectric, solar, or nuclear – offers the safest future?" In response, engaged citizens seek to understand the underlying scientific and technical reasoning behind these important issues.

The growing complexity of scientific knowledge and technology presents a significant barrier for the non-specialist public (Bromme & Goldman, 2014). Scientific advances increasingly rely not on straightforward observations, but on complex demonstrations involving mathematical models, highly indirect analytical techniques, computer simulations, or a combination of these. Even individual scientists now depend more and more on transdisciplinary collaboration. As a result, the gap between science and public understanding continues to widen. In the absence of intuitive understanding, trust becomes even more essential.

TRUST IN SCIENTISTS IS GENERALLY HIGH

The good news so far is that there appears to be no fundamental issue regarding trust in scientists. The key question is how we ensure this personal trust is maintained, along with systemic trust in universities. These institutions play a key role in fostering the creation of knowledge and its transmission to society. Trust in scientists is confirmed by a large-scale survey study published in 2025 in *Nature Human Behaviour* that examined public trust in scientists across 68

countries and found that "in most countries, most people trust scientists". What is more, most people surveyed stated that "scientists should engage more in society and policymaking" (Cologna et al., 2025). The authors found interesting variations between and within countries, which they explain with individual- and country-level variables. They also indicate how the political orientation of the country may play a role.

The Covid-19 pandemic provides a compelling example for reflection. While scientists played a crucial role in alerting the public to health risks and offering multiple solutions to prevent transmission, some groups chose not to trust the information provided. In addition, this resulted in a decrease in the trust of science in those groups until today (Tyson & Kennedy, 2024). In this context, certain authors go as far as to consider trust in science as a public collective good (Slater & Schofield, 2022). The questions that arise are: What could scientists have done differently to build greater trust with the general public? How can we sustainably preserve this collective good?

UNIVERSITIES AS CRADLES OF KNOWLEDGE

In Europe, the emergence of medieval universities such as Bologna (1088), Paris (c. 1150), and Oxford (c. 1096) marked the formalization of higher education (Pedersen, 1998). Following their first establishment in the eleventh and twelfth centuries, universities became the principal institutions for advanced study, particularly in the fields of theology, law, medicine, and arts (de Ridder-Symoens, 1991). From these onsets, universities have developed into centers for both the discovery and dissemination of knowledge. Their existence has contributed to society's stability as well as the cultural and scientific development of the regions in which they are implanted.

This is, however, not always the population's perception. In periods of political, cultural, or economic upheaval, universities often become focal points of public scrutiny, facing accusations of elitism and ideological bias. The discrediting of these institutions often includes accusations of detachment from societal concerns (Hahn, 2019) – the well-known phenomenon of the so-called "ivory tower" (Shapin, 2012). These developments are particularly well illustrated by recent developments in the United States. As Kristin Van Dorn puts it:

> Colleges and universities in the United States have always been at the forefront of political dialogue in society. In times of political and cultural upheaval in the country, they are institutions that come under fire for being politically biased toward liberal ideology. Despite the best efforts of university leaders to dismiss these claims, such perceptions are real, having resulted in growing distrust in the academy (Van Dorn, 2020).

This highlights the growing responsibility of universities to communicate their impact on society and the world, in order to build and sustain public trust. This can be achieved through various means, including outreach activities, public dialogue, and offering guidance to political authorities and public institutions.

Happily, reality looks somewhat brighter than the myth, as illustrated in the following UK example. In 2011, the largest survey till then in the world to cover academic involvement with external organizations (Hughes & Kitson, 2012; University of Cambridge, 2011) exploded some of the myths surrounding the alleged ivory-tower isolation of university academics to reveal the wide, but often hidden, impact of universities outside of academia. It also showed the way in which universities can act as a "public space" within which a variety of initially informal interactions can develop into a broad spectrum of fruitful interactions with the public, private, and third sectors.

COMMUNICATION OF SCIENTIFIC KNOWLEDGE

Communication with Political Authorities

A structured approach to communicating scientific knowledge to policy-makers is often facilitated through dedicated advisory bodies and science-society initiatives. Such entities can play an important role in ensuring that policy decisions are informed by robust scientific evidence.

In the *European Union*, the European Commission's Scientific Advice Mechanism (SAM) was set up in 2015 and is designed to provide independent scientific evidence and policy recommendations to European institutions (Scientific Advice Mechanism, 2025a). It comprises the *Group of Chief Scientific Advisors* (eminent scientists who formulate policy recommendations), *SAPEA* (the Science Advice for Policy by European Academies consortium bringing together Europe's academies and academy networks) and a secretariat (Scientific Advice Mechanism, 2025b).

In *Switzerland*, the Swiss Science Council (SSC) serves as a permanent extra-parliamentary commission advising the Swiss Confederation on issues related to science, higher education, research, and innovation policy. It was founded by the Federal Council in 1965 and provides specific expertise, which the federal authorities and other stakeholders can call upon (Swiss Science Council, n.d.).

At the end of 2022 and as a result of the Covid-19 pandemic, several parliamentary initiatives, such as the postulates by Matthias Michel (2020) and Jacqueline de Quattro (2020), led to the request for a more institutionalized exchange between scientists and political institutions. The Swiss government thus decided to activate scientific expertise during crises through the creation of ad

hoc advisory groups and to define corresponding processes (Federal Chancellery, n.d.). At the end of 2023, the government adopted an implementation proposal and signed a cooperation agreement for the creation of ad hoc scientific advisory groups – the Swiss National Science Advice Network – during crises (Federal Council, 2023). Switzerland's institutions in the education, research, and innovation domains jointly propose experts for the groups. Together with the Swiss government, they have drawn up a Code of Practice for its participants that perfectly summarizes the principles of science-based policy advice:

1. Science-based policy advice plays a different role from other forms of policy consultancy. It is expected to follow best scientific practice, be non-partisan, evidence-based and independent and to be given without financial compensation for the experts involved.
2. Science-based policy advice can be given in different formats and settings, including formal hearings, meetings of mandated advisory councils and informal exchanges with policymakers.
3. Policymaking must consider aspects other than just scientific information, in particular societal values and interests. Scientific evidence alone is never sufficient for decision-making.
4. An engaged and open dialogue between policymakers and experts based on trust, mutual interest and understanding is the foundation for good science-based policy advice. The commitment of both sides not to interfere in each other's tasks is key: experts may expect their scientific work and advisory activities to be free of political influence, and policymakers may expect scientific advisors to stay out of policy decision-making.
5. Good science-based policy advice typically requires not only expertise in a particular discipline, but also interdisciplinary perspectives, so that policymakers have as comprehensive a view of the situation as possible.
6. Scientific expertise made available to policymakers should also be explained to the public as clearly and transparently as possible. Therefore, scientific advisory bodies need clear guidance on how to communicate with the public (swissuniversities et al., 2023).

The idea of this network is that in the run-up to a crisis, scientific organizations form clusters for certain crisis-relevant topics so that experts can be recruited more quickly. The Swiss government proposes topics for each year that seem of particular relevance (Federal Chancellery, n.d.).

Communication and Dialogue with Society

As science plays an increasingly central role in our lives, and is largely funded by taxpayers, it becomes ever more important for society to be informed about

scientific findings and their implications for everyday life. Traditionally, the responsibility for communicating science to the public and public institutions has not rested solely with universities. This role has often been carried out through various initiatives led by academies of arts and sciences.

In *Switzerland*, the Swiss Academies of Arts and Sciences serve as a central hub for science communication, hosting, inter alia, *Science et Cité*, a non-profit foundation that promotes dialogue between science and society with low-threshold and innovative projects. In 2021, an expert group set up by the Swiss Academies of Arts and Sciences assessed the state of science communication in Switzerland in a thorough report covering a wide range of facets of science communication and public engagement in Switzerland. It found, amongst other things, that the Swiss population perceives science positively, trust in science and scientists in Switzerland is high and seems stable over time, and the Swiss population expects scientists to communicate to the public (Schäfer et al., 2021). Other initiatives also exist, such as the Geneva Science and Diplomacy Anticipator (GESDA), a "think-tank and do-tank" that has given itself the mission of anticipating emerging scientific discoveries and translating them into concrete actions for the benefit of society (GESDA, 2020).

THE ROLES OF UNIVERSITIES AND RESEARCH CENTERS

The Example of CERN

CERN offers a compelling example of how scientific outreach can be made both captivating and accessible to the broader public. Through initiatives such as the Science Gateway (CERN, 2025a), the artist-in-residence program (CERN, 2025b), public visits, and activities like IdeaSquare (CERN, 2022), our colleagues at CERN demonstrate a remarkable talent for explaining fundamental research and sharing their enthusiasm for it. This is especially impressive given that few topics are harder to link to immediate societal impact than the origin of the universe.

The Case of EPFL

Interdisciplinary work with the potential to attract non-academic audiences as well (D'Este & Robinson-García, 2023) is particularly associated with Switzerland's Federal Institute of Technology in Lausanne *(École Polytechnique Fédérale de Lausanne – EPFL)*. In Switzerland's education, research, and innovation system, the two Federal Institutes of Technology (ETH Zurich and EPFL) have a particular position in the sense that they not only depend directly on the Swiss Confederation – unlike the other universities that are managed by the regions (the cantons) – but also their activities cover a particularly large section of the innovation chain, including: (i) the teaching of both basic and

applied scientific/technological branches; (ii) cutting-edge fundamental as well as applied research; and (iii) innovation in the form of direct cooperation with industry as well as spin-off and startup creation. Beyond creating new knowledge and innovation showcased in scientific journals and patenting, Switzerland's Federal Institutes of Technology are ideally placed to communicate science and technology from the most basic research to the newest innovations in an accessible manner. At EPFL, we see it as our duty as a publicly funded institution to proactively and systematically contribute knowledge and understanding to society and thereby give a return on the investment society makes in us. Rather than waiting for a "pull" from journalists, the wider public, or decision-makers for scientific advice on ad hoc topics, we adhere to a "push" model, by building activities and structures that have the potential to enhance public understanding of the work carried out within universities, their role, and their societal impact, thereby contributing to long-term trust.

Dedicated Structures at EPFL

Structures at EPFL that have the precise goal of breaking down the boundaries between education, research, innovation, and industry, and spur output to society, have a tradition: as early as 1991, the *Science Park Foundation* opened on EPFL's campus, with the then groundbreaking vision of creating a research park that would foster innovation and technology transfer by bringing startups and companies close to the university campus, its researchers, and its students. Today, the resulting *EPFL Innovation Park* is a vibrant deep tech hub at the core of the EPFL campus, with 2,837 entrepreneurs, engineers, technicians, and support staff, and 500 companies in the park benefiting from the osmosis of ideas generated by the proximity of over 500 EPFL laboratories and research centers (EPFL Innovation Park, n.d.). The success story of the EPFL Innovation Park illustrates the added value of EPFL to industry and society at large, and also to a wider audience.

In 2002, EPFL restructured and replaced its departments with large *schools*, precisely to facilitate cross-disciplinary collaboration. The resulting structure allows the tackling of topics focused on societal challenges much better than the former, siloed thematic department.

With the same logic, that is, with a focus on serving society rather than on its own internal structures, EPFL co-created, together with other universities and universities of applied sciences across French-speaking Switzerland, *campuses* that help address specific societal challenges. In 2009, the *Microcity* campus opened in Neuchâtel, focusing on microengineering, microtechnology, and nanotechnology. In 2014, the campus EPFL Valais Wallis opened in Sion, addressing energy and environmental questions as part of the *Energypolis* project to create a national hub in sustainable energy transition. Also in 2014, the EPFL Fribourg campus opened in the *Smart Living Lab*, contributing to challenges of

sustainable construction and energy systems. Finally, in 2015, EPFL was part of a joint effort to open *Campus Biotech* in Geneva, which addresses pathologies such as disorders of brain function, neurological disorders following trauma or vascular accidents, epidemiological threats, and nutritional behaviors. These efforts combine the expertise from different actors to find solutions to societal problems. Both the topics and the regional approach make the work accessible to a broader population, and the local anchoring allows ownership from the concerned regions and contributes to a better understanding (and thus, hopefully, to more trust).

On its main site, EPFL invested in the *SwissTech Convention Center*, a highly flexible and scalable state-of-the-art building and the first fully automated convention center, to serve the outreach of academic knowledge during congresses, events, and conferences to scholars and a wider public.

On the level of governance structure, as of January 2025, EPFL has reorganized its vice-presidencies with a view to building bridges to society at large. Along this vein, EPFL has transformed the former Vice-Presidency for Innovation into the new *Vice-Presidency for Innovation and Impact*, in order to emphasize the importance of the impact of our actions on society and the return to the taxpayer. Parallel to this, we created the *Vice-Presidency for Support to Strategic Initiatives*, which helps turn the EPFL community's ambitious ideas into concrete initiatives aimed at resolving modern-day challenges.

These structures serve EPFL's long-term efforts to convey knowledge and relevant information more directly to society at large.

Examples of Activities at EPFL

The abovementioned structures are filled with a myriad of activities that help span the gap between science and society. Here, we provide a non-exhaustive subset of some activities of particular relevance to the topic under consideration.

Linked to EPFL's commitment to expand STEM (Science, Technology, Engineering, and Mathematics) education and engagement across society, EPFL implements a comprehensive strategy to inspire young people, support educators, and foster a scientifically literate public through its *Education and Science Outreach Departments* (EPFL, 2025a). For primary and secondary school classes, we offer a range of activities linked to subjects taught in school in order to introduce schoolchildren to EPFL and the fields of science and engineering. For schoolchildren aged 7-16, EPFL holds numerous extracurricular activities on its campus and in other Swiss cities. One such activity is guided science walks for families with children. For young people aged over 16, we offer the *EPFL participatory science* projects, where citizens of any background can get involved in topical environmental issues, discover field and laboratory methods, and meet and interact with EPFL researchers. With a focus on the results (rather than on EPFL as an institution), EPFL runs joint initiatives with other outreach

programs and works closely with a number of foundations to promote STEM subjects, encourage talented young students, and educate the next generation.

For adults, EPFL holds a variety of *public science events* to render science and its latest discoveries and developments accessible to the public (EPFL, 2025b). EPFL aims to make scientific knowledge accessible to a wide audience by presenting it in an understandable way. One example is the so-called *Scientastic* fairs that take place regularly at the different EPFL campuses and allow non-specialists to discover the science and technology work carried out at EPFL, meet the scientists and researchers who are inventing the world of tomorrow, and learn about the impact of science and technology on our daily lives.

Alongside these activities that aim to spark an interest in and understanding of science and technology in society, EPFL also offers continued education for professionals through its *Extension School*. Transforming cutting-edge research into practical skills, EPFL's programmes equip participants with the expertise needed to stay ahead in a rapidly evolving world. The courses are industry-driven and allow people to learn from internationally renowned professors and to upskill their knowledge at the scientific forefront. In this way, numerous possibilities for reskilling and upskilling in a wide array of technology and science-related fields (including the management of science) are offered.

In that same direction of outreach to a wider public, EPFL provides a vast offer of MOOCs (massive open online courses) for undergraduates, Bachelor's, Master's, and postgraduate students, as well as for the general public, to the point that EPFL has become a leading institution in the production of MOOCs in Europe (EPFL, 2025c).

Dedicated Initiatives for Societal Engagement

To move from simply "communicating science" to "fully engaging with society", EPFL has engaged in several specific activities and endeavors.

Created in 2012 as a program and established as a centre in 2018, EPFL's *EssentialTech Centre* aims to harness science and technology to drive sustainable development, support humanitarian action, and foster peace. To do so, EssentialTech brings together science and technology researchers, students, and academics on the one hand, and international organizations, NGOs, state actors, philanthropists, and foundations on the other, to try to address the challenges of extreme vulnerability, which means people living in extreme poverty, in humanitarian crises, or situations of conflicts and violence. The accelerating impacts of climate change exacerbate these vulnerability factors (EPFL EssentialTech Centre, 2025a). As Klaus Schönenberger, EssentialTech's Director, puts it: "it isn't just about throwing technology at problems. We need to start by properly understanding the problems, which are part of complex systems and require multidisciplinary approaches. To make this work concretely, the centre has developed a methodology which aims to generate

a large-scale impact on society" (EPFL EssentialTech Centre, 2025b). As an example, EssentialTech addressed the problem that two-thirds of humanity does not have access to medical diagnostic imaging. Together with EPFL labs and partners in Switzerland and Africa, it has completely redesigned an X-ray solution adapted to the context of low-income countries. The initiative has led to the creation of a startup company, which has started deploying in sub-Saharan Africa. Another example is the collaboration called *Engineering Humanitarian Action*, which EssentialTech launched together with EPFL, ETH Zurich, and the International Committee of the Red Cross, and which has enabled the launch of a dozen impactful projects, including the *Agilis Prosthetic Foot*, a robust, low-cost foot prosthesis that costs 40 times less than existing solutions. Using its methodology, EssentialTech has also developed a practical framework for peace to better integrate professionals from technical disciplines into the field of PeaceTech (Maqueda López et al., 2024).

In 2018, EPFL launched the *Centre for Digital Trust (C4DT)*, a multidisciplinary initiative aimed at enhancing trust in digital technologies through research, innovation, and collaboration. Especially in the current time, where the edification of digital trust is challenged, this academic-industry alliance of international relevance brings together 15 industry partners, 43 EPFL laboratories, civil society, and policy actors to collaborate, share insights, and gain early access to trust-building technologies, building on state-of-the-art research at EPFL and beyond (EPFL Center for Digital Trust, 2021).

In 2019, EPFL co-founded, together with IMD (International Institute for Management Development) and the University of Lausanne, the *Enterprise for Society Center (E4S)*. Its mission is to inspire and activate the transition to a resilient and inclusive economy, seizing the opportunities and addressing the challenges raised by scientific and technological change (Enterprise for Society Center, 2025). The center is a laboratory where its founding institutions jointly explore new ways of fulfilling their missions, previewing and experimenting with new developments in training, research, and outreach, with a view to its values: scientific excellence, transdisciplinary dialogue, focus on major societal challenges, and proximity to public debate. This is also illustrated by the yearly *Showcase event*, E4S's impact innovation summit that gathers an ecosystem of changemakers, from academia, businesses, startups, investors, large organizations, NGOs, policy-makers, and civil society, to engage in a collaborative, action-driven, multi-stakeholder platform to build a net-positive planet. The 2025 edition is planned for September 2025 at the SwissTech Convention Center, with the topic "Innovating for the Wellbeing of Humans and Ecosystems".

Launched in 2021, the *Excellence in Africa (EXAF)* initiative is a collaborative 10-year project between EPFL and the Mohammed VI Polytechnic University (UM6P) in Morocco, which aims to foster scientific and technological

excellence across the African continent by promoting research, education, and innovation, particularly through digital transformation (EPFL, 2025d). Among the various activities, the *African Cities Lab* illustrates one type of project, with the overall objective to create an African digital education platform on urban development, offering quality MOOCs and online continuing education training for professionals (EPFL, 2025e).

As another example, EPFL appointed in 2022 a *Chair of Policy & Sustainability (PASU)*, who teaches courses such as *Technology, Sustainability and Public Policy* and conducts applied and theoretical research on the economics and politics of sustainable development, as well as the policies to achieve it. The group is particularly active in areas such as clean energy transition, energy access and economic development, climate policy, and environmental inequality, and often works in partnership with civil society, policy-makers, and industry to generate rigorous and relevant research (EPFL, 2025f).

Although positioned at the interface between science and society, all our initiatives at EPFL share a common focus: contributing to key topics through the technological lens that defines a technical university. In other words, our aim is to offer expertise at the technical level, while refraining from prescribing what society should do.

TRUST IN INSTITUTIONS IS TRUST IN ITS REPRESENTATIVES

In this last part, we would like to focus on another aspect of trust, namely the fact that it is, at its origin, a fundamentally *interpersonal* sentiment.

Scientific literature on the subject divides *trust* (a concept of high-level abstraction) into two subtypes of lower-level abstraction: (i) *interpersonal* trust (a horizontal, emotional bond between individuals), and (ii) *institutional* trust (a vertical bond between citizens and "power holders", which pertains to confidence in systems or organizations). We have so far concentrated on the second type – institutional trust.

Although rarely examined together, the two subtypes are not independent (Campos-Castillo et al., 2016). The findings of a study (Domański & Pokropek, 2021) using data from the European Social Survey for 27 countries make clear that individual trust is inseparable from institutional trust (examined in relation to core institutions of the state). In the same vein, a recent set of studies (Spadaro et al., 2020) show that when institutions are trusted, they increase feelings of security, and therefore promote interpersonal trust even among persons that do not know each other – who knows, perhaps this contributes to Switzerland's culture? Interpersonal and institutional trust were even examined among university faculty (Gratz & Looney, 2025), with results showing significant relationships between faculty trust in colleagues and faculty trust in deans,

between faculty trust in colleagues and institutional trust, and between faculty trust in deans and institutional trust. Faculty trust in colleagues and deans was determined to be a predictor of institutional trust. On a side note, and perhaps of interest to the colleagues contributing to this book, faculty rank was a higher predictor, indicating that faculty with higher rank reported less trust.

In the somewhat particular setting we examine here – the trust of *society at large* towards *universities as institutions* – there is unfortunately limited research and empirical understanding, according to a systematic review of empirical studies that focus on trust in higher education institutions (Law & Le, 2023).

Our personal belief in this situation is that *trust in universities as institutions* can build up only when their *representatives* are perceived as trustworthy. Therefore, appointing individuals of integrity – be it at PhD student or post-doc level, and especially professors, management staff, and at directorate level – is just as essential as striving for excellence and developing effective structures for communication. It will be these representatives who appear in the media during reports on a scientific finding, or who give explanations on a topic of interest to political commissions. It is a convenient shortcut of our brain to associate a professor's statements with their institution, blurring personal and institutional opinions.

CONCLUSION

We have explored ways in which universities can engage with society – by better explaining their activities, addressing societal needs, and thereby fostering public trust. This chapter provides a perspective within the broader field of trust in research – a domain that is also studied across disciplines, including sociology, psychology, philosophy, economics, management, organizational science, and systems science.

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Chapter 7

Truth and Trust in an Ever-Changing AI Landscape: Humanity's Use of Tools

Alessandro Curioni

AN INTRODUCTION TO AI

Artificial intelligence has been a growing force in technology over several decades. It can provide us with increased productivity due to its capability to identify patterns, and it can also *improve accuracy by reducing human error*. With its strong ability to learn, reason, and predict outcomes in a variety of domains – from healthcare to climate change – it is a powerful tool that can help us solve the world's most pressing challenges.

Despite AI's tremendous potential to benefit society, its *development and deployment* should be handled with care. Models operating in a black-box manner – those withholding access to training data and methods – do not allow the user to *understand the logic and rationale* behind their outputs, forcing them to either blindly trust the tool or neglect it entirely. This has particularly strong consequences within the fields of science and research – disciplines known for their transparent methods to distill truth – as well as for the trust placed in the scientific community to disprove deprecated facts. The very use of the scientific method can be severely affected by the widespread employment of opaque AI models.

The role embodied by universities in their pursuit of truth will therefore have to change dramatically – not merely to accommodate AI, but to place it center

stage in their teachings and research efforts. Ethical considerations should be *foundational in AI deployment*, together with transparency and accountability. Whenever possible, the provenance of training data, model architectures, and evaluation methods should be openly disclosed, so that external experts have the opportunity to not only audit but also improve upon the work.

AI brings forth tremendous potential for humanity. However – as with any other tool at our disposal – its impact will be shaped by how we choose to engage with it.

WHAT MAKES A GOOD TOOL?

The knife is one of the oldest, most pivotal instruments in human history. In our kitchens, it plays a valuable role. In operating rooms, it can save lives. But if used in the wrong context, it can bring great harm. Much like AI, it is not the knife itself that determines the outcome, but the intentions and decisions we embed in its use. Our most powerful tools tend to be double-edged swords, holding great promise for both usefulness and danger. While the positive aspects of knife use are undeniable, there are also many rules in place to avoid wrongdoing – for example, one cannot carry a knife to a concert or bring it onto a flight. Therefore, the knife is neither a good nor a bad instrument – it is simply one that should be used according to certain guidelines to meet specific societal needs.

In the same way that parents teach their children how to safely use a knife, or surgeons are trained to operate on patients, society must be instructed to use AI in an ethical, critical manner. We must learn *the positive and negative ways* of engaging with this impactful technology, and legislation must be in place to steer us in the right direction. We have successfully defined frameworks for the use of powerful tools in the past, and we can and should continue to do so moving forward. The question is no longer whether we should use AI, but rather how we will shape its use to maximize its benefits and minimize potential harm.

HOW AI IS CHANGING THE WORLD

An Evolving Tech Landscape

We are currently witnessing an undeniable shift in the AI ecosystem. The release of ChatGPT in late 2022 has completely transformed the way we use technology. It has also quickly prompted global concerns regarding trust and transparency. With companies like OpenAI, Microsoft, or Google refusing to disclose both the data and methods used to train their models (Xu & Mustafaraj, 2024; Buick, 2025), many questions arose regarding the safety and fairness of such systems. This lack of transparency contributed to the announcement of the AI

Alliance at the end of 2023. The organization, co-founded by IBM, promotes safe and responsible AI development, and places a strong focus on open-source models. Openness became more than a mere licensing decision – it *evolved into* a duty to develop technology responsibly, embedding model cards, data cards, and continuous red-teaming from day one. Collaboration is at the forefront of this movement, democratizing access to high-quality, cutting-edge AI tools that provide truthful outputs and can be used safely.

Since then, the AI ecosystem has changed significantly. There is now less focus on large, general-purpose models, and more specialized ones are quickly gaining traction. As large language models move into critical infrastructure, it has become central to ensure that their outputs are auditable, reproducible, and compliant with legal standards. Regulators are being pressured to demand more transparency around AI tools, and initial governmental concerns have *grown into* comprehensive international safety frameworks. By 2030, trustworthy AI may carry certification badges akin to CE or UL marks, indicating that a system has been vetted for provenance, bias, and robustness (Brogle et al., 2025; Ferrario, 2024). To tailor the technology to ever-changing use cases, we are also witnessing a rise in agentic AI development – systems that have become the foundation of decision-making for an increasing fraction of the population.

Agentic AI consists of systems that act autonomously to achieve specific goals. This contrasts with traditional AI, which is confined to fixed tasks within well-defined parameters. AI agents can make decisions without real-time human intervention – something that requires a deep understanding of context and environment to ensure successful action – and their outputs can heavily influence the performance of other AI agents. The moral ramifications of such systems are clear, highlighting an urgent need for both ethical deployment and robust oversight.

We are witnessing a severe fracture in the AI sector. Key players are moving in very different directions, with some choosing to keep their data and methods private despite the unmistakable need for transparency. Our initial aspiration to build AI tools that provide us with informational or entertaining content has evolved into a reliance on AI-based agents to make fundamental decisions in our daily lives.

But can we blindly trust their automated responses? Can exploratory outputs be clearly distinguished from validated scientific findings? And how can we define truth in a future infused with AI-generated data, *where machine-made decisions increasingly escape human understanding* or scrutiny?

The Shift in Data and Intellectual Property

Enterprise data is highly valuable as input to train and fine-tune AI models. Since machine learning (ML) and deep learning (DL) models learn patterns from data, enterprises have a lot to gain by injecting data from their own

customer interactions, market trends, or regular operations into a model. Data that is highly representative of a market segment will therefore produce a model tailored to that industry's needs, leading to valuable insights and predictions.

However, such training processes can have a large impact on the data value chain as we know it. Once the knowledge derived from a dataset has been embedded into a model, the data itself might become irrelevant, since the model is able to retain the data's implicit value. This brings forth the need for *robust data lineage tracking* – the ability to trace data from its origin as it is reshaped through the AI pipeline. Since the credibility of an AI model relies heavily on the quality of the data it was trained on, monitoring data lineage becomes essential.

The very meaning of intellectual property might be at stake. Integrating proprietary enterprise data into a model can provide a substantial competitive advantage, but guidelines must be in place for a model to integrate proprietary ideas without undermining the corresponding rights. A careful balance is needed to ensure data ownership is respected while maximizing the benefits that enterprise information can bring.

In addition, distinguishing AI-generated data from human-generated data is becoming increasingly challenging. As AI models grow in complexity, the content they produce mirrors human-generated material more closely. A solution is to create *metadata standards* – labels indicating whether the content was human- or AI-generated. Detection tools are also emerging to identify characteristics of AI-generated material. As this distinction becomes harder and the line increasingly blurred, embedding transparency and accountability into AI models becomes essential – only then can we ensure clarity about how and why a specific output was provided.

As enterprise data shifts from fuel to foundation, our notion of data property – and the way we value data-derived knowledge – will be challenged. New frameworks must ensure ownership of classified information. Transparent data pipelines, exhaustive documentation, and permissive licenses to govern content distribution – such as Apache 2.0 or CC BY-SA – are becoming standard, and Granite's 2.7 PB corpus is IBM's own example of such a framework. So-called "glassbox" datasets – with comprehensive documentation of data sources, collection methods, or preprocessing steps – are also becoming increasingly popular. Examples include OpenAlex, an open directory of academic papers, and LAION, which responsibly built its large image dataset by documenting every step of the collection process.

PROACTIVE PATHWAYS TO TRUSTWORTHY AI: THE CHANGING ROLE OF ACADEMIA

Universities have served as important centers of knowledge creation and dissemination for centuries, and they have played a central role in the development of AI itself. Now, as AI-generated content becomes increasingly prevalent, academia must redefine its responsibilities and adapt to shifting expectations to remain relevant.

Many AI agents operate in an opaque manner, lacking clarity and credibility – something already influencing science and research. Not only can AI models reduce transparency, accountability, and reproducibility – key pillars of the scientific method – but they can also introduce bias. When developing theories and observing causal links in data, we may no longer be able to ask "why", as results may be generated without an underlying rationale or sufficient scrutiny. In addition, if the most widely used AI tools remain controlled by private companies, the balance between public and private research could shift significantly.

Universities will therefore need to drastically redefine their roles. Higher education institutions must place AI front and center in their teaching and research. The focus should not only be on how to best use these tools, but also on deeply understanding their foundations. Students across disciplines should learn model logic, limitations, algorithm design, data processing, and training methods. *Critical-thinking curricula should expand to include prompt engineering and model debugging labs*. Students must not be passive users of AI, but trained interrogators of it: verifying citations, testing reliability, and understanding limitations before relying on outputs.

Peer review must evolve in tandem. Reviewers should be able to execute submitted code, inspect data cards, and interrogate model weights. Text-only manuscripts should remain available for clarity, but they must be complemented by reproducible notebooks, version-controlled datasets, and signed model artifacts. Journals and conferences could pilot *continuous review dashboards* where the community updates reliability scores over time.

Certification programs and bug-bounty initiatives – such as those by IBM, Hugging Face, and others – use economic incentives to crowdsource verification. These must be expanded to reward teams that demonstrate *safe reflexivity* – the ability to self-assess and adjust. Validation checkpoints should occur at every stage of the research pipeline – from literature review to statistical analysis. Only then can errors be caught before results are publicized.

Despite challenges, academia can benefit greatly from transparent and trustworthy AI. Peer review assistants can triage manuscripts, and agentic lab notebooks can reject unverifiable claims. Establishing an *AI Steward Office* – combining ethics, legal, and IT expertise – could mirror DevSecOps teams in industry. This would manage model registries, provenance logs, and risk

mitigation playbooks. Shared governance could ensure the drive to publish quickly does not override rigorous verification.

TRUTH AND TRUST, CONTROL AND CO-CREATION

There is a delicate interplay between truth and trust in AI. While truthful outputs increase trust, trust itself does not guarantee truth. Users often trust models that hallucinate – showing that such trust may be misplaced. In fact, we do not truly trust tools – we trust people and institutions. Organizations developing AI must earn trust by explaining how their models work. Unless tools operate transparently – providing access to data and methods – users cannot distinguish between validated facts and mere opinions. Blind acceptance is a mistake.

The risks of black-box AI can expand quickly. Outputs may be recursively fed into new systems, leading to distorted truths that cannot be traced. The ground truth becomes elusive, making knowledge harder to anchor.

The right response is not to restrict AI, but to shape its trajectory by embedding truth at every stage. Proactive, evidence-based guidelines should ensure models remain aligned with truth. This includes periodic certification, guardianship layers for high-impact models, executable scholarships for reproducibility, and incentives for open collaboration. Continuous oversight through peer review and post-deployment monitoring is also critical.

Collectively, these actions can shift our perspective: from AI as a technology to be controlled to AI as a scientific partner we co-create with. Used under clear guidelines that protect the public interest, AI can help us address societal challenges in ways no previous tool has allowed.

SHAPING A BRIGHT, AI-POWERED FUTURE

IBM's Contributions to Trustworthy AI

The deployment of ChatGPT sparked massive interest in AI. It also created demand for domain-specific models whose success is judged not by virality but by groundedness, safety, and compliance. This shift is visible in recent open-source releases from IBM, Meta, and Cohere, and in the multilingual Mistral ecosystem. Open models are the first and most important step toward truthful and accurate AI.

Interestingly, AI itself can help solve the very challenges it creates – something IBM has leveraged from the start. *Guardian oversight models* – first popularized in IBM's open-source Granite – offer a practical way to turn abstract debates on truth into measurable engineering targets. These have since been adopted by multiple vendors and research groups.

Small auxiliary models, also popularized by IBM, evaluate each LLM response for context relevance, citation quality, or policy adherence. Originating in Granite

Guardian prototypes, this approach is adaptable across platforms. Similar methods are used by Anthropic for critiques, Google for factual consistency, and open initiatives like TruthfulQAbot. IBM's design choices include lightweight architectures for in-device deployment and transparent evaluation datasets to enable replication.

A FINAL OPTIMISTIC TAKE

Human nature pushes us to continuously pursue truth. Through the scientific method, we have transformed conjectures into facts. Powerful tools have repeatedly changed society, deepened knowledge, and improved quality of life.

Generative AI presents unprecedented potential to broaden our understanding of the world. It enables us to tackle complexities beyond current computing. Great progress is possible through agentic AI – but precisely because of its capabilities, its use must be anchored in truth and transparency.

We are at an inflection point. Governments must create frameworks to ensure ethical AI development. Guidelines must uphold societal interests, while human scrutiny preserves truth. Open, democratized AI with built-in safeguards can turn this computing shift into a revolutionary instrument, expanding our horizons across domains.

Institutions must adapt. Universities in particular should integrate generative AI into curricula, update research metrics, and lead the way in verifiable scholarship. Our society must learn how to understand outputs and identify errors. Research institutions can build stronger standards – rooted in fact and truth.

AI anchored in openness, guardianship, and reproducibility will be a tool for discovery – not misinformation. Let us approach this leap not with fear, but with optimism and critical thinking. Much like the knife, AI can benefit society when used responsibly.

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Chapter 8

The Complex Relationship between Society and Academia: How to Enhance the Trust of Citizens in Science and Research

Sari Lindblom, Hanna Snellman, & Anu Kantola

The relationship between society and academia is complex in nature. In this chapter, we explore possibilities for enhancing the trust of citizens in science and research through four solutions:

1. Free education for all, enabling social mobility
2. Universities serve society both in Finland and globally
3. Higher education as an asset for all
4. Commitment to openness

We provide a short historical overview of Finland's journey in becoming a democratic and open society until today's turbulent global situation, where all these solutions might be under threat.

The university, as an academic institution, has from the very beginning of its history been international in nature. Following the invention of the internet and the rapid increase in migration, it has become a truly global community. This global community consists not only of international students, academics, and staff working at universities, but also the societies it serves. These recent

developments also change the way we see citizenship. Today, globalization has increased the social and linguistic diversity in societies all over the world, including Finland (Snellman, 2015). The multiculturalism of an earlier era, captured mostly by an "ethnic minority" paradigm, has been gradually replaced by what has been named "superdiversity" (Blommaert & Rampton, 2011).

At the same time, educational attainment has increased rapidly throughout the world and increasing numbers of people are enrolled in universities and higher education (Grossman & Hopkins, 2024). For many individuals, education paved the way to social mobility as people took up new jobs and professions, which were abounding in rapidly advancing societies. In particular, the rise of new computerized and digital information technologies since the 1970s altered not only the ways information was transmitted, but also created new flexible forms of production, which could be scaled up globally. Thus, education became a key facilitator of wide and deep societal upheavals, whereby industrial societies turned into post-industrial and globalized economies.

For some time, all seemed good. Yet, since the 2010s, something seems to have been changing. Especially since the global financial crisis in 2008, both globalization and science have increasingly been contested and challenged. As political scientists Matt Grossman and David Hopkins (2024) suggest, education has become a key divisive issue in politics as societies are polarized by educational degrees. Education also plays a role in the discussion concerning the rule of law. The University of Helsinki hosts the Rule of Law Centre funded by the Ministry of Foreign Affairs. The Director of the Centre, Tuija Brax, former Minister of Justice, has added academic freedom as a criterion to the global principles for the rule of law in addition to fighting against corruption, the freedom of the press, and the state of civil society (Brax, 2024).

Somewhat paradoxically, a pivotal accelerator of the mistrust in science seems to be the overwhelming success of higher education. Today, people in leading positions across business and governmental organizations, as well as in politics, are highly educated. At the same time, people without education are often stuck with lower pay and disadvantageous social conditions. Thus, for instance, those with no or less education are often in poorer health, suffering from pain, chronic disease, or mental distress. They are less likely to get married than the educated social groups, who also enjoy wider social networks (Grossman & Hopkins, 2024).

In addition, one of the key developments of current societies is the rapid change in work, jobs, and professions. For instance, it has been estimated that every year, in Europe, every tenth job is lost, and new jobs need to be created. This turbulence affects not only individuals who lose their jobs but also threatens whole industries, professions, and occupations. Many regions that have relied on these declining industries suffer and lose their economic vitality. These structural transformations and the pressures they create often propel

people toward radical politics and movements. Often, the highly educated have turned into elites in the eyes of the less educated. Thus, the mistrust in science is propelled by mistrust in the educated, who seem to live in the upper echelons of society, driving their own interests and not recognizing the value of the people with less educational attainment.

Mistrust in science has become a rallying cry in many social movements, which are growing and may also be feeding disinformation or unsubstantiated ideas into mainstream policy-making. Vocal critics, while often marginal in numbers, gain support by maintaining that scientists and academics are purportedly promoting selfish or political ends rather than serving the truth. Also, many see that science is a narrow-minded endeavor, which is not capable of knowing what really takes place. Rather, science appears as a servant of business interests or, say, "Big Pharma", and thus cannot be trusted. While the extreme forms of distrust are not always that widely spread, the sense of distrust is circulated affectively and effectively on social media platforms. Critics may also become influential among political parties and affect their policy aims.

The "excellence talk" of academia, accelerated by the rise of university rankings since the early 2000s, may enhance mistrust of science and universities as well (See Müller et al., 2026). Even though societal outreach and public engagement are repeatedly mentioned in academic talks and strategies, universities can still be seen as talking from the comfort of our ivory towers without really meaning what we are saying.

What is to be done? How could higher education and universities enhance trust in science and serve societies in ways that could lead to a less confrontational view of science? The universities have always been among the most trusted institutions in Finland. However, because of the many changes in society, more needs to be done to keep the trust of the citizens in science and research high.

SOLUTIONS FOR GAINING TRUST

Free Education for All, Enabling Social Mobility

Finland is a country of equality and equity. Academia has been a key motor of economic and societal changes since the nineteenth century, when Finland fought its way from being a marginal border area between Sweden and Russia into a modern society and advanced economy. At the outset, education became a central part of society's self-understanding and a key pathway to prosperity. Over the course of the twentieth century, and especially since the early 1970s, Finland developed its schools and universities, which propelled social mobility through universal admission to free education. Today, as societies are changing rapidly, social mobility remains a key feature of their success. To this end, universities need to pay attention to their recruitment practices and ensure that social mobility takes place. It is vital to find motivated students across social

strata, and to this end, universities should take in students and recruit scientists across social ladders, not just from the upper, educated echelons.

In Finland, the school reforms in the 1970s diminished both social and regional differences in Finland by offering free compulsory primary and secondary education for all. This was extended throughout the educational ladder. Thus, today, regardless of social, geographical, and financial background, education from primary school to higher education is free of charge – including study materials – for all living in Finland. In addition, university education is tuition-free for all EU citizens. At the university level, all course materials, including books and scientific articles, can be found in the university library.

Universities Serve Society in Finland and Globally

The Finnish Universities Act defines three tasks for universities: research, higher education based on research, and service to society. Therefore, universities also seek to engage in societal dialogue with the whole society. While highly educated people are vital for today's societies, the less educated matter as well. Science grows from the society it serves, and it would be detrimental for all if academia retreated to its own polarized bubble with no real connection with the society it serves.

The University of Helsinki has always been located in the close vicinity of state decision-makers. First in Turku on the west coast, when Finland was a part of the Swedish kingdom, and then in Helsinki when the Grand Duchy of Finland was an autonomous part of Russia. When Finland became independent in 1917, only the name of the University changed, and the location remained the same. Even the grandiose architecture emphasizes the role of academia in Finland. At that time, the University of Helsinki was the only university in the country. Its main building, the prime minister's office, the mayor's premises, and the bishop's cathedral on each side of Senate Square form a concentration of power. This shows the acknowledgement of the importance of science and scholarship for Finland when the nation was in the making.

Service to society has always been valued in Finland – and still is. For example, the Ministry of Education and Culture's funding model acknowledges publications targeted to the larger public as a small part of the universities' research output. The University does the same. Every year, in the anniversary celebrations, a prize is granted by the rector to a member of the academic staff for their valuable efforts in societal outreach.

It is very important for the University of Helsinki that its researchers can talk about their research in such a way that their target groups can understand the value of their results. Furthermore, the University of Helsinki wishes to strengthen trust in science by offering education for all in our Think Corner, where anybody can participate in sessions in which research on topical themes

is discussed. The activities are also streamed and thus available for anybody, wherever in the world they live.

Providing higher education and access to scientific knowledge for all, from small children to senior citizens, is important for the University of Helsinki. One good example is our University Museum Flame, which is free for all up to the age of 18. It is very common to see kindergarten groups visit the Flame. In addition, the University offers science education for pupils of all ages (Aksela, et al., 2020; Aksela et al., 2024). Flückiger and Bonvin argue in their chapter in this volume that "when the public feels more connected to the scientific process, they are more likely to trust the findings that emerge from it" (p. 4). If we succeed in connecting with people at an early age, we hopefully keep their trust in science and scholarship throughout their lives. What will top researchers have in the future if we succeed in maintaining a child's curiosity in exploring phenomena around us?

Higher Education for All as an Asset

In the so-called Draghi report published in the fall of 2024 by the European Commission, Finland was noted as an exemplary country when it comes to digital skills (together with the Netherlands) and adult learning (European Commission, 2024a; 2024b). Think Corner, access to university libraries, and the publication policy of the University are, for their part, enhancing adult learning in Finland, but there are other measures as well.

In Finland, all universities have an open university that offers university-level education even to those without any qualifications to enter the study programs. However, the Finnish open universities do not confer academic degrees but instead offer a broad selection of university-level courses at relatively low fees. The maximum fee for one ECTS (European Credit Transfer System) is 45 euros. This lowers the threshold to access academic knowledge. Open university is also a very good way to foster continuing education and to update academic expertise after graduation.

Our massive open online course (MOOC) Elements of AI has been translated into all EU languages, in addition to Ukrainian and Norwegian, and is free of charge for anybody interested in artificial intelligence. The MOOC was created by Professor of Computer Science Teemu Roos, in collaboration with the learning technology company MinnaLearn and the University's MOOC Center (Heintz & Roos, 2021). Professor Roos' dream is that 1% of the world's population will complete the Elements of AI MOOC. This MOOC enhances equity as it has been particularly popular among both men and women and among people of all ages. So far, the youngest student has been in his teens, and the oldest approaching 90 when taking this MOOC.

Commitment to Openness

The University's policy is to open our venues and classrooms to all. In addition, the University's libraries are open to all visitors, local and international. Identity cards are not needed to enter the University premises – at least not so far. All this lowers the threshold for accessing academic publications. And it is not just through libraries. The University's policy is to encourage its researchers to publish their work as Open Access. The University of Helsinki is an exception, at least among Finnish universities, in that the rector covers the Open Access fees for the peer-reviewed articles of our researchers. This is a major investment – 1 million euros annually – for the University, but it is paid back through government funding as the funding model of the Ministry of Education and Culture has one indicator for Open Access peer-reviewed articles. In addition, this increases the visibility of the research conducted at the University. It also aligns with two of our four values, *Bildung* and inclusivity, and our vision "for the world" (University of Helsinki, n.d.).

Unfortunately, in the current turbulent global context, this principle of openness needs to be reconsidered to safeguard the security of our university community. At least there is a clear need to raise awareness of the diverse threats around us. Therefore, we at the University of Helsinki have, for example, created a digital tool, RISK-I, for risk assessment. The leadership of the University, including deans and heads of units, is encouraged to use this digital tool before making any decisions concerning, for example, international research collaborations and donations. Using the tool is very simple and has been proven to be useful. We have plans to make the use of the RISK-I tool obligatory.

However, our risk-assessment tool does not protect us completely from threats from outside. For the first time in the 385-year history of the University of Helsinki, the leadership decided to require preregistration and the showing of the QR code at the entrance to the venue of our anniversary celebration. That was just a precaution to safeguard a peaceful event. The venue, the Great Hall of the University of Helsinki, has always been the same, but the times are different. Previously, only in exceptional events have high-security precautions been taken in the Great Hall. For example, on 30 March 2015 and 25 March 2025, respectively, the then Chancellor of Germany, Angela Merkel, and the President of Ukraine, Volodymyr Zelensky, together with the President of the Republic of Finland, Alexander Stubb, visited the University. These events understandably entailed substantial safety procedures.

CONCLUSIONS

Finally, regarding the future, the shifts from industrial to post-industrial societies challenge universities and how higher education is organized. As Carlota

Perez (2010) has maintained, the industrial revolution gave rise to forms of universal and standardized education and welfare benefits, which provided the industries and businesses with able workers, schooling both managers and engineers, or doctors and nurses, who all helped to create the workforce for the industrial turn. Equally, with the post-industrial turn, societies need institutions that provide people with the skills and abilities that are needed for work. In this, it is of course the new knowledge and know-how that need to be transferred and incorporated into education. Yet, it might also mean that the structure and forms of education need to be reconsidered (Scott et al., 2017).

As some argue, the rampant change requires not only specialists but also generalists, who are able to grasp and manage various domains of expertise and move between various sectors to make a meaningful innovation. All this prompts higher education to consider, for instance, more flexible curricula that allow for individualized choices and provide means to combine things in unusual or exceptional ways. Aside from degrees, universities could offer flexible study modules as well as open education, which helps people to grasp a particular field while working. In this context, those with less education could also be given the flexibility to update their skills and knowledge, and the barrier to higher education could be lowered.

Thus, as the industrial revolution created its particular forms of education with professional qualifications and career prospects, perhaps the post-industrial revolution will create its own forms of education that best serve the people who want to make their living in the post-industrial workplace and society. These transformations are a pivotal and ongoing key issue for universities. If they manage to develop a new education model that serves the whole society and its success, it is highly likely that the universities will maintain their legitimacy in the eyes of the wider society, carve for themselves a trusted social standing, and escape the trap of polarized politics.

Academia has for decades trusted in the power of empirical evidence to argue and explain its points of view. How can it survive in the world of alternative views where everyone can fabricate their own facts about the world? How can we reclaim the leadership of academia, and how do we articulate this claim?

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Chapter 9

Fearless Universities: Towards a New Definition of Excellence Through a Healthy Failure Culture

Andrea Müller, Klaus Jonas, Michael Schaepman, & Anna Däppen-Fellmann

INTRODUCTION

The conventional concept of judging excellence in higher education is under increasing scrutiny, highlighting the urgent need for a redefined understanding. Current evaluation methods, which rely heavily on university rankings and quantitative metrics of limited scope, have proven inadequate and, at times, even detrimental. These methods fail to capture the multifaceted contributions of individuals and universities to society and often undermine their core values. Despite their limitations, university rankings continue to be widely used as indicators of excellence, significantly influencing academia and informing higher education policy-making.

To overcome the limitations of conventional notions of excellence and respond to the evolving challenges faced by universities in a rapidly changing world, academia must embrace a more comprehensive, inclusive, and socially responsible vision and mode of operation. At the heart of this vision lies a new understanding of excellence, one that reflects the values of a university and incorporates alternative parameters, such as fostering a culture that moves away from occasionally harmful academic pressures, encourages constructive

engagement with failure, and promotes ethical and meaningful contributions to society.

In our opinion, psychological safety is a key factor in creating a productive working environment in which the parameters of a new understanding of excellence come into play. First explored by organizational scholars in the 1960s (Edmondson and Lei, 2014), it was essentially social psychologist Amy C. Edmondson who coined the terms "team psychological safety" and "fearless organization". Her research in the 1990s demonstrated that a good interpersonal climate in work teams, where questions, mistakes, and even dissent are welcome, is essential to success in modern knowledge societies (Edmondson, 1999). Much of this can be transferred to academia. Recent studies (e.g. Kyambade et al., 2024a; Kyambade et al., 2024b) have found that psychological safety supports learning processes as well as authentic and responsible leadership.

In particular, the constructive handling of mistakes enabled by psychological safety seems promising to us when considering a new definition of excellence at universities, which are learning organizations per se. A learning organization is composed of two key features, namely the ability to learn and continuously transform itself, and its five inherent characteristics: personal mastery, mental models, building shared vision, team learning, and systems thinking (Senge, 2006).

Building on the experience we have gained from various reform processes at the University of Zurich (UZH), this chapter presents, firstly, the key dimensions of the current understanding of excellence in higher education and points out the main controversies surrounding it. We then look at definitions of psychological safety, both in general and with a focus on academic institutions. Thirdly, we explore how universities can foster a sense of psychological security and a healthy failure culture at an institutional level.

REDEFINING EXCELLENCE: WHAT TRULY MAKES A WORLD-CLASS UNIVERSITY?

Since the early 2000s, together with the growing importance of the international visibility of higher education institutions, the rise of university rankings has significantly shaped the discourse on excellence. Consequently, global rankings have increasingly influenced the restructuring of higher education systems to enhance international competitiveness, sparking a "battle for world-class excellence" or a "reputation race" (Hazelkorn, 2011), and shaping the global conversation around the concept of the "world class university" (Rider et al., 2021). Although there is no common and unequivocal definition of quality in academia and higher education, quality has become "increasingly synonymous with *excellence*: always be the best, belong to the elite, get better results than the others, etc." (Czellar & Lanarès, 2013, p. 1004, emphasis in original).

When we talk about university rankings, we refer to ordered lists that assess and compare universities based on various – mostly quantitative – criteria, such as research output, faculty qualifications, international reputation, or student satisfaction. The league tables are published annually by private companies, and the three dominant rankings are: the Academic Ranking of World Universities (ARWU or Shanghai Ranking), the Times Higher Education World University Rankings (THE Rankings), and the Quacquarelli Symonds World University Rankings (QS Rankings). Due to the increasing influence of these rankings, criticism of their methods and validity has also emerged. For example, the abovementioned rankings have all been criticized for lacking methodological transparency. In the case of the THE and QS Rankings – both relying heavily on qualitative reputation surveys – it is argued that they "are based on reputation scores given by respondents who are subjective and whose expertise is not verified" (Universities of the Netherlands, 2023, p. 12). ARWU, a ranking that is mainly determined by bibliometric data, presents a different problem. With this use of public data, universities cannot decide whether they want to participate or not. In a position paper, the Universities of the Netherlands network argues that the highly influential league tables "wrongly suggest that it is possible to summarise university performance in a one-dimensional ranking" (2023, p. 9). Other voices have raised similar issues related to these "flagship" rankings, pointing out that they "claim to identify the world's best universities" even if they ignore indicators that reflect a university's mission, "like open access, equality, diversity, sustainability or other society-focused agendas" (Gadd, 2020). Critics agree that many problems of the rankings cannot be resolved simply by technical improvements to indicators because scores and metrics cannot represent the complexities of academic institutions; on the contrary, they "misrepresent what universities are and do" (Rider et al., 2021, p. 4).

Another component of university rankings using quantitative metrics is the ability to "engineer" such metrics and foster "malpractice", for example, by relying on non-standardized institutionally submitted data (Hazelkorn, 2019), as well as citation manipulation (Ibrahim et al., 2025).

An example from Bielefeld University illustrates the problem very clearly. The university leapt upward in the THE Rankings in 2019, from position 250 to 166. On behalf of the rectorate, researchers investigated the reasons for this significant jump and found that it was solely due to the "citations" category. The upward leap was due to only a few publications in which scientists published with several hundred co-authors worldwide. The ranking, therefore, cannot provide a valid impression of the overall situation of a university (Sagerer, 2020; Brankovic, 2021). Nonetheless, such leaps are interpreted from the outside as a success for the university as a whole and disseminated further, also by institutions themselves. (Bielefeld University emphasized that it does not engage in ranking marketing to improve its performance in the rankings [Sagerer, 2020]).

Although criticism of rankings is widespread today, these metrics are still very captivating to us, and they give us the "appearance of being factual" (Brankovic, 2021). Rider et al. make a similar argument, stating that "algorithms are themselves both agents and effects of a technical ideal" that falsely projects objectivity onto ranking processes, which "are integrated into marketing with ever finer differentiation and new sectors, giving rise to a steady stream of new rankings released to be utilized in the governance of global higher education" (2021, p. 2). In general, we can identify three different ways that institutions deal with quantitative metrics: one group ignores them, a second group is guided by the rankings, and a third group tries to engineer them, that is, abuse them for their benefit. The last group in particular, which uses "rankings merely for branding" (Rahman, 2024), reflects a behavior that runs counter to the strong commitment to autonomy of most universities. Universities seek self-determination through legal, financial, and organizational independence from government agencies. However, they often undermine this autonomy themselves by prioritizing rankings and, for example, aligning internal research funding with specific indicators or engineering the value-added chain of using financial means to improve research capacity to obtain more political or financial support (Ngoc Mai et al., 2021). In doing so, they readily relinquish their autonomy. In addition, the literature states that the "importance attached to such statistics may 'trickle down' to the level of individual researchers", pressuring them "to adjust their research focus and publication strategy" (Universities of the Netherlands, 2023, p. 7). These misguided incentives increase the risk of academic misconduct and are also at odds with the strategic objectives universities define for themselves.

Towards a Value-Driven Understanding of Excellence

For these reasons, many universities have turned their backs on the established ranking systems (Allen, 2024). This is also the case for UZH. In response to the shortcomings of rankings and internal efforts to individually "engineer" metrics, as well as allowing for some transition time to establish a new culture of interdisciplinarity and systems thinking, UZH decided in 2024 to withdraw from the THE Rankings. As a signatory of the international Agreement on Reforming Research Assessment and a member of the Coalition for Advancing Research Assessment (CoARA), UZH has long advocated a new paradigm of excellence – one that prioritizes quality over quantity and recognizes the diverse missions of higher education institutions (University of Zurich, 2024b). The agreement, signed by more than 500 institutions worldwide, emphasizes ethics and integrity as values that should never be compromised. Furthermore, it establishes a common direction for research assessment reform that respects organizations' autonomy. Qualitative judgment, for which peer review is central, is required, as well as the recognition of aspects like the diversity of research activities and

practices, mentoring and supervision of PhD candidates, leadership roles, science communication and interaction with society, or industry-academia cooperation, among others (CoARA, 2022).

Besides that, there are other initiatives – of local, national, regional, or global scale – that foster a "change of culture" in the assessment of quality in research and higher education institutions. In the Netherlands, the national Recognition and Rewards (R&R) program promotes a balanced assessment of academics. They can be assessed on four dimensions: research, education, impact, and leadership. The program recognizes that "different academics have different talents" – some excel in teaching, others in research – each contributing uniquely within a team. To honor these differences, a tailored approach is seen as crucial, whereas the league tables impose universal criteria (University of the Netherlands, 2023, p. 7). Finally, there is the More Than Our Rank initiative by the International Network of Research Management Societies (INORMS). This is intended to motivate organizations to "define their successes on their own terms in line with their own institutional missions and ambitions" (INORMS, 2023). All these initiatives are an important step away from the limited definitions of quality and excellence of national and international rankings. They put missions, ambitions, and values at the center of a new understanding of excellence. This position is also represented by the League of European Research Universities (LERU), of which UZH has been a member since 2006 (Boulton, 2010).

The significance of a university's mission and values in the assessment of quality is not only highlighted by university management or by different university networks but also by individual researchers. An analysis at the University of Lausanne has shown that only "a minority of researchers define research 'excellence' in 'quantitative' way" (Czellar & Lanarès, 2013, p. 1018). Instead, shared values, like the search for truth, academic freedom, honesty, or collegiality, are considered essential and are shared at the institutional level. Study participants also mentioned faculty or institution-specific values like "conviviality, collaboration or teaching valorization" (Czellar & Lanarès, 2013, p. 1004). Finally, as highlighted by Antonio Loprieno, the former rector of the University of Basel and former president of the Rector's Conference of the Swiss Universities, the concept of excellence struggles to evoke the necessary emotions to serve as a unifying narrative of the university within society ("*die vergesellschaftete Universität*"). This is because excellence is inherently tied to the logic of competition. While competition may shape the university's image, it does not necessarily define its "spirit" (Loprieno, 2017). So, what does? How can a university develop its own value- and mission-driven understanding of excellence? And how can this vision be transformed into a lived institutional culture?

These questions are currently at the center of discussions at UZH, where we are developing a new university strategy. This strategy is being shaped through an

"open process", designed to generate diverse ideas and foster greater acceptance by involving a broad range of stakeholders. At its core, the strategy distinguishes between individual and institutional excellence, based on the hypothesis that institutional excellence serves as the foundation for excellence in research, teaching, and learning at the individual level. During the initial phases of strategy development, internal workshops and discussions have identified different key pillars of institutional excellence. Among them, trust is recognized as an essential value. A university must cultivate an environment where trust serves as the foundation for all interactions, both internal and external. Focusing on trust, the following section explores how this core element of excellence can be embedded in institutional culture. As a thought experiment, we incorporate the idea of the fearless university – drawing from the concept of the "fearless organization" – and highlight the importance of a healthy failure culture in redefining excellence. We argue that when failure is embraced as a fundamental organizational value, it becomes a catalyst for excellence.

While it is beyond the scope of this chapter to go into detail about all the different categories of error and failure established by Edmondson, we would like to point out that a healthy failure culture does not mean fostering an "anything-goes atmosphere" or rewarding sloppiness, stupid (i.e. easily preventable and basic) mistakes, ignorance towards early warning signals, or the failure to try at all (Edmondson, 2023, p. 289).

EXCELLENCE THROUGH FAILURE? IDENTIFYING MISSING PIECES IN HIGHER EDUCATION INSTITUTIONS

Even if the idea that people and organizations learn from mistakes is popular and somehow obvious, things are not as simple as they seem. Most people find it uncomfortable to admit mistakes. We tend to quickly move on from things that go wrong, deny them, or even blame others for them. Research in psychology and neuroscience has shown that our discomfort in dealing with failure is probably deeply rooted in human evolution: for early humans, rejection by one's social group could mean death. Thus, to pay close attention to the negative feedback of others and to deny mistakes might have been a survival mechanism for our ancestors (Edmondson, 2023). Nowadays, it is often the other way round: in modern companies where most of the work is done in teams, it is advantageous if mistakes are quickly brought to light to avoid further, often major, mistakes. In science, so-called "intelligent failures" (Sitkin, 1992), which force us to rethink issues or look for new solutions, are essential steps on the journey towards success. More recently, Manu Kapur, a leading professor of learning sciences and higher education, even developed the theory

of "Productive Failure", an approach that consists of deliberately confronting students with problems that they will fail to solve in order to stimulate deeper learning processes (Kapur, 2025). So, how can we overcome our aversion to mistakes and "fail well" (Edmondson, 2023)?

The Fundamental Role of Psychological Safety When it Comes to Learning from Failure

As Edmondson found out, there is a close connection between the general working atmosphere in a company or a team and the willingness of team members to address mistakes – and consequently, to learn from them. During her field research in hospitals, schools, and public authorities, Edmondson has been able to show that people who work in teams are often prevented by interpersonal fear from saying something that could make them look incompetent. By holding back, they protect themselves from losing face. However, this also means that team members do not give the group the opportunity to learn from mistakes or to come up with new ideas. In the long term, this prevents sources of learning and potential for innovation from being fully exploited. A team climate of trust and respect, where interpersonal fear is minimized, has positive effects on team learning and innovation, as Edmondson has shown. She defines such states as psychological safety or *team* psychological safety, *a shared belief* held by members of a team that they can take risks, express their ideas, and admit mistakes without having to fear negative consequences (Edmondson, 1999; Gallo, 2023). Accordingly, Edmondson classifies organizations that successfully established psychological safety within their teams as "fearless organizations".

It should be noted here that while the concepts of trust and psychological safety both describe psychological states and have a lot in common, they are not the same: trust pertains primarily to a relationship between two individuals or an individual and a collective (dyadic relationship); psychological safety tends to be experienced at a group level (Edmondson, 2003). In other words, "trust is personal; psychological safety is a group phenomenon" (Geraghty, 2020). Trust is, however, a component of psychological safety in work teams, as high degrees of interdependence, which are critical for psychological safety, also build trust.

As proven by research over the past two decades (most notably by Edmondson's original studies and the so-called Project Aristotle at Google (Duhigg, 2016), there is "a myriad of positive workplace outcomes" (Newman et al., 2016) associated with being a fearless organization. First, a psychologically safe work environment makes team members feel more motivated, as they get the impression that they are being heard and that they can contribute actively to the team's success. A sense of psychological safety can also lead to better decision-making, as more opinions and perspectives are being considered when people feel comfortable sharing their ideas (Gallo, 2023). Third, team

psychological safety enables a set of behaviors, such as information exchange or individual creativity, that are positively associated with successful learning, not only from failure, but in general. And this is regardless of the respective industry, organizational, or geographical context: the positive correlation between learning and the existence of team psychological safety was evident in many different settings analyzed in countries around the globe (Edmondson and Lei, 2014, p. 36). Due to the generalizability of the results, we believe that the concept of fearless organizations is transferable to the academic context in the form of "fearless universities".

HOW TO BECOME A FEARLESS UNIVERSITY: THE IMPORTANCE OF LEADERSHIP, RISK-TAKING, AND COMMUNICATION

In academia, there seems to be a particularly close connection between socially responsible leadership and psychological safety, as shown by Kyambade et al. Socially responsible leadership is defined as an inclusive form of leadership that strives to achieve organizational or group objectives in an ethical manner and by considering environmental concerns and sustainability (Kyambade et al., 2024a; De Roeck and Farooq, 2018). Among university staff, socially responsible leadership seems to significantly improve psychological safety and vice versa, as psychological safety can itself be considered a building factor for socially responsible leadership in academia (Kyambade et al., 2024a).

It should be noted here that while there is ample research evidence that leadership has an influence on psychological safety in teams, apart from the work of Kyambade et al., hardly any studies have dealt with psychological safety at universities as institutions. Those that have, generally focus on the importance of psychological safety for students or in classroom settings, rather than at the institutional level, which is what interests us here. One caveat concerning the studies by Kyambade et al. is that they analyze public universities in Uganda, whose framework conditions differ completely from those of European or Swiss universities. Further research is needed to examine whether all results cited here are transferable to a European or Swiss academic context.

In addition, we hypothesize that promoting psychological safety within academic teams not only has positive effects on desirable forms of leadership and psychological safety but also promotes a constructive risk-taking attitude at universities. (According to Edmondson, a healthy failure culture within private-sector companies fosters smart risk-taking, which is closely associated with perseverance and has positive effects on innovation.) This could manifest itself through more risk-taking in the pursuit of strategic goals or by proactively seeking opportunities to intensify knowledge exchange or expand the academic

portfolio. UZH has therefore adopted a new strategic risk management approach (University of Zurich, 2025a), allowing it to leverage opportunities and identify risks. A key improvement in comparison to classical risk management systems has been to define for each risk category (educational excellence, institutional quality, academic autonomy, etc.) a "risk appetite". This allows the risk to stay high in its quantitative expression, combined with no necessity to move it to a lower risk category, deliberately accepting a risky approach.

Given its numerous benefits, how can we create the necessary conditions for psychological safety – and ultimately for a healthy failure culture – to thrive at universities? As outlined above, it is primarily interpersonal factors that determine whether a climate of psychological safety can develop in work teams. As mentioned, leadership plays a fundamental role here. Therefore, UZH strives to constantly analyze and improve leadership practices at all levels, since leadership has a considerable influence on trust and well-being among university staff, as we have seen. Last year, we updated our Leadership and Management Principles (University of Zurich, 2024a) by including more details concerning different contexts of leadership – leading yourself, leading others, and leading or managing organizational units – and relevant behaviors, for example, conflict resolution, team culture, or sustainability. We see these principles as a foundation for teamwork based on trust, which fosters a productive work environment, and which is binding for all leaders at UZH. In addition, we offer leaders a wide range of counseling services and continuing education opportunities at our in-house Leadership and Governance Academy. By professionalizing leadership, we aim primarily not to improve the "output" of our research teams, but to improve their working atmosphere. According to our experience, professional leadership training not only improves team performance, but also increases satisfaction within teams (Blöchlinger, 2023).

What becomes evident from research, too, is that authentic and transparent communication plays a key role in promoting psychological safety and a healthy failure culture. When leaders or team members communicate well – which includes attentive, appreciative listening and open discussion – this gives employees a sense of security and encourages continuous learning, quick error-reporting, as well as smart risk-taking: "freed from self-protection, we can play to win" (Edmondson, 2023, p. 285).

At UZH, we pursue several approaches to make our communication across different levels of the university as authentic and transparent as possible. To start with, decision processes at UZH are fundamentally participatory. We place great emphasis on the participation and involvement of all members of the university in relevant discussions. For example, in our Extended Executive Board, the body responsible for all academic matters at UZH, representatives of each body of the university are included: students, junior researchers, senior researchers, teaching staff, administrative staff, and technical staff. In addition, most

key future developments at UZH are generally subject to broad consultation and are communicated via several channels. A key example is the functioning of the academic senate at UZH. It is not only composed of all professors of the university, but complemented by a significant fraction of all four bodies representing students, early-career, late-career, and professional staff members. With more than 800 participants, it seems logical that this senate will not engage in substantial discussions, but all members are invited to contribute and finally vote on university-relevant matters in a democratic fashion.

Other important aspects for creating psychological safety include sharing expectations and creating forums for input (Edmondson, 2021). With this aim, the president of UZH launched a series of events called "Breakfast with Michael", an informal get-together to ask questions and share ideas or opinions with the president (University of Zurich, 2025b). These "breakfasts" are open to faculty, members of staff, and students alike. The "breakfast series" has enjoyed great popularity since its launch and is generally fully booked.

WHAT IS HOLDING US BACK FROM BECOMING A FEARLESS UNIVERSITY? CHALLENGES AND CONCLUDING REMARKS

Developing a new definition of excellence and embedding it in institutional practice is a challenging process, especially when emotionally charged issues such as dealing with mistakes are involved. Therefore, it is important to acknowledge several difficulties. The current understanding of excellence, as discussed earlier, is contrary to a culture of failure, and our deep-rooted aversion to mistakes contributes to this. The need to outperform others and follow the logic of competition is particularly present in academia, making it resistant to change.

A second challenge when changing institutional practice arises from the structure of universities: academic self-organization and the self-conception of universities as expert organizations do not align well with top-down decision-making, which could accelerate cultural change. However, self-organization also provides flexibility in rapidly changing environments and can strengthen an organization's resilience (see Däppen et al., 2024). For change to succeed, it must consider the inherent characteristics of universities. At UZH, this is being addressed through the previously mentioned development of a new strategy aimed at fostering a sense of identification with the organization, rather than just individual faculties or institutes. Achieving this is challenging, as top-down changes initiated by university leadership are often met with skepticism and resistance.

A third challenge lies in the increasing external pressure from policy-makers and funders to deliver applicable research output. The demand for rapid results

and publications is neither compatible with the lengthy trial-and-error processes essential for fundamental research nor with a culture that values learning from failure. Universities must ensure that fundamental research is given ample space, allowing researchers to pursue it without fear of being sidelined.

Further research is needed to explore these dynamics and develop effective strategies for change. Institutional and individual excellence are neither contradictory strategies nor are they disjunct. Interdisciplinarity, systems thinking, and collaborative approaches will support the transformation of universities to educate future leaders of fearless organizations!

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Chapter 10

University's Third Mission Redefined: Rebuilding Trust in Truth

Toomas Asser & Lauri Randveer

INTRODUCTION

The search for truth, scientific certainty, and the academic freedom that ensures both has long been a central value of universities in the Western cultural tradition. Historically, universities have served as mediators of knowledge and as pillars of critical thought within society. Yet, as both distant and recent history have shown, academic freedom has never been self-evident nor guaranteed. Even today, this value faces serious challenges.

The crises of recent years – whether related to health, the environment, security, or social tensions – have deepened the mistrust toward science, scientific reasoning, and the institutions that represent them, including universities. Increasingly, scientific facts are being questioned, and academic authorities are attacked as part of the privileged elite, accused of exacerbating rather than resolving societal problems. This trend is amplified by populist political forces, which in turn are supported by geopolitical actors who benefit from a post-truth, relativistic worldview.

The roots of this crisis of trust are often grounded in objective realities: European societies are increasingly fragmented by growing inequality, as well as deepening educational and economic stratification. Universities, which have historically enabled social mobility, are now often associated with the establishment. Furthermore, their dependence on state funding makes them appear, in

the eyes of some societal groups, as part of an alienated system. In this context, standing up for science and truth is often interpreted not as a service to the public good but as the pursuit of a political agenda.

In such circumstances, the mere defense of academic freedoms is not enough. If we want to strengthen society's resilience against science denial and misinformation, we must address the root causes of mistrust and increase understanding of the nature and purpose of science. Universities must engage in active dialogue with society, take clear positions, and contribute to the promotion of social justice. It is also essential to enhance interdisciplinary collaboration: in the development and implementation of new technologies, the voices of humanities researchers and social scientists must be heard just as clearly as those of natural scientists.

In this chapter, we analyze the new role that universities could and should play in restoring public trust in truth and science. We emphasize the importance of universities as ethical beacons and show how these institutions can help shape solutions to overcome social tensions. Drawing on the experience of the University of Tartu, we also highlight specific steps that have been taken to enhance trust in scientific truth and the credibility of scientists in Estonian society.

DEFINING CORE CONCEPTS

Scientific Knowledge and Scientific Truth

Scientific knowledge is a body of statements and theories that adequately describe and predict phenomena occurring in the physical and social world. Science seeks to provide as objective and universal an understanding of reality as possible, based on the assumption that truth is not contingent upon inherent personal characteristics such as gender, nationality, or racial identity. Science and logic belong to everyone, and their value lies precisely in their universality and applicability across different cultural and societal contexts.

Trust

Trust is a mental and social state in which the truster holds a positive attitude toward the person or institution being trusted, expecting that the trusted party is reliable and both capable and willing to meet the expectations placed upon them. Trust always involves forward-looking uncertainty: it is grounded in the belief that past experiences and expectations will continue, despite the absence of any guarantees. Thus, trust is strongly tied to emotions, values, and will – rather than being based solely on a rational evaluation of facts.

Trust in Science and Scientists

Trust in scientists is primarily based on their competence and ethical conduct. A scientist must demonstrate objectivity, critical thinking, honesty in handling data, freedom from bias, and openness. The credibility of science as an institution depends on broader factors: independence from political and economic interests, the promotion of openness and inclusivity, adherence to ethical standards, and the capacity to enable broader societal participation in scientific work.

The trust in the products of science – new knowledge and technological solutions – rests on their usefulness, safety, and alignment with the values and expectations of those who trust. Trust in science often requires trust in the processes and the people involved, rather than a direct personal understanding of complex scientific reasoning. Just as a patient trusts a doctor's expertise, trusting the results of science requires faith in the professionalism and ethics of scientists – even when the science itself may be only partially comprehensible.

The Fragility of Trust and its Importance for Science

The relationship of trust between scientists and society is fragile. It depends not only on the behavior of scientists but also on the prior experiences, attitudes, and beliefs of those placing their trust in them. Trust is easy to lose and difficult to regain once lost.

Without public trust, science has limited influence in a democratic society, since political decision-makers ultimately reflect the will of the electorate. Research has shown that higher trust in science and scientists generally correlates with greater trust in societal institutions, higher satisfaction with the functioning of democracy, and increased optimism about a country's future development.

THE ROLE AND SIGNIFICANCE OF UNIVERSITIES IN LIBERAL SOCIETIES

In today's Western societies, universities remain the primary institutions for the creation of knowledge. They play a critical role in supporting societal development, acting as hubs from which innovation, scientific thinking, and the formation of new ideas emerge. Although some tech companies – particularly, and most famously, those based in Silicon Valley – have demonstrated greater efficiency than universities in advancing certain applied sciences (such as information and communication technology or rocket science), universities are the only institutions that continue to provide the conditions necessary for deep reflection and for inter- and transdisciplinary collaboration. Universities bring together representatives of diverse fields of knowledge, and it is through their

open dialogue and competition that new scientific ideas and deeper understandings of society are born.

The success and development of universities have historically been grounded in the principles of liberal science, which relies on freedom of speech and academic freedom – the right of scholars to choose their research topics and to disseminate findings without external pressure. The process of creating and verifying knowledge follows a specific procedural framework characterized by two core principles, as outlined by Jonathan Rauch (2021): first, no one gets the final word in scientific discourse; and second, no one has the authority – based on personal status – to unilaterally decide what is true.

These principles stem from an acknowledgment of human fallibility and assume that all knowledge must be open to critique and revision. Knowledge is thus in constant development: what is accepted as scientific truth at a given time is always subject to challenge and holds only until it is overturned by a better idea.

The significance of universities to society extends beyond the creation and preservation of knowledge. They are also engines of societal progress and hotbeds of elites. The synergy between scientific advancement and societal development has been one of the cornerstones of Europe's success since the Renaissance. The application of scientific achievements in societal practice – with universities playing a central role in the process – has enabled slow but steady social progress. This evolutionary development has valued existing systems while reforming and improving their shortcomings, bringing Western societies to historically low levels of violence and oppression.

Admittedly, this development has been far from linear. The totalitarian regimes of the twentieth century – communism and Nazism – represented dramatic regressions, but they ultimately underscore the importance of liberal scientific and societal structures. These examples illustrate the dangers that arise when societies abandon critical thinking, freedom of speech, and open scientific discourse in favor of irrational and dogmatic ideologies.

THE CRISIS OF TRUST AND ITS CAUSES IN THE TWENTY-FIRST CENTURY

The foundation on which liberal science and liberal societies are built is increasingly showing signs of erosion. The vulnerability of liberalism – its Achilles' heel – lies in its inherent slowness and caution: a liberal science and liberal order cannot and must not offer quick or simplified solutions. This very characteristic opens the door to proponents of extreme measures – both leftist revolutionaries and right-wing populists enchanted by the illusion of a return to a mythical past. Under their influence, both the autonomy of science and the role of universities as pillars of a free society are under pressure.

This erosion of trust in science and universities is driven by several interrelated factors, including ideological pressures within academia, the destabilizing effects of technological change, and the growing prevalence of disinformation.

Identity Politics and the Erosion of Academic Freedom

In recent decades, identity-based political movements have gained momentum in universities and academic circles, often drawing on theories related to colonialism, racism, gender, and other issues of social justice. These theories increasingly go beyond simply raising concerns – they tend to declare certain research topics or viewpoints as inherently harmful, indisputable, and morally unacceptable.

This approach holds understandable appeal, as it highlights real and urgent issues that the existing order seems unable to address. The issue arises, however, when ideologically charged theories refuse to engage in debate, branding critics as either blind to their privilege or morally wrong. This closedness prevents the public scrutiny of these ideas' flaws and simultaneously hinders the integration of their potentially valuable elements into the broader scientific discourse.

The natural condition of academic debate is the free competition of ideas, but how can meaningful scientific dialogue take place with an opponent who denies the legitimacy of debate itself? If science is declared a form of power discourse and oppression, the link between the pursuit of truth and open criticism is broken. Under conditions of honest debate, many of these tautological and internally inconsistent theories would either die a natural death or evolve into genuine science through de-ideologization. Unfortunately, before that can happen, they often manage to discredit and destabilize the very institutions on which democratic and science-based societies depend.

Universities, by their nature open to ideas and committed to offering freedom of speech to all, remain institutionally neutral, which inevitably gives a platform to even destructive ideologies. As a result, universities have become breeding grounds for various nihilistic ideologies. The political changes in society driven by these ideas, in turn, have triggered a wave of right-wing populism – a resurgence of tribalism and xenophobia. This radicalized polarization has given renewed momentum to previously marginalized reactionary movements, which now pose a threat to the balanced development of both science and society.

The clear association of universities with these ideologies has made it easy for populist actors to cast doubt on their credibility in the eyes of the public. As the authority of science and academia weakens, opportunities emerge for authoritarian forces to sideline universities or systematically undermine their independence – a trend we have witnessed in Hungary and, even more strikingly, in today's United States.

Disruptive Technological Development and Social Inequality

The hyper-rapid development of technology – especially in the fields of social media and artificial intelligence (AI) – has brought profound changes to how knowledge is created and disseminated. While new technologies can strengthen science's capacity, they can also seriously undermine its credibility if transparency, critical quality control, and public dialogue are lost.

Social media has created echo chambers in which everyone can find confirmation for their biases and worldviews, regardless of their factual basis. A willingness to compromise and engage in calm discussion has been replaced by a combative "winner takes all" mentality, where debate opponents are quickly demonized and must be destroyed. The false anonymity of social media amplifies this tendency even further. As a result, we now find ourselves in a situation where wishful thinking, rage, and fantasies threaten to dominate public discourse.

In addition, the use of AI in academic work raises fundamental questions about authenticity, creativity, responsibility, and ethics. As the creation and dissemination of knowledge become increasingly automatable, important questions arise: why and for what purpose do we do science at all? Will the search for knowledge remain a goal that supports human development, or will it simply become an exercise in technological efficiency?

To preserve the credibility of science, it is essential that the social sciences and humanities are involved in the implementation of technologies and in the assessment of their impacts on an equal footing with the technical sciences. Technological innovation without critical thinking and social responsibility can ultimately prove destructive to societies.

The Spread of Disinformation

The rise of digital media and AI has created an unprecedented overflow of information – a phenomenon that may be called information pollution. The systematic dissemination of disinformation – particularly by states seeking to undermine the liberal international order – already threatens to contaminate the training data of AI systems on which future knowledge infrastructures will rely. In the future, fully automated disinformation factories, where AI continuously generates vast quantities of fake news, opinion pieces, and even "expert commentary", may become a part of everyday life.

These developments are resulting in a deepening loss of trust – people no longer know what or whom to believe. Distinguishing fact from falsehood is becoming increasingly difficult; the authority of science suffers, and political and societal divisions intensify. The ultra-fast production and distribution of knowledge make it significantly harder to discern trustworthy and important information amidst the noise. If science is associated in the public mind with

uncertainty and confusion rather than reliable knowledge, society's willingness to support and engage with scientific outcomes inevitably diminishes.

This problem is further exacerbated by the commercialization of science: when universities and scientists become partners or dependents of tech giants, concerns arise about the independence and credibility of scientific research. Public perceptions of bias or conflicts of interest further undermine academia's authority.

UNIVERSITIES CAUGHT IN THE CROSSFIRE: EXPECTATIONS, PRESSURE, AND FADING INFLUENCE

One of the most visible consequences of the internal weakening of liberal science and society is the paradoxical situation universities find themselves in today: on the one hand, they face a growing number of expectations and demands from the public and policy-makers; on the other, their actual influence on societal decision-making is steadily diminishing.

Governments are increasingly intervening in university financial management, making funding conditional, temporary, and project-based. Core funding is shrinking, even as reporting requirements, regulatory burdens, and bureaucratic oversight continue to grow. This undermines the flexibility and strategic stability that long-term research requires. Universities are finding it ever more difficult to convince decision-makers that investment in science and higher education is a long-term public good rather than an annual expense to be justified anew each year.

Added to this is the mounting pressure to take political stances or align with ideological movements. Universities are often caught in the middle: while some demand they take a clear public position on politically sensitive issues, others accuse them of bias or ideological partisanship when they do. Both populists and technocratic neoliberals tend to see universities either as elitist strongholds or as obstacles to "efficient" and "results-driven" governance.

Academic autonomy is increasingly under threat: the shift toward competitive, project-based funding creates dependency and increases the risk of political instrumentalization of knowledge and self-censorship. In certain fields – such as climate policy, green energy transitions, or major infrastructure projects – balanced, truth-seeking public debate has become virtually impossible. Researchers who dare to raise critical questions are quickly attacked: they are either "cancelled" or branded as "funded stooges", depending on whether their views align with the expectations of those in power or of vocal interest groups.

Universities, often at the heart of today's "culture wars", are being pressured from both sides: on one side by populist lawmakers and funders who see

academic debate as elitist and ideological, and on the other by activists who accuse them of passivity and lack of "progressivism". To these critics, academic restraint is not a virtue but an obstacle to social change. The mindset that "the world is not to be described but changed" forces scholars into roles where they are no longer permitted to simply analyze – they are expected to take sides and engage, often at the cost of their academic independence.

RECLAIMING PUBLIC TRUST IN SCIENCE AND ACADEMIA

Reversing the erosion of public trust in science is imperative. Abandoning this effort is not a viable option. This loss of trust is not merely a challenge for the scientific community – it constitutes an existential threat to the broader social order, which depends fundamentally on the pursuit of truth, knowledge, and rational discourse. Moreover, anti-scientific sentiment and public distrust are being deliberately exploited by external actors that benefit from societal confusion and the erosion of democratic institutions.

The irony lies in the fact that the necessary solutions are already known. Western societies possess robust institutions and tools. The capacity to address complex problems is not in question. What remains lacking is the will to act on this knowledge – action that requires perseverance, integrity, and the courage to make difficult, and often unpopular, decisions.

Universities cannot bear full responsibility for resolving today's crisis of public trust, but they do have a moral and institutional obligation to contribute meaningfully to its repair. This contribution need not begin with grand declarations. Often, it is the daily, deliberate choices – the way values are practiced, not merely professed – that make the greatest difference:

- Defending academic freedom and institutional autonomy. A university must remain a space where free thought can flourish. This means protecting the right to doubt, to make mistakes, to change one's mind – without fear of being cancelled or ridiculed. Science is not dogma; it is a process of uncertainty, self-correction, and gradual refinement. This core aspect of its nature must be explained more openly to foster trust in science's imperfect but sincere pursuit of truth.
- Honesty and transparency. We must be willing to acknowledge the limits of science and its inherent uncertainty. At the same time, we must uphold the scientific method as the most reliable tool we have for generating knowledge. Simplistic answers must not be allowed to obscure complex truths.
- Empathetic communication and engagement. Mistrust of science cannot be overcome through condescension. Universities must invest in

science communication that does not speak *to* people from above, but *with* them. This means listening to fears, explaining calmly, and offering meaning and stability – not just data.

- Reviving a culture of debate. The university should model how to disagree without hostility, how to respect arguments even when we don't accept their conclusions. Debate must not become a ritual of opposition but remain a joint pursuit of understanding. Where the open contest of ideas dies, ideological conformity takes its place – whether revolutionary or reactionary.
- Independence from political and economic pressure. When university funding becomes conditional, project-based, and metrics-driven, the space for deep analysis and long intellectual inquiry disappears. Scientific independence is not a privileged luxury – it is a public good. Investing in science is an investment in long-term societal resilience.

A NEW SOCIAL CONTRACT – RESTORING THE VALUE OF A FREE ACADEMY

To preserve the vitality of science, critical thought, and academic freedom, we must rethink the foundations of the relationship between universities and the society they serve. The old field of trust is faltering. Universities are under increasing pressure to deliver rapid solutions to urgent societal problems, provide cost-effective outcomes, and train specialists tailored to labor-market demands. The university is increasingly viewed as a technocratic tool for hire – a provider of custom-fit knowledge that serves immediate political or economic needs. What is expected are immediately applicable forms of knowledge that align with existing political or economic preferences.

Yet the role of the university cannot be merely instrumental. Equally important – if not more so – is its function as a space for free thought, as a guardian and generator of societal imagination. The university must also retain its role as a "court jester": one that can correct or critique the powers without fear of reprisal, helping society ask more difficult but necessary questions. This means the university must have both the right and the opportunity to speak uncomfortable truths – even when they are unpopular or not immediately useful.

This dual role – both critical and constructive – requires universities to be independent, but also to embrace social responsibility. A new social contract must therefore rest on two pillars: society guarantees the autonomy, funding, and ideological neutrality of universities, while universities, in turn, commit to open public engagement, explaining their role, and actively working to build trust in science and knowledge. This also includes taking clear positions on

matters of public importance, standing up for social justice, and responding empathetically to citizens' concerns.

An academy that is free from the whims of rulers and political fashions is essential to a healthy society. The university should be a place where even the most polarizing topics can be debated in a controlled and mutually respectful environment. Such an intellectual laboratory cannot solve every problem instantly, but it creates the conditions for solutions – without tearing the whole society apart.

REBUILDING TRUST: A ROADMAP FOR UNIVERSITIES AND SCIENCE

Below are several concrete steps and guiding principles that could help overcome the growing societal mistrust of science and evidence-based reasoning.

1. Fostering critical thinking and media literacy. A society's resistance to misinformation begins in its education system. Before entrusting people with sophisticated technological and scientific tools, we must first teach them how to think critically. This should be as basic a requirement as having a driver's license to operate a car or being of legal age to consume alcohol. This calls for deep structural changes in education. From an early age, students should not only be taught facts but also how knowledge evolves, how to evaluate evidence, and why doubt lies at the heart of scientific thinking. Students need to see how knowledge is formed, why science does not claim infallibility, and why the ability of science to detect and correct its own errors makes it the most trustworthy method of producing knowledge.

2. Combating misinformation and promoting media literacy. The spread of misinformation is one of the gravest threats to the credibility of science. It is a pleasure to highlight our own university as a pioneer in the fight against misinformation.

   a. The University of Tartu coordinates the Baltic Engagement Centre for Combating Information Disorders (BECID), which works to counter disinformation and strengthen media literacy. BECID conducts fact-checking, produces analyses on the spread of false information, and develops automated tools for detecting it. Of particular importance is its work in improving media skills among teachers and young social media activists.
   b. In 2024, the University of Tartu also launched a new master's program, Disinformation and Societal Resilience: Defending Democracies in the Digital Age, aimed at training a new generation of professionals equipped to counter false information. The program brings together expertise from communication, law, psychology, data science, cybersecurity,

and regional studies, while also offering practical experience in leading institutions.

3. Advancing science communication. How do we reach people whose only source of information is social media? The answer lies not in lecturing or scolding, but in genuine dialogue. Science communication must be a two-way street – asking questions, hosting conversations, listening to people's doubts and values, and engaging with them respectfully. It is also crucial to demonstrate that science is not just a tool for the elite but a resource for solving social and community-level problems. Much of the current mistrust toward science stems from a sense of injustice or exclusion. When science connects meaningfully with people's everyday concerns, it becomes an organic part of society's functioning.
4. Strengthening the link between science and communities. Academics need to be present not only in lecture halls but also in community centers, schools, and public discussions. Personal, direct contact between researchers and citizens helps reduce alienation. One effective approach is the promotion of citizen science or crowd-sourced research initiatives, where people can participate directly in scientific work – gathering data, tracking biodiversity, or measuring environmental indicators. A great example is the project Estonia is Looking for Cowslips, initiated by researchers at the University of Tartu, which invited Estonians to map the distribution of cowslips. The initiative quickly gained popularity, collected thousands of observations, and later expanded to 30 other European countries. Such efforts help to break down the myth of science as something distant and inaccessible, while strengthening mutual trust between researchers and society.

ESTONIA AND THE UNIVERSITY OF TARTU: A NATIONAL MODEL OF ACADEMIC RESPONSIBILITY

The University of Tartu is as old as the Republic of Estonia itself. As the national university, it has been an inseparable part of Estonia's birth and survival as an independent state – and it will remain so in the future. Estonia's future depends on its universities, and the University of Tartu carries a particular responsibility in this regard.

One of the University of Tartu's core values is responsibility – the ability and willingness to recognize the impact of both action and inaction on society and the academic community. As Estonia's national university, the University of Tartu's responsibility also includes preserving the Estonian language and culture, advancing national sciences, and supporting the foundations of a democratic society.

Estonia has thus far managed to maintain a relatively strong level of university autonomy and academic freedom. However, there are recent signs that these privileges can no longer be taken for granted. At the same time, discussions around increasing the national funding of research and higher education have stalled, jeopardizing the sustainability and competitiveness of our research institutions.

Yet public trust in science in Estonia has remained remarkably high by European standards. This trust has been one of the key enablers of our rapid digital development and has made possible the launch of major national science initiatives – such as the Estonian Biobank at the University of Tartu, which now includes genetic data from over 200,000 people.

As a small country, Estonia has been bold and flexible in its experimentation – a kind of "guinea pig" conducting tests on itself. Our country's small size has enabled us to carry out swift reforms in education and public administration, and we've managed this with considerable success. Estonia is internationally recognized as a success story in digital governance and digital democracy. We are known for our media and internet freedom, cybersecurity, e-services, and digital civic participation. Ranking third in the world for e-participation reflects Estonia's commitment to citizen-centric digital government.

While we may feel internally that the pace of technological progress has slowed, Estonia still enjoys a reputation as a forward-looking digital state. Building on this, the President of Estonia (former Rector of the University of Tartu), together with the Ministry of Education and Research, has launched a new Tiger Leap initiative – this time in response to the challenges posed by the era of AI.

Tiger Leap 2.0 (or AI-Leap) is a national program aimed at integrating AI into upper secondary education. Beginning in autumn 2025, students in grades 10 and 11, along with their teachers, will gain access to top AI-powered learning tools. Teachers will be trained to use these tools effectively. The goal is to make education more individualized, efficient, and adaptable to each learner's needs.

Universities play a vital role in such large-scale systemic transformations. To ensure that this leap is not a jump into the unknown but a step toward a deeper level of knowledge, the critical expertise and support of universities is essential.

When engaging with colleagues in European academic networks, Estonians often find that their country's historical experience – marked by occupation, repressions, and the loss and regaining of statehood – has instilled in them a heightened sensitivity to existential threats. This historical awareness shapes their perception of contemporary developments: the erosion of trust in science and evidence-based reasoning is not seen as merely concerning, but as something that evokes dystopian implications.

CONCLUSION

The university holds a unique role in society – not only as a transmitter of knowledge, but as a place where a fragile yet vital balance is maintained between truth, freedom of thought, and responsibility. We live in a time when knowledge has not disappeared but trusting it has become more difficult than ever before.

A so-called post-truth society does not mean that truth has ceased to exist – rather, it signals that our shared agreement on what is trustworthy has weakened. It is precisely in such a moment that the role of science becomes especially important – not only as a producer of knowledge, but as a bearer of values.

Science is not just a method – it is a mindset. It is a readiness to doubt, to seek justification, to admit mistakes, and to learn. It is the courage to confront complexity and to acknowledge that there are no easy answers. This mindset will never be convenient or comfortable for everyone. Yet a democratic and responsible society cannot turn its back on this mindset without also turning its back on itself.

The relationship between trust and science is delicate. It requires constant attention, openness, and public dialogue. It demands an education that fosters not only knowledge but also the ability to think. And it depends on people – scientists, teachers, journalists, politicians, and citizens – who are willing to take action to preserve and strengthen this relationship. Each of us makes small daily choices that either support or undermine the credibility of science. Do we seek to understand and engage in dialogue, or do we decide before we ask?

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Chapter 11

Good for What? Unpacking the Concept of Social License to Operate in a University Context

Deborah Terry & Paul O'Farrell

INTRODUCTION

Overview of the Topic

In his 2018 book, *The Soul of a University*, the former Vice-Chancellor of the UK's Newcastle University, Professor Chris Brink, argues that higher education leaders and academics should be occupied by two simple questions: "what are we *good at?*" and "what are we *good for?*" (Brink, 2018, p. xv, emphasis added). Brink concludes that universities, globally, have tended to focus on what they are *good at* (demonstrations of institutional excellence, including rankings, funding, and awards), while neglecting what they are *good for* (demonstrations of institutional purpose and community impact, such as addressing global challenges and serving the public good). To quote Brink: "We have been complicit in a relentless focus on the first question, and complacent in the face of a growing revolt about our lack of focus on the second" (Brink, 2018, p. xv).

Seven years later, that conclusion feels even more prescient and, indeed, pressing. In our "post-truth" world, characterized by rising nationalism, populism, political polarization, and declining faith in the institutions that

underpin liberal democracies, it is increasingly urgent that university leaders act to arrest growing public distrust and maintain our social license to operate (SLO).

In this chapter, we argue that our collective response must involve a much more relentless and selfless focus on fulfilling our mission to serve the public good. That requires a genuine cultural change, so that our institutions become more outward-looking, collaborative, risk-taking, courageous, benevolent, and socially engaged. And it will also require a clearer approach to both *articulating* and *demonstrating* what our institutions are actually good for.

Social License to Operate in a University Context

The concept of SLO first emerged in the late 1990s, and it was initially used in relation to industries involved in the extraction and development of natural resources, such as forestry and mining. In broad terms, SLO refers to the ability of a corporation or an entire industry to gain the acceptance, approval, and support of local communities and stakeholders for their operations. The concept recognizes that long-term organizational success is dependent on much more than simply having a legal license or regulatory approval to operate. Rather, sustained success requires deep community support and stakeholder advocacy, which is achieved through responsible management of an organization's social, economic, and environmental impacts.

Social license is not a formal, legal authorization but rather an ongoing, dynamic form of societal approval that is earned through consistent demonstrations of responsibility, transparency, integrity, and responsiveness to community needs. In recent times, the concept of SLO has been applied more broadly across a wide range of organizations and institutions, including universities. As Emeritus Professor Graeme Turner recently put it:

> It may be a bit of a stretch to properly apply this notion to the universities. They are national educational institutions established with public funds expressly to serve the common good. Recently, however, their current level of interest in doing exactly that, as well as their behaviour as public institutions, has been questioned (Turner, 2025).

For universities, maintaining social license is fundamentally important to the maintenance of public and government support. It is the foundation of staff morale and engagement and, therefore, has an enormous impact on the attraction and retention of talent. It also contributes to student recruitment. And it helps to underpin the partnerships (with industry, government, civil society organizations, and philanthropic bodies) that ultimately determine the capacity of our universities to have widespread impact.

What is the Purpose of a University?

Throughout history, universities have always existed to discover, advance and disseminate knowledge. Our institutions have long been places that have sought to determine and promulgate truth, based on evidence, reasoning, and critical thinking. And we have sought to promote progress and innovation – for the good of society, and for the benefit of people and communities across the world. Our university – The University of Queensland (UQ), in Australia – has as its mission: "to deliver for the public good through excellence in education, research and engagement with our communities and partners" (University of Queensland, n.d., p. 4). Most universities express their unifying purpose in similar terms.

Of course, universities also fulfill a larger purpose in the democratic, free-market system, as one of the foundational institutions that underpin the maintenance of liberal democratic values and traditions. As the President of Johns Hopkins University, Ronald J. Daniels, notes in his 2021 book, *What Universities Owe Democracy*, universities play a key role in underpinning the liberal democratic system because of strong values alignment. In his words, this is due to "the premium each places on freedom of speech and thought, tolerance for dissent and heterodoxy, the free flow of information and ideas, and shared and distributed authority" (Daniels, 2021, p. 9). Daniels outlines the four key areas in which he believes universities have both the critical capabilities and the responsibility to contribute to "liberal democratic flourishing":

1. Social mobility: launching meritorious individuals up the social ladder
2. Civic education: educating citizens for democracy
3. Stewardship of facts: creating and disseminating knowledge
4. Pluralism: cultivating the meaningful exchange of ideas across difference

From our perspective in Australia, a commitment to truth, freedom of expression, civic responsibility, and social equity are certainly values that our federal government sees as "first principles" for our nation's universities.

Indeed, the Australian government recently conducted a holistic review of our nation's vocational and higher education system aimed at developing policy recommendations that would deliver lasting and beneficial reform. The *Australian Universities Accord's Final Report*, published in late 2023, opens with a noble definition of the role of universities in Australian society and highlights very similar goals to those outlined in Daniels' book:

> Higher education is vital to Australia's future: the knowledge, skills and research it produces enable us to be an economically prosperous, socially equitable and environmentally sustainable nation. By encouraging intellectual endeavour, creativity and personal accomplishment, it adds to the quality

> of our lives. Pursuing truth through free discussion, it promotes democracy and civic values (Australian Government, 2023, p. 1).

However, despite these high-minded ideals – and the largely beneficial role that universities actually do play in our society – the ability of universities to continue to fulfill our important civic duties is currently being challenged due to declining community confidence in our institutions.

INSTITUTIONAL TRUST

Diminishing Trust in Institutions Globally

Before considering the reason for the erosion of public trust in universities, it is important to acknowledge that there has been a noticeable trend of declining public confidence in societal institutions more generally over the past two decades. There are many examples from across the globe of formerly strong public institutions that have been greatly diminished in the eyes of the community. The causes of this damage are many and varied. Some institutions (for example, the Catholic Church and the banks in Australia, or the police in the U.S.) have been shaken by major scandals that have created widespread community perceptions that the institution suffers from an immoral or unethical culture. Additionally, the institutions of government have been diminished by the perceptions of some that policy responses to recent global emergencies, such as the global financial crisis and the Covid-19 pandemic, have served the narrow interests of elites, rather than the whole community.

However, perhaps the single greatest factor contributing to contemporary distrust of institutions is the seismic change that has occurred in media and communications over the past two decades. The disruption of mainstream legacy media and the rising influence of social media (with its filter bubbles and resultant echo chambers) have ushered in the "post-truth" era, characterized by misinformation, intense partisanship, political polarization, and conspiratorial suspicion. The rise of the so-called "attention economy" of social media has had compounding impacts, including the amplification of unsubstantiated and unscientific viewpoints; a diminishing of respect and civility in our public debates; and a fracturing of society's shared understanding of what constitutes facts and truth.

Alongside these trends, the *2025 Edelman Trust Barometer*, which tracks levels of trust across 28 countries, found that only 36% of respondents globally have confidence that the next generation will be better off. The results on this measure are particularly concerning in developed countries, including Australia, the UK, Germany, and France, where fewer than one in five respondents

felt that the next generation will be better off compared to today (Edelmen, 2025, p. 14). Furthermore, 61% of the respondents in the *2025 Edelman Trust Barometer* reported feeling a "moderate" or "high" sense of grievance, which is defined as a belief that government and business make their lives harder and serve narrow interests, and wealthy people benefit unfairly from the system (Edelmen, 2025, p. 17). This outcome was found to be associated with what the Edelman team refer to as a "trust penalty", resulting in a marked distrust in all institutions (business, government, NGOs, and media) among those expressing high levels of grievance.

The opinion polling company Gallup has also been tracking trust in American institutions for decades. The company's Confidence in Institutions survey paints a clear picture of steady and persistent declines in public trust across most American institutions since the turn of the century. In the period from 2001 to 2024, those with "a great deal" or "quite a lot" of confidence in the church or organized religion fell from 60% to 32%. Over the same period, confidence in the Supreme Court fell from 50% to 30%; from 44 to 27% in banks; from 26% to 9% in newspapers; and the public's confidence in Congress fell from 26% to 9%. While Gallup has not been measuring public perceptions of American universities for quite as long, the downward trends are similar. Over the past decade, those with a "a great deal" or "quite a lot" of confidence in the higher education system fell from 57% in 2015 to just 36% by 2024 (Gallup, 2025).

The Current State of the Australian Community's Confidence in Universities

This growing sense of distrust in societal institutions, including universities, is evident in Australia, too. A study led by Professor Nicholas Biddle of the Australian National University (ANU) found that the Australian community's confidence in our nation's universities fell 3 percentage points (from 70.9% to 67.9%) in a two-and-a-half-year period during, and immediately after, the Covid-19 pandemic (see Figure 1). While this is a concerning trend, it is somewhat ameliorated (for our sector, at least) by the finding that all the other institutions measured in this survey suffered more dramatic falls in public confidence during this period. According to the survey, the Australian community's confidence in the police, schools, hospitals, the public service, state and federal governments, and the aged care sector all fell by between 8 and 22 percentage points over the same period between November 2020 and April 2023.

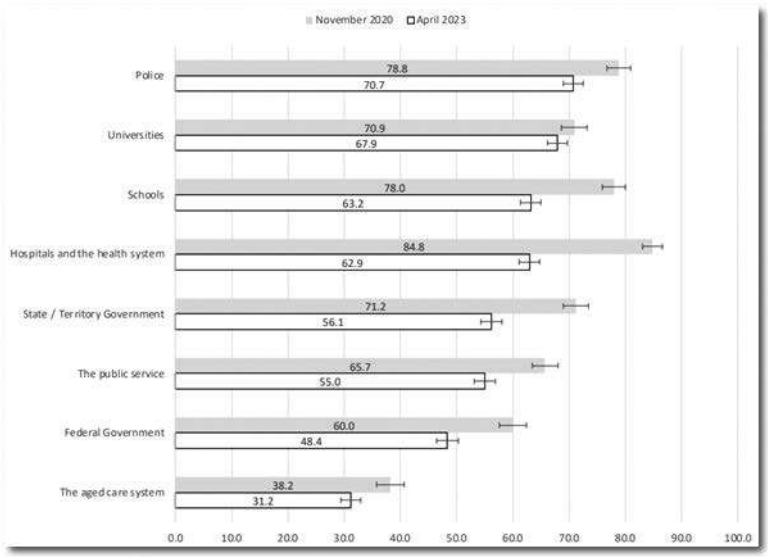

Figure 1 – Per cent of Australians who had quite a lot or a great deal of confidence in institutions, November 2020 and April 2023 (Biddle, 2023, p.10).

However, much more concerning for our sector is that this long-running ANU survey has found that community confidence in Australian universities has been gradually eroding over a 15-year period – from 81.1% in 2008 to 67.9% in 2023. To put it another way, this survey has recorded a gradual but steady fall in public confidence in Australian universities that is equivalent to almost 1 percentage point per year over the past 15 years (Biddle, 2023, p. 9). At one level, the declining trust in universities could be dismissed as a natural corollary of diminishing support for institutions globally – or as an inevitable consequence of technological disruption, the rise of social media, and the associated culture of grievance and political polarization.

However, if we passively accept that dwindling public support is beyond the control of universities, then we run the risk of overlooking legitimately held concerns about the performance and priorities of our sector that need to be addressed in the longer-term interests of our institutions and the communities that we serve. Seeking to better understand community criticism – and address it, where possible – is going to be the most effective way of ensuring that we preserve our social license and maximize the positive societal impact of our institutions.

THE CRITICISMS IN AUSTRALIA

Understanding the Downturn in Community Support for Australian Universities

Over the past few years, there have been a number of consistent themes underpinning the media and public criticisms leveled at Australian universities. Given that we do not have the capacity within the confines of this chapter to unpick the complex nature of all of the issues affecting our sector, we will instead seek to capture the broad thematic nature of these criticisms.

In our experience, the community's distrust or disappointment in our universities is associated with the following perceived issues, which we have arranged according to our sense of their significance in the Australian context.

1. *Universities have become too corporate or commercially focused, and have lost sight of their mission to serve the community*. One clear theme has been the increasing tension between universities' public mission and their operational realities as large global institutions. This is reflected in community perceptions that Australian universities are driven by profit. For instance, a 2023 study found that 83% of people are concerned that universities focus on profit at the expense of education (Littleton, 2023, p. 8). This community perception is clearly strongly held, despite the fact that nearly all Australian universities operate as not-for-profit institutions, with any operating surplus being directed solely towards reinvestment into teaching, research, campus facilities and infrastructure, and student support. In Australia, a number of concerns around university governance and workforce policies and practices have also contributed to the perception that our nation's universities have become overly corporate in their management style. Of course, Australian universities are not alone in facing these issues. University leaders and administrators around the world are confronting similar challenges associated with balancing community expectations against the contemporary realities of governing highly complex, large-scale institutions. This perception of universities losing focus on their mission (in pursuit of profits) is perhaps most simply distilled in a quote from the UK's higher education minister, Baroness Smith, who in May 2025 said that universities have "lost sight of their responsibility to protect public money" (Smith, 2025).

2. *Universities no longer serve the interests of domestic students and local communities*. At the same time, policy frameworks underpinning the Australian higher education system have created financial incentives for universities to attract full-fee-paying international students. As a result, over the past three decades, most Australian universities have enrolled increasing numbers of international students. Until recently, international education was widely regarded by the Australian government and the community as a net positive, given that it drives economic activity beyond the higher education sector, broadens the diversity

of perspectives on our campuses, and contributes to Australia's diplomatic soft power on the world stage. However, in the post-pandemic period, there have been increasing concerns that the number of international students has become excessive. The criticisms leveled at universities on this issue are twofold: first, international students are gaining preferential treatment for access when compared to domestic students; second, the large numbers of international students are exacerbating the housing shortage in Australia's capital cities.

3. *Universities are captured by a "woke" culture that is having a detrimental impact on free speech.* Given that the term "woke" is often deployed mockingly as a way of describing the perceived excesses of left-leaning progressives, this is a difficult criticism to unpack without sounding overtly political (or defensive, on behalf of universities). Accusations that our universities are overly woke are often made as part of the ongoing "culture wars" in Australia, especially in debates related to gender identity, LGBTQ+ rights, and environmental or racial justice issues. Critics argue that there is a prevailing culture of wokeness on campus that has the effect of suppressing free speech and limiting academic freedom. Meanwhile, the more progressive elements on our campuses generally reject the "woke" label, arguing that they are advocating the steps necessary to achieve greater social equity, inclusion, or justice. A comprehensive 2019 Australian government report into free speech at Australian universities led to the instigation of A Model Code for the Protection of Freedom of Speech and Academic Freedom in Australian Higher Education Providers. This Model Code has since been adopted by all Australian universities, and its principles have been reflected in the policies of our nation's universities. The author, the Honourable Robert French AC, concluded his report:

> Reported incidents in Australia in recent times do not establish a systemic pattern of action by higher education providers or student representative bodies, adverse to freedom of speech or intellectual inquiry in the higher education sector. There is little to be gained by debating the contested merits of incidents which have been the subject of report and controversy (French, 2019, p. 217).

Despite this conclusion, the accusation that universities are preoccupied by progressive or "woke" causes, and that this has a chilling effect on free speech, will inevitably persist and remain difficult to counter. Indeed, in the recent period of pro-Palestinian protests on many campuses around the world, universities have increasingly had to manage the competing challenges of being seen to be captured by a "woke" culture at the same time as not upholding the core principles of freedom of expression and academic freedom.

4. *Universities do not show an appropriate duty of care for staff and students.* Over recent years, there have been occasional media reports of anti-social behavior

on our nation's campuses, including some quite despicable acts of racism, anti-semitism, and gender-based violence. While these relatively isolated incidents have been consistently condemned by university leaders and administrators, they have still resulted in media commentary that tends to portray the sector as being either complicit in this anti-social behavior or indifferent and unresponsive to it. This perception that universities do not show sufficient care for key stakeholders has also been reinforced in Australia by several widely reported incidents of universities underpaying staff. These incidents have highlighted the failings of universities' complex staffing profiles, payroll procedures, and oversight processes – rather than being examples of systemic wage theft. On each occasion, the relevant university has retrospectively compensated the affected staff who were underpaid. Nevertheless, these administrative errors have led to an impression that universities do not adequately value the contributions made by our own staff. Of course, nothing could be further from the truth.

REBUILDING PUBLIC TRUST

The Key Imperative: Returning to Purpose

For Australian universities to regain public support and reverse the slow erosion of community confidence, our collective priority must be to have a more relentless – and selfless – focus on fulfilling our mission to serve the public good. In the opening section of this chapter, we referred to the mission of UQ: "to deliver for the public good through excellence in education, research and engagement with our communities and partners". It is a point that is articulated repeatedly, at both internal and external events, because the purpose of our institution needs to be central to all that we *do* in universities, and everything we *say about* what we do in universities. But it also goes much further than this. As institutions that are committed (in the words of Ronald J. Daniels) to "liberal democratic flourishing", our universities must lean into the challenges facing modern societies and economies, including the need to help address declining productivity, social inequality, environmental upheaval, and the impact of rapid technological change. In this section, we outline the three areas where universities have clear opportunities to rebuild community trust, by demonstrating how our institutions deliver for the public good.

1. *Boosting human capital and addressing social inequality*. For Australia, a nation that has always prided itself on egalitarianism and the notion that everyone deserves a "fair go" to improve their lot in life, the *2025 Edelman Trust Barometer* findings about a widespread sense of grievance and a lack of optimism for the next generation are particularly disturbing insights. Indeed, in commentaries on social license, the notion that its loss begins with those who have been left behind is a common theme. In this regard, our universities

are uniquely positioned to help overcome this pervasive and increasing sense of grievance by creating educational opportunities for those who feel that they do not have access to the same opportunities as others in our societies. Access to higher education is critical in this regard, because studies comparing the life outcomes of university graduates with those who completed their education in high school continue to show the lifelong benefits of higher education. University graduates, on average, have a greater range of career choices, earn more, are healthier, and are more socially connected than those who do not get the opportunity to study at university (Ross, 2024; Balaj et al., 2024). Given this, universities can make a difference by purposefully building more inclusive student pathways into higher education for disadvantaged groups that we know are under-represented in our institutions. This includes students from rural and regional areas, lower socioeconomic backgrounds, and Indigenous Australians. By creating more equitable access to higher education – via alternative entry pathways and needs-based scholarships – our universities have the capacity to preserve the concept of the "fair go", and foster greater social inclusion and mobility in our society.

2. *Driving innovation, economic growth, and productivity*. Closely related to this widely held feeling that segments of the Australian community are being left behind economically is the reality of recent cost-of-living pressures and our nation's record of stagnating productivity over the past two decades. Australia's Productivity Commission has calculated that if we had been able to maintain the 2.2% per annum productivity growth that Australia recorded in the 1990s, and continued that through the period between 1995 and 2003, then Australia's average income would be $25,000 higher than it is today (Commins, 2025). The key to unlocking those kinds of prosperity-boosting productivity gains does not involve Australians working harder, but rather, working smarter. As the Productivity Commission has identified, growth in multi-factor productivity (how labor and capital combine to produce economic outputs) requires two key ingredients: (1) new ideas being discovered; and (2) these new ideas being applied or used (Australian Government, 2025, p. 2). As a nation, it has become apparent that Australia is highly effective at generating those ideas and discoveries (mostly from university-based research programs), but we are a lot less successful in terms of translating those ideas into innovations that deliver commercial returns and societal benefits. The discovery of new ideas is part of the core business of Australia's high-performing, research-intensive universities. Indeed, Australia has become a research powerhouse, producing around 3.4% of the world's scientific publications, despite having just 0.33% of the world's population (Australian Government, 2023, p. 57). The 2024 Global Innovation Index ranked Australia as 23rd in the world for innovation, out of a survey of 133 nations. The Index specifically calls out Australia's challenges in converting home-grown scientific discoveries into locally built innovation.

A key line from the report highlights that "Australia excels in the quality of its universities (3rd in the world), the impact of its scientific publications (6th) and its knowledge-intensive employment (9th)" (WIPO, 2024). However, our overall performance in the Index was diminished by measures related to innovation outputs, such as business sophistication (26th in the world), and knowledge and technology outputs (28th). To express that another way, not nearly enough of the globally significant research that is emerging from Australian universities is being translated to drive social, economic, and productivity benefits for the nation. For our universities to drive these benefits, we must re-double our efforts to engage more deeply as one of the three key contributors to Australia's innovation ecosystem – along with our partners from government and industry. As Australia's former Chief Scientist, Professor Ian Chubb, once said, when it comes to innovation, "it takes three to tango". Through adopting a more open and genuinely collaborative approach to R&D partnering with government and industry, Australian universities have an opportunity to help drive economic growth and spread prosperity across the nation.

3. *Serving our communities through engagement and impact*. The third area in which we believe universities have a very real opportunity to win back community trust (and maintain our SLO) is by focusing more purposefully on having a positive impact in those communities that surround our institutions. This is an argument that has been made by two Australian higher education experts, Hamish Coates and Angel Calderon, who recently collaborated on a presentation for the Higher Education Futures Lab. In that presentation, they argue that the era of global university rankings has been a period of "fool's gold" that has encouraged "futile striving" amongst university leaders. In the pursuit of improved standing in the global rankings, Coates and Calderon argue that "universities as critical pillars of society have lost space to show how they engage, connect and are trusted community institutions" (Coates & Calderon, 2024). Together, they argue that we need a new set of metrics that show how universities are genuinely engaged with local communities, and how they are involved in making a difference within those communities. At UQ, we are now actively engaged in adopting a new framework – the Carnegie Community Engagement Classification – that helps us to demonstrate the commitment we are making to local communities, while also being a platform for sharing best practice community engagement approaches within the sector. The Carnegie Classification has been the leading framework for institutional assessment and recognition of community engagement among universities in the U.S. for the past 15 years. It has been implemented more recently in Australia, following a pilot process that involved adapting the framework to suit the Australian context (Engagement Australia, n.d.).

Communicating the Paradigm Shift – The Queensland Commitment

As the President of Indiana University, Pamela Whitten, recently noted: "None of this is earth-shattering, and that's kind of the point. It's a back-to-basics, focus-on-our-mission approach" (Whitten, 2025). But what we need to do, as institutions, is not only to progress the core initiatives outlined above but also to commit to bold and courageous initiatives that demonstrate our willingness to help drive genuine change within the communities in which we are embedded. As decades of psychological research tells us, changing views and rebuilding trust requires a prolonged period of consistent engagement and a genuine commitment to making a difference.

At UQ, we have called our bold initiative "The Queensland Commitment". At its most fundamental level, this initiative is designed to reaffirm our founding mission to deliver for the public good by: (a) providing expertise and driving innovation to help power the future; (b) strengthening our communities; and (c) expanding access to opportunity. In other words, The Queensland Commitment is about building strong and productive partnerships with government, industry, and the not-for-profit sector to help address the challenges facing nations across the globe. It is also a vehicle that enables our team at UQ to demonstrate to local communities, across our home state of Queensland, what our university is *good for*. And fundamentally, The Queensland Commitment is focused on removing barriers and leveling the playing field to study at UQ. Because, ultimately, access to a university education is still the key to unlocking the doors of opportunity – and preserving the "fair go" in Australian society. In other words, The Queensland Commitment is a grand strategic initiative that is purposefully designed to demonstrate to all of the university's stakeholders, through real action, that we are not merely paying lip service to our mission of "delivering for the public good". At a high level, The Queensland Commitment initiative is designed to reinforce the same four aforementioned characteristics of "liberal democratic flourishing" identified by Daniels in *What Universities Owe Democracy*, namely: social mobility, civic education, stewardship of facts, and pluralism. For our team, this initiative has been a point of pride; a valuable demonstration of our university's mission and values; and also a rallying cry to signify (both internally and externally) that UQ is returning to our founding purpose of delivering for the public good and benefit of local communities.

CONCLUSION

What are Universities Good For?

At their very best, universities are among society's greatest forces for good. Our universities uplift people by building human capital and expanding access to

opportunity – helping to break cycles of disadvantage and reduce inequality. They power our future by driving innovation, boosting productivity, and fueling economic growth. And they strengthen the fabric of our communities through meaningful engagement, service, and impact. These are not abstract ideals, but rather the lived reality of people and communities everywhere – and it is all made possible by the work of our students, staff, and partners. As Jeff Bleich, the former United States Ambassador to Australia put it, universities help us to "see the future and prepare future generations to succeed in it" (Bleich, 2017). In a world that urgently needs hope, courage, and solutions, universities are not just relevant, they are absolutely essential. Universities are good *at* many things, but more importantly, they are profoundly good *for* society.

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Chapter 12

From Campus to Community: Eco-Leadership Values and the Art of Living Together in Trust and Truth

Audrey Leuba & Gerlinde Kristahn

"The greatness of a community is most accurately measured by the compassionate actions of its members." Coretta Scott King

INTRODUCTION

Values play a pivotal role in trust-building within any institution (Kaasa & Andriani, 2022). In an ideal scenario, a global higher education institution embodies values deeply rooted in humanism, encompassing respect for human rights and appreciation of diversity. It fosters trust through international dialogue and the exchange of ideas. Within this context, prioritizing equality, diversity, and inclusion becomes paramount. By providing an environment conducive to serene and respectful interactions, such institutions pave the way for meaningful transformation in societies. This vision aligns with the principles of ecosystem leadership (Eisler et al., 2016; Scharmer & Kaufer, 2013), engaging both the university community and external stakeholders to reimagine and reshape the higher education landscape and beyond.

To strengthen trust among members of institutional, local, and global communities, the University of Geneva (UNIGE) exemplifies a pioneering approach through its strategic vision (University of Geneva, 2024). This chapter delves into the interplay between the values of *le vivre ensemble* or "living together" (Guenaou, 2023) and their role in fostering trust and truth within a university setting. It examines how these values underpin an eco-leadership model that promotes inclusivity and harmony. By exploring practical examples, the chapter highlights strategies to create an inclusive and harmonious university community, setting a benchmark for institutions and their communities worldwide.

ECO-LEADERSHIP VALUES

Eco-Leadership for Trust and Truth

In recent years, the order on planet Earth has been shaken from many directions. What humanity has come to regard as trustworthy and truthful is subjective, regularly challenged, or rapidly changing. These changing conditions make it even more important to focus on ways to cultivate values of trust and truth. A constructive view of uncertainty in education is being endorsed, as it is considered a natural driver of curiosity (Jiroud & Mathews, 2022, p. 17). This positive approach includes cultivating resilience and establishing trust in change, which also depends on the university's capacity to adapt and react quickly, a crucial component of higher education in recent times (Cauce et al., 2024, xxvii).

Besides models and defined structures based on past experiences, universities and institutions worldwide should be adaptive and reactive to what is coming next, and even ahead of time. This means living with constant transformation and change. Research studies on eco-leadership show that behaviors within systems cannot be transformed "unless we also transform (deepen) the quality of *awareness* that people in these systems apply to their actions, both individually and collectively" (Scharmer & Yukelson, 2024, p. 35, original emphasis). This requires system-wide engagement at all levels in order to build a common sense of trust and truth within the university community and beyond. One model of eco-leadership is *distributed leadership*, where leading within organizations is a true team effort (Boocock, 2019, p. 3). Eco-leadership always relates to the ecosystems in which we live and work. It conceives of leaders as agents distributed throughout institutions who take a holistic, systemic, and ethical stance (Western, 2010, p. 50).

Eco-Leadership for Sustainability

The need to work for sustainability and peace as universities should be recognized in all leadership efforts within higher education institutions (Satterwhite et al., 2016). Strong leadership draws upon a variety of frameworks and styles,

such as adaptive, servant, and collaborative models, each of which is suited to particular contexts and challenges. While some of these guiding principles are explicitly articulated, others are implicit yet profoundly influence how leaders perceive themselves and interact with others. Eco-ethical leadership is rooted in deeply held personal values, which naturally inform a person's actions across both professional and personal domains (see also McKimm & McLean, 2020).

Firstly, it is imperative for organizations to implement structured initiatives that proactively promote pro-environmental behaviors, given their instrumental role in achieving sustainability objectives. Furthermore, the promotion of ethical leadership behaviors within the workplace is imperative. The integration of environmentally responsible practices into the fundamental values and norms of a university can serve as an effective motivator, prompting the university community to consistently engage in sustainable actions (Aziz & Hussain, 2025).

Human Rights and Democratic Values

Many higher education institutions are based on democratic values, including the assumption that people should live freely and have an equal voice. This is based on the assumption that everyone can think for themselves and for the whole, make appropriate judgments, and act for the common good (Welzel, 2021, p 134). Universal, libertarian, and egalitarian values are increasingly being embraced by the newer generations of people in particular (Welzel, 2021, p. 133). Article 19 of the United Nations Universal Declaration of Human Rights (1948) states: "Everyone has the right to freedom of opinion and expression; this right includes freedom to hold opinions without interference and to seek, receive and impart information and ideas through any media and regardless of frontiers".

Deeply rooted in human rights values, UNIGE's democratic values are respect for and appreciation of people in all their diversity, together with a strong commitment to international dialogue and the open exchange of ideas. As truth depends on the perspective of each individual, UNIGE fosters an environment conducive to calm and productive interactions and places a high priority on equality, diversity, and inclusion (University of Geneva, 2024). Its mission is to seek all varieties of truth and advance knowledge by encouraging intellectual curiosity, creativity, and a critical mindset while preserving academic freedom, as well as to promote interdisciplinary and transdisciplinary research.

UNIGE's values include social and environmental equity, by pioneering its contribution to ecological balance and by supporting the health and cohesion of the university community, the canton of Geneva, and the globe.

LIVING TOGETHER

The Concept at the University of Geneva

Rooted in democratic values, UNIGE seeks truth in its quest for knowledge by nurturing intellectual curiosity, creativity, and critical thinking. It champions freedom of expression and reinforces academic freedom, emphasizing the importance of integrity and innovation in education and research. It supports its university community to build equal access and possibilities for all students and staff.

Beyond its immediate community, the university extends support to public authorities in addressing the needs of individuals in precarious situations. It also emphasizes sustainability and the preservation of planetary balance, recognizing the interdependence of environmental, social, and economic systems worldwide. Connected to the local environment as well as to worldwide challenges, the university spreads its values into the community and globally.

Living together in the context of UNIGE reflects a series of trust-building measures aimed at listening to the community, fostering connections between individuals, strengthening the sense of belonging to the university community, and demonstrating the Rectorate's commitment to addressing both the professional perspectives and precarious situations faced by its members and its community.

The living together concept takes on particular significance in the context of recent societal developments, notably the impact of the Covid-19 pandemic and the influence of social media. These two phenomena have contributed to altered behaviors and the exacerbation of individual isolation, making the need for collective solidarity and cooperation more urgent than ever. The pandemic introduced lasting changes, including widespread isolation – whether chosen or imposed – particularly among students who have come to rely on recorded lectures and digital tools. The digital age has fostered a kind of isolation behind screens and virtual barriers, distancing individuals from genuine social interaction. This trend has been further intensified by the portability of digital devices, which allow people to remain in their own *bubbles*, especially in public spaces such as public transportation.

Post-pandemic, the desire for more authentic, spontaneous connections has become more apparent: "While the resilience of academic institutions is paramount for their survival, the resilience of students is crucial for the future of society" (Cauce et al., 2024, p. 233). There is a growing demand, particularly among students, to break down barriers between faculties and different university bodies. The concept of living together thus responds to this need for greater cohesion and collective interaction.

The living together concept also involves searching for truth through engaging with others, particularly in an era where media and social media algorithms

create *filter bubbles* that limit exposure to differing viewpoints. This trend fosters individualism, as the desire to stand out from the crowd becomes increasingly prioritized in society. However, universities, grounded in scientific inquiry and humanist values, encourage engagement with diverse ideas and perspectives. Education is not about reinforcing existing beliefs but about questioning and challenging them. Open-minded thinking and intellectual courage are key: "The motivation to identify gaps in one's thinking as part of becoming curious likely also relates to open-minded thinking, the inherent acceptance of and openness to alternatives to one's own thinking" (Jirout & Matthews, 2022, p. 9; Stanovich & West, 1997).

The role of universities, therefore, is to create an environment where ideas, points of view, and personalities can meet, interact, and clash, with respect for diversity at the core. The concept of living together fosters this dynamic and, in doing so, promotes the principles of democracy.

Trust in Action: How Universities Can Lead with Integrity

Trust in the community as well as between its members includes the fact that they feel seen, recognized, and equally valued. Equality, with a focus on parenthood, non-discrimination, diversity and inclusion, and the protection of individual rights, is therefore fundamental within the university as well as for its broader community.

These trust-building strategies are actively embraced within UNIGE (University of Geneva, 2024):

- Encouraging Dialogues Across Diversity: initiatives such as intercultural forums, student-led discussion groups, and collaborative projects can bridge cultural and ideological divides, fostering mutual understanding and respect.
- Embedding Sustainability in Education: introducing courses and programs that integrate sustainability principles can instill a sense of environmental stewardship among students and staff, contributing to broader planetary well-being.
- Promoting Mental Health and Well-Being: establishing accessible counseling services, wellness programs, and safe spaces can enhance the overall quality of campus life, ensuring that all community members feel valued and supported.
- Leveraging Technology for Inclusion: digital tools can be employed to facilitate inclusive education, enabling participation from diverse groups, including those with disabilities or those from geographically remote areas.

In this regard, UNIGE works on improving the quality of life of its community, especially its most vulnerable members. It aims to address financial,

medical, food, and housing insecurity among students by leveraging Geneva's ecosystem to support them.

Support initiatives for student equality, health, and well-being include:

- Student housing: the university won a joint tender with the Foundation for Student Housing, enabling the creation of accommodation for about 100 more students in Geneva, expected to be ready by 2028.
- Financial relief: for example, the guarantee of affordable meals at university restaurants and a signed agreement with the Debt Relief Foundation to assist students in breaking the cycle of debt. In addition, the university provides students with access to job opportunities through a dedicated platform, which currently has 11,000 registered users.
- Psychological support: subsidized or free psychological consultation services for students.
- Social support: the university launched the Virtual Student Center project in 2024, designed to offer students personalized and simplified access to events, associations, and social resources based on university buildings and individual preferences.

In 2023, UNIGE's Equality & Diversity service launched a brand-new online guide on parenting, designed for the entire university community. The guide is intended for members of the university – whether staff or students – who are planning to become parents or already have children. The guide answers a wide range of questions and lists the resources and services offered by UNIGE. Trust grows when every individual feels acknowledged, respected, and treated with fairness. The university nurtures this through inclusive dialogue, well-being support, and accessible learning. By addressing real-life challenges and embracing diversity, it strengthens its community from within.

Belonging beyond Borders

UNIGE cultivates a sense of togetherness within the institution that fosters commitment and cooperation among its members, the local community, and worldwide.

- Through the implementation of the Horizon académique project, UNIGE actively supports the integration of individuals from the asylum sector, facilitating their welcome and integration into the community. This fosters a sense of trust among individuals who, due to circumstances such as war or other challenging situations in their home country, have been compelled to seek refuge elsewhere. Within the context of the university community, these individuals often embark on a new phase of their lives, marking a significant transition and the

potential for forging connections with new peers. Access to French language instruction is available, enabling individuals to commence their linguistic studies even in the absence of legal status in Switzerland, a process that can extend over a period of months or even years. They can commence coursework immediately. These courses will be recognized upon receipt of their Swiss residence permit. The program's initiatives are designed to foster a sense of trust and confidence within the local community. It facilitates interpersonal interaction, collaborative learning, observation of challenges faced by different groups, and the reduction of stereotypes.

- UNIGE has actively participated in the international Scholars at Risk (SAR) program since 2008 (University of Geneva, n.d.). In this effort, researchers categorized by SAR as being at risk (of imprisonment, threats to physical integrity, etc.) can join UNIGE for up to one year, thus allowing them to continue their academic work while living in exile.

These projects show how communities can work together to achieve shared goals. The community members work together, share the same paths, and have the same opportunities. These actions are essential for living together in harmony and peace.

Living Together Through the Lens of Truth

For members of civil society, living well often means engaging in civic activities such as caring for shared spaces, staying informed about issues that affect one's local community or society more broadly, and engaging in political discourse (Baehr, 2017, p. 1153). In this sense, UNIGE is aligned with the values of its home, the city of Geneva. International diplomacy, peace-building activities, as well as spaces for genuine exchange and worldwide gatherings, are reflected throughout the university and the local Geneva community.

The living together concept emphasizes citizen, evidence-based, and impact science and similar projects that explore ways to enhance collaboration with participatory bodies. In the pursuit of truth, it is imperative to consider the perspectives of both the local and global communities, as this approach has been demonstrated to yield more reliable and accurate results (Pocock et al., 2018; Frantzeskaki et al., 2019).

It is fundamental to create a governance model that aligns with the expectations of the community where the university is located (University of Geneva, 2024). This could include:

- The establishment of values of truthfulness, research predicated on adherence to ethical practices, and equitable collaborations with local

and global communities. The principles of open science, citizen science, and transparency are instrumental in fostering community involvement and trust in the generated knowledge.
- The enhancement of interdisciplinary and transdisciplinary research to create solutions that address societal issues, as well as foster a collaborative environment that promotes *living together*.
- The establishment of robust collaborative relationships between researchers and policy-makers for the successful translation of research findings into evidence-based policies. The dissemination of research findings to policy-makers serves to bridge the gap between academic research and government actions, thereby promoting a more cohesive society.
- The enhancement of international university and multi-stakeholder partnerships, which is imperative for the dissemination of scientific knowledge and the cultivation of a globally informed public, underscoring the significance of collective action.

UNIGE facilitates and participates in different local and global initiatives that help improve the constant quest for truth locally and within a worldwide living-together community.

- The university community is invited to engage in the development and implementation of new projects, in collaboration with partners outside of the institution. This enhances collaborations close to the reality of people living in the field and increases the input of their experience-based knowledge.
- UNIGE is a member of the 4EU+ Alliance, which supports researchers in working with partner universities in other countries and across different fields of study. This helps produce research results that are valid for a larger community and strengthens exchanges and collaborations with different geographical and thematic perspectives.
- The university engages in strategic collaborations with international organizations based in Geneva. For example, it collaborates with the International Committee of the Red Cross (ICRC) in the fields of education, research, humanitarian health action, and raising awareness of humanitarian issues. It hosts the World Federation of Public Health Associations (WFPHA) within its Institute of Global Health and has maintained a long-standing partnership with the World Intellectual Property Organization (WIPO), including a joint summer school on intellectual property, as well as conferences, symposiums, workshops, and other shared educational programs.
- The university is involved in the defense of academic freedom and actively participates in the SAR network (participation in the

publication of the *Free to Think* reports, Swiss SAR network, links with international organizations, invitations to guest speakers, awareness raising with the authorities, etc.) (University of Geneva, n.d.)

- Measures have been taken to fully engage the university and its community in operations that are mindful of and adhere to environmental limits, aligning with sustainable development objectives and informed by our scientific expertise. The university actively supports student engagement in sustainability. The Rectorate co-organizes Sustainability Week (SDD) with the Student Association for Sustainable Development – an initiative aimed at raising awareness of sustainability issues. UNIGE also promotes active mobility by offering free access to cargo bikes and organizing a second-hand bike market.

With the concept of living together to promote truthful research outcomes, UNIGE fosters shared responsibility through ethical research and inclusive collaboration. It connects local and global communities in the pursuit of knowledge and mutual understanding. Promoting sustainability and academic freedom, it helps shape a more just and connected world.

CONCLUSION

In a world shaped by rapid change, universities are reimagining leadership through shared responsibility and ethical action. Eco-leadership encourages openness, adaptability, and care for both people and the planet. Trust and truth grow when communities are heard, supported, and empowered to shape their future. Inclusive learning spaces and collaborative research help bridge local realities with global challenges. By honoring diversity and fostering curiosity, universities become catalysts for a more just and resilient world.

Living together on a university campus means more than just getting along – it means taking responsibility for each other, talking openly, and getting involved in what is happening on campus and around the world. Universities play an important role in creating trust through ethical research, inclusive governance, and collaboration across different subjects and countries. By working with communities, supporting academic freedom, and promoting sustainability, the university becomes a place where the truth is pursued together. This approach is all about embracing different points of view and teaming up to turn knowledge into real-world action that makes a positive difference in society.

In sum, living together is intrinsically linked to the concept of human rights and allows us to examine the role of universities in nurturing democratic life. Universities must be spaces where individuals from diverse backgrounds and perspectives come together, challenge each other, and cultivate mutual respect – a fundamental pillar of any thriving democratic society. Civic virtues like

tolerance and civility are motivated by a concern with distinctively civic goods such as the well-being of society (Baehr, 2017, p. 1156). The strategic focus on this concept at the university underscores the importance of nurturing not only intellectual growth but also social cohesion within the academic community.

Building a university community rooted in the principles of trust, truth, and inclusiveness demands a commitment to shared values and collaborative action. By embracing the ethos of *living together*, institutions can not only transform their immediate environments but also inspire global progress toward a more peaceful and harmonious society. UNIGE's initiatives demonstrate how eco-leadership can serve as a guiding framework for this endeavor, fostering a culture of inclusion, dialogue, and sustainability.

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Chapter 13

Rebuilding Trust in Higher Education: Putting Students First

Ángel Cabrera

REBUILDING TRUST IN AMERICAN UNIVERSITIES

Decades of strategic decisions and investment in the U.S. have produced the most highly regarded and competitive system of higher education in the world. Grounded in a uniquely American approach – institutional diversity, independent governance, competition, comparatively loose regulation – plus abundant public and private funding, U.S. universities today top world rankings, lead the world in scientific research, earn the most Nobel Prizes, and support the most productive and dynamic businesses on Earth.

Despite all this success, American universities are losing the confidence of the public at an alarming rate – and facing questions about their value and the independence they should be afforded. This worrisome trend, amplified by the political divisions permeating every aspect of society, has made universities vulnerable to an unusual level of political scrutiny and governmental punitive actions – from cuts in research funding to the taxation of endowments, limits to the ability to recruit international students, and even threats to accreditation. In some cases, a combination of government actions and independent campaigns has pushed against governance autonomy and forced academic leaders out of office. If left unaddressed, this crisis of confidence and the political actions it has provoked will have severe and lasting consequences for universities, diminish the essential value they provide, and ultimately make the U.S. less

competitive, healthy, and secure. Understanding the root causes of this loss in public trust is therefore of paramount importance.

An observer from outside the U.S. may have a hard time understanding why so many Americans and their elected officials are dissatisfied with their universities. According to the World University Rankings conducted by *Times Higher Education* (2025), a British media group, 23 of the top 50 universities in the world call the U.S. home. The Chinese Shanghai Ranking (2024), hardly suspected of pro-American bias, also places 26 U.S. institutions among the world's top 50.

Students from around the world appear to agree with this assessment as they regularly vote with their feet – and tuition checks. American universities host the largest share of international students globally (Project Atlas, 2024), with at least twice as many as China. Faculty from around the world also prefer to work in America, with one study (National Science Board, 2020) estimating that 49% of U.S. postdoctoral scholars and 29% of full-time science and engineering faculty were born overseas. Even administrators are drawn to American universities, including about 220 immigrants serving as presidents (Bhandari et al., 2024) – I am one of them.

American universities consistently rank at the top for scientific publications and prestigious awards. While, prior to World War II, virtually all Nobel Prize winners in chemistry, physics, and medicine were based at European universities, the score has now flipped in favor of scientists at American universities – whether homegrown or recruited from other parts of the world.

Universities also provide the talent that powers the most dominant technology companies in the world. While accounting for just about 4.3% of the world population, the U.S. has produced more than half of the world's largest IT and biotech companies and more than half of the world's unicorn startups. Remarkably, the market capitalization of the top six American tech companies (Apple, Microsoft, Nvidia, Amazon, Alphabet, and Meta) has surpassed $14 trillion, much greater than the value of the entire stock markets of the U.K., Germany, and France combined.

Higher education is admittedly not the only factor contributing to this remarkable business success. A large, open internal market, a culture that celebrates risk-taking, abundant venture capital, and a legal system that protects private property and enforces rules, are at least as important. But in a knowledge economy where competitiveness is decided by one's capacity to innovate, the institutions that produce the talent and the new ideas take on a crucial role. My analyses show a strong correlation (of over 45%) between national competitiveness (as measured by the World Economic Forum in Switzerland) and the number of top universities per capita in a country (as measured by ShanghaiRanking). It is not difficult to trace back America's national competitiveness to the contributions of universities and conclude that there is much causation behind that correlation.

Larry Page and Sergey Brin famously created their Google search algorithm while pursuing doctoral degrees at Stanford University. Herbert Boyer started Genentech with Robert Swanson (and with it, the biotechnology industry) after extensive training at the University of Pittsburgh and Yale University, and his work in recombinant DNA at the University of California, San Francisco. Machine-learning algorithms and the idea of using graphics processing units to train them effectively, which underlie the emergence of Nvidia, OpenAI, and a slew of other AI giants, was led by faculty and graduate students at various universities, including Princeton University Professor John Hopfield, who received the Nobel Prize in physics in 2024. The list goes on.

In the decades following World War II, the impact of universities has grown at an impressive pace. For instance, in 1960, American universities served 3.6 million students, and less than 8% of adults aged 25 and older had a college degree. Today, American universities serve more than 19 million students, and more than 38% of adults in the U.S. have a college degree. In 1960, American universities spent about $646 million on research. In 2023, they spent $109 billion – an increase of more than 15 times, even after adjusting for inflation.

The role of American universities in attracting talent from other parts of the world cannot be overstated – and not only for the $50 billion that international students inject into local economies across the country. A 2022 study reported that 55% of American unicorns (startups valued at $1 billion or more) were founded by an immigrant, and 80% had either an immigrant founder or executive (National Foundation for American Policy, 2022). Many of those immigrants first came to the U.S. as international students. Another 2022 study reported that 25% of billion-dollar startup companies in the U.S. (143 of 582) had a founder who first came to the U.S. to study (Anderson, 2022). This impact, too, is growing. In 1960, approximately 48,000 international students studied at American universities, according to the Institute of International Education, accounting for about 1.3% of all students. Today, 1.13 million international students do, accounting for 5.9% of all students (Institute of International Education, 2024).

Immigrant faculty play an important role, too. Geoffrey Hinton, a British researcher who shared the 2024 Nobel Prize in physics with John Hopfield for his seminal work on the machine-learning algorithms behind generative AI, moved to the U.S. to work at the University of California, San Diego and Carnegie Mellon University – before settling in Canada – in search of research funding not readily available in his home country.

Yet, when American physicist Robert Oppenheimer wanted to learn quantum mechanics in the 1920s, he had no choice but to leave America's oldest and finest institution, Harvard University, for Europe (first Cambridge University, then the University of Göttingen), where he could study with the leading physicists in the world. Oppenheimer would eventually return to teach at the

California Institute of Technology and the University of California, Berkeley. He ultimately led the Manhattan Project that produced the world's first atomic bomb and firmed up American military dominance for decades. Today, it is far more likely for a brilliant young European researcher to want to come to the U.S. than the other way around. It is also far more likely they will want to stay. Talent is mobile, and it will flow to locations where it can have access to the resources and opportunities to be most productive.

The reason for the extraordinary success of American universities is multifaceted. American universities are diverse in structure, governance, and funding. They compete for resources, faculty talent, and students; they are governed by independent boards; they embrace faculty and student talent from around the world; and they are afforded significant regulatory leeway, independence, and autonomy in decision-making. They also command vast resources compared to their counterparts in other parts of the world.

Public universities receive from their states, on average, about $12,000 per student (State Higher Education Executive Officers Association, 2024), and charge over $7,000 in net tuition per student, totaling over $19,000 per student, with some state flagship universities bringing in much more. Leading private universities do not receive much or any state funding, but some are supported by large endowments – in some cases exceeding $1 million per student – and charge much higher tuition than public universities. Both public and private universities employ fundraising staff who raise, in some cases, hundreds of millions of additional dollars per annum from alumni and philanthropic organizations to support current spending and grow permanent endowments. Federal and state tax laws incentivize philanthropy by making donations tax-deductible and by not taxing capital gains on assets donated or invested.

University research is also supported by generous funding. The $109 billion American universities spent in research in 2023 is by far the highest in any country. For comparison, the total higher-ed research and development spend in 2018 was about $74.7 billion, versus China's $34.7 billion (though China's figure has also likely grown substantially since). Corporations and private foundations are a growing source of research funding, but more than half of all research expenditure in American universities today comes from the federal government, a system that has worked with minor tweaks since the end of World War II.

In short, U.S. colleges and universities have become dominant in the world over recent decades and have been instrumental in shaping scientific, technological, and societal progress through a unique mix of institutional diversity, independent governance, and generous financial support from states, tuition-paying families, private philanthropy, and a large federal research architecture based on peer review, competitive awards, openness, and collaboration. And yet, the American public is not happy.

PUBLIC PERCEPTION OF HIGHER EDUCATION

Gallup regularly asks Americans how much confidence they have in their universities, and the results paint a puzzling picture. About a decade ago, almost 60% of Americans responded they had "quite a lot" or "a great deal" of confidence, while only 10% said "very little" or "none." Today, those expressing a great deal/quite a lot of confidence in higher education is down to 42%, and even lower among Republicans, with only 26% expressing high confidence in four-year colleges (Jones, 2025). While the most recent numbers saw a modest uptick, the overall trend for the decade remains significantly negative. These numbers are consistent with polling conducted by other organizations, including the Association of American Universities, which assesses public opinion regularly. The Manhattan Institute National Higher Education Poll's numbers are even more concerning, as they show nearly half of voters (45%) feeling that universities are heading in the wrong direction (Arm, 2025).

When probed about the reasons for this mistrust, polls tend to provide two sets of explanations. One has to do with the *perceived value of a college degree*: too expensive, too inaccessible, too focused on knowledge of little practical use. The second, mostly among conservative voters, stems from a *growing suspicion of a political bias on college campuses*: too political, too liberal, too lenient with protesters, too hostile to conservative ideas. Americans appreciate the research conducted by their leading universities, especially in the fields of medicine, national security, and new technologies. But the overall perception of universities is increasingly negative in the eyes of many. Politicians going after universities are not acting in a vacuum but rather are responding to voter sentiment.

This situation came to a breaking point in the fall of 2023. Following the October 7 terrorist attack of Hamas on Israel, Israel's military response, and the ensuing wave of pro-Palestinian campus protests, the presidents of some of the most prestigious institutions were publicly censured in Congress and then pushed out of office after intense public campaigns. Their universities were then targeted with penalties of hundreds of millions of dollars in federal research funding, threats to their tax-exempt status, and potential limits to recruiting international students. Additional measures reining back research investments, and changes in international student visa processes, followed, affecting not only those, but all universities.

University responses so far have varied from public defense of their value to collective legal defense, bargaining, or resignation to government demands. Whatever the strategy, the most common line of defense has been to highlight the value of universities' research for the American people and the potentially irreparable damage of the cuts in federal funding.

Universities rightfully argue that their research has supported America's technological, medical, and military dominance thanks to a proven system they

now see under attack: abundant investment (including in research infrastructure), merit-based distribution of funds to independently governed institutions, and a culture of openness and collaboration. By partnering with universities to carry out the national research agenda following World War II, the U.S. built a system that attracts the best talent, trains scientists and innovators, and produces early-stage discoveries that are the essential building blocks for new and transformative commercial products. Investments in ideas and technologies that are decades in the making are what allow the U.S. to produce breakthrough innovations – like the internet, the Covid-19 vaccine, and generative AI.

These are important and necessary arguments. But they are insufficient. They address the penalties being assessed but leave out the causes of the public mistrust that provoked them in the first place. In fact, a majority of Americans – more than 60%, across party lines – actually support continued investment in university-based scientific research. What is at stake is not so much the legitimacy of science but confidence in the universities that carry it out.

The issue many people have with higher education is about the student experience – access, relevance, value, and political campus climate. Yet the student has, for the most part, remained absent from universities' responses. Restoring trust will require that leading research universities like ours re-prioritize the student as the center of the academic enterprise.

THE ROLE OF COLLEGES AND UNIVERSITIES IN RESTORING PUBLIC TRUST

Success in American higher education has too often been equated with prestige – rankings, selectivity, endowment size, even research expenditure – rather than value for students and the public. Yet these benchmarks offer little reassurance to Americans questioning whether universities are beneficial for them and their families. In fact, they may do just the opposite.

Selectivity may be ingratiating to the few who get in and to the faculty and administrators who let them in, but not to the majority that is left out, resentful of the opportunities they missed, if not dismissive of the university enterprise altogether. Large endowments and impressive facilities may delight affluent students and alumni, but they may be puzzling to families struggling to pay tuition bills. Research expenditure helps establish universities among the academic elite, but does not say much about why that research matters to the average citizen and may amplify suspicions about how much universities care about students.

The perceived *value* of a degree in terms of job prospects and future earnings remains robust overall. Most degree holders say their education was worth the investment, and the economic data supports their assessment: college graduates earn significantly more over their lifetimes than non-graduates. However, an

increasing number of people, especially those who did not get to go to university, believe the cost of college is too high and may not be worth it.

In 2024-25, the average published tuition and fees for full-time undergraduate students were $11,610 at public four-year in-state institutions, $30,780 for out-of-state students, and a staggering $43,350 at private non-profit four-year institutions. Add in housing, food, books, and other expenses, and the average student budget reaches nearly $63,000 at private universities and $49,000 for out-of-state students at public institutions (Ma et al., 2024). Considering a median household income of $82,000 (about half of that for families in the 25th percentile), these costs are not just numbers – they represent a fundamental access barrier for many families and a central concern when evaluating the value and purpose of higher education. Returns do not matter much if you believe the investment to be out of reach for you in the first place.

Universities argue that the average tuition actually paid by students after external scholarships and institutional discounts (what we call net tuition) is far lower than advertised, yet their published pricing strategy resembles that of a luxury brand – signaling exclusivity, inaccessibility, elitism – instead of a service for the average citizen. Couple luxury pricing with a sales pitch that often weighs classic liberal arts dogma over more prosaic employability and practical skills, and we should not be surprised that many Americans conclude college is not for them. Getting into debt for the sake of intellectual enlightenment is a luxury many feel they cannot afford.

This is not to minimize the importance of students' overall intellectual growth, the central role of the liberal arts, the development of critical thinking, or the learning of basic tenets of modern society and culture, all of which are essential goals of the university and requirements for a healthy democratic society. But when we ask for a price that will drain a family's annual resources, we may want to lean more clearly on the value proposition in dollars and cents when we communicate with prospective students.

The second area of mistrust is related not to *value* but to *values*. Universities have the responsibility to serve students from all backgrounds, expose them to a broad range of perspectives, and give them the tools to engage, question, and grow. Yet in recent years, concerns about fairness in admissions, ideological homogeneity, and perceived political bias have led many Americans to question whether higher education is open to all voices. A 2025 national poll found that 66% of U.S. adults are concerned about liberal bias on college campuses, with over a third saying they are "extremely" or "very" concerned (AP-NORC Center for Public Affairs Research, 2025). This is not a fringe issue. It is a reflection of growing doubts, especially among conservative voters, about whether universities truly welcome everyone, encourage disagreement, and foster civil discourse.

Americans agree that universities should be diverse and do what they can to serve underprivileged students, as long as no demographic group is afforded an

advantage to get in or is favored in any way once on campus (Cheche, 2024). Most Americans agree with the 2023 Supreme Court landmark decision ending race-based admissions (McCarthy, 2024). Most are also opposed to legacy practices, favoring the children of those who already had the opportunity and reaped the benefits of attending college (Gómez, 2022). Very importantly, a majority expects universities to be ideologically diverse and open to students expressing their views, however liberal or conservative, without fear of retribution, ridicule, or ostracism.

Free speech was a cause célèbre among liberal, pro-civil rights, antiwar campus activists in the 1960s. Then in the 1980s and 90s, liberals became more concerned about protecting minority students from harmful speech, harassment, and discrimination. Universities responded by implementing speech codes, free-speech zones, safe spaces, diversity statements, and other practices intended to protect marginalized groups. Yet these practices were seen as suppressing conservative viewpoints from the other end of the political spectrum. As a result, the defense of free speech is now a central demand of conservative critics of universities.

In the aftermath of the Middle East conflict, critics saw universities as unable or unwilling to control violent protests that disturbed regular campus operations and, in some cases, threatened Jewish students. The leniency of administrators was seen by critics as politically one-sided, and the discontent that had been brewing for years finally exploded. Conservative political leaders were quick to leverage this animosity and went on an unprecedented attack, the consequences of which are yet to be fully assessed.

For universities to regain the trust of the people they serve, it is of paramount importance that they remain truly open and demonstrate their openness to all ideas. To paraphrase the late president of the University of California, Clark Kerr, universities should not be engaged in making ideas safe for students but students safe for ideas. Universities should provide students with the intellectual strength, curiosity, and skills necessary to evaluate different perspectives, especially those that are different from their own, and to engage in respectful, constructive dialogue with people across a full range of viewpoints.

GEORGIA TECH'S MODEL: GROWTH, EXCELLENCE, AND PUBLIC VALUE

My own institution, The Georgia Institute of Technology, or Georgia Tech, is not isolated from these issues. While not claiming to have all the answers, we have critically examined our practices and have worked to be responsive to public sentiment both in what we do and in how we tell our story. Despite our position as one of the most research-intensive and selective public universities in the nation, we have embraced our responsibility to expand access, improve

outcomes, lower costs, and respond to employer demand, while maintaining a high standard in terms of viewpoint diversity, free speech, and constructive dialogue.

Our strategic plan defines our success by the impact that we have, the students we serve, and the lives we help improve. While we appreciate our strong showing in media rankings – and benefit from the publicity they afford us – rankings are nowhere to be seen among our strategic goals. We have also rejected the norm of small enrollment common in other leading technological universities and have instead become the nation's fastest-growing university. In the past five years, our enrollment has grown by 46%, reaching more than 53,000 students – 23,000 of them through low-tuition, high-quality online master's programs. We have adopted as one of our four strategic "big bets" the doubling of the number of degrees we award annually over the course of this decade, and we are on course to deliver on that goal.

While expanding access, we have achieved best-in-class six-year graduation rates, career outcomes, and return on investment – we are not shy about sharing our #1 Princeton Review ranking in that regard. Because of a surge in applications, our undergraduate program has become one of the most selective among public universities in the country, but not by design. On the contrary, since 2019, we have expanded the entering class by more than 33% and continue to create new transfer pathways for students to start elsewhere and finish their degree with us.

We are taking a deliberate approach to expanding access for student populations we have traditionally not done well in attracting. We proactively recruit students in counties and rural areas in our state, with usually low or no enrollment at Georgia Tech, and offer automatic admission to the top two students at any high school of a certain size. Also, through a suite of transfer pathway programs, we offer structured opportunities for students who may not have been admitted as first-year applicants to start their education at a less selective institution, prove themselves, and then transfer in. Since 2019, our transfer class has increased by 167%, reflecting a commitment to meeting students where they are.

Thanks to generous investment from our state government, we have been able to reduce the cost for students and their families, not just in net terms, but in official, published tuition and fees. Since 2019, we have only increased in-state tuition once, by a modest 2.5% (we increased out-of-state and international tuition twice), and, starting in 2022, we reduced mandatory fees by $1,088 per year. Altogether, in-state students will, this coming year, pay $674 (or 5.31%) less than they did in 2019 – when adjusted for inflation, this is a reduction of $3,978 or 31.36% in today's dollars.

Even with these reductions, and after factoring in in-state and federal financial aid, a Georgia Tech education is still out of reach for students in the

low-income tiers. That is why we are aggressively pursuing student financial aid as the number-one priority in our ongoing fundraising campaign. We have also joined forces with other selective institutions in the American Talent Initiative to find new ways to grow the number of low-income students we serve.

Our online graduate programs, including the pioneering Online Master of Science in Computer Science, have demonstrated that world-class education can be both scalable and affordable. Critics feared that a low-tuition program would somehow hurt our brand as a research-intensive, elite institution, but the unprecedented market response – currently 23,000 working professionals enrolled, and growing – the growth of campus-based programs, and the robust showing in reputation-based rankings seem to indicate otherwise.

We have also made viewpoint diversity, intellectual freedom, and freedom of expression visible and central core values. We have established and systematically enforced clear and point-of-view-neutral policies that safeguard speech while setting fair and consistent rules around the time, place, and manner of public expression. We have ensured the campus is open to speakers from across the ideological spectrum – not just in theory, but in practice. Hosting speakers with different political views, encouraging and creating programs for debate, and modeling respectful disagreement even during heated political campaigns or while facing intense criticism from inside or outside the Institute help us signal our commitment to all stakeholders and perspectives. This commitment to freedom of speech and viewpoint diversity is a priority of the University System of Georgia's Board of Regents and chancellor, who have adopted explicit resolutions and policies to that effect and provide broader political support when the criticisms heighten.

REBUILDING TRUST SYSTEMICALLY

Current punitive government actions risk significant and lasting damage to our universities and our nation's economic competitiveness, health, and security. But the deeper issue we face is the rebuilding of public trust, the decline of which led to these actions in the first place. And doing that requires more than marketing, advocacy, and legal defense. It requires universities to critically reflect on their institutional priorities and how they are meeting the demands of the students and public they serve.

A good place for universities to start is to ground their strategies in student and public value: expanding opportunity, producing knowledge that addresses pressing challenges, and preparing graduates to contribute to their communities and economies. This means expanding access rather than narrowing it, lowering the cost of attendance, and improving financial aid. As Georgia Tech has demonstrated, excellence and scale are not in opposition and can be achieved while keeping costs relatively low. A university can be selective, high-performing, and broadly accessible – if it is designed that way.

Second, universities must protect and promote viewpoint diversity, free speech, and open inquiry. They must have clear rules and be willing to enforce them in a content-neutral way. And they need to be ready to withstand partisan criticisms when uncomfortable or controversial speakers or ideas come to campus. Trust will be built on the belief that higher education is a place where all voices can be heard. That means safeguarding academic freedom and cultivating campus environments where disagreement is not only tolerated but encouraged.

Universities must publicly demonstrate their societal contributions in tangible ways: how their research helps serve the public and national interest; how their teaching equips students with the skills that prepare them to succeed professionally and contribute to an ever-evolving workforce; and how they are genuinely committed to serving students of all backgrounds and income levels, driven by merit and potential. Outreach must reflect the institution's understanding of societal priorities. Universities must be proactive in communicating their value and values – not through self-congratulation, but through clear, honest engagement with the concerns of the public. Institutions cannot assume their value is self-evident. They must make the case every day, through both action and dialogue, that they exist to serve.

CONCLUSION: A PUBLIC COMMITMENT TO PUBLIC GOOD

Spanish philosopher José Ortega y Gasset defined the purpose of universities as providing three basic services to society: advanced training for the learned professions; research to advance science, technology, and our understanding of the world we live in; and transmission of culture – that is, the set of mature ideas that are shared by a society that allow it to function. Universities have so far tried to regain public trust by highlighting their role in science and technology, but the questions Americans are asking have more to do with the value of the education they offer and the culture they convey.

Rebuilding public trust in American higher education will come from a demonstrated commitment to public service – from institutions willing to rethink their models, expand their reach, and demonstrate their relevance. By placing students first, aligning missions with action, and embracing the full diversity of perspectives and people they serve, universities can once again be seen not just as places of prestige, but as engines of opportunity and progress. In doing so, they fulfill not only their academic purpose but their democratic one as well.

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Chapter 14

Can We Strengthen the Role of Universities in the Provision of Science-Based Policy Advice?

Henrik C. Wegener

INTRODUCTION

Society is faced with several urgent, extremely complex, and interconnected problems: climate change, biodiversity loss, demographic changes, pandemics, conflicts and the threat of nuclear war, the food, water, and energy nexus, AI and digital totalitarianism, etc. We need extremely good political governance and decision-making at global, regional, and local levels to manage the challenges and reduce the risk of major societal and ecological crises. There are no simple solutions, and there is little time to develop and implement good ones. In the spirit of Matt Damon's isolated space explorer in the movie *The Martian*, "We're gonna have to science the shit out of this" (Scott, 2015).

Science, interpreted as the most recent and comprehensive research-based knowledge, should underpin and inform the political decisions urgently needed to address many of the complex challenges our societies are faced with. However, science as a basis for policy-making requires that scientists are made available and useful in the political decision-making process. Creating an efficient interface between science and policy, where the most accurate and up-to-date scientific knowledge meets the needs of the political decision-makers in the most constructive way, is not easy. We are best helped if we have clear organizational structures, well-defined roles and responsibilities of science advisors, and, moreover, have agreed on the principles and processes of

procuring, preparing, and receiving science advice, so that everyone involved can play their part optimally and with mutual respect.

The questions remain:

- How can societies maximize the quantity and quality of science-based inputs in political decision-making processes?
- How can we get more university experts involved in science-advice activities?
- How can we increase politicians' acceptance and appreciation of the value of science-based advice in their decision-making processes?

Politicians do not read the millions of papers published each year in the scientific literature, so scientific publishing alone does not constitute relevant input to the political decision-making process because of its highly technical nature and lack of contextual information and assessment of the consequences of different policy decisions. To activate the relevant body of scientific knowledge for a particular policy process, it must be transformed into other formats by experts who both understand the field of science as well as the societal and political context in which the scientific knowledge is supposed to be used.

Every country and society has systems and structures for science-based advice to political decision-makers. However, there are large differences in how it is organized and carried out depending on resources, history, and tradition.

To prevent a common misunderstanding, it should be clarified here that science policy and science for policy are not synonymous. Science policy is the policy relating to the framework conditions surrounding research within a jurisdiction. Science policy is typically the key activity of a ministry of science. I will briefly describe the main stakeholders and organizational entities involved in the science-for-policy system.

The *political decision-maker* is typically a person with the power to develop and approve legally binding laws and regulations, or a person granted powers to implement and enforce existing laws and regulatory texts (the *risk manager*). In Europe, the supreme decision-maker is elected, and the majority in a parliament has the power to develop and implement legislation.

The *science advisor* is typically a researcher in a university or other independent research organization. They can also be referred to as the *risk assessor* in some systems. Science advisors must be independent from political decision-making; in fact, science advisors should be free from any influence of political, commercial, religious, or other factors. This follows the principles of the academic freedom bestowed upon academics in academically free universities and is crucial for the public (and political) trust in the science advice given.

In most countries, dedicated *government research institutes* deliver research-based policy advice within certain domains, for instance, in health, environment, energy, agriculture, etc. (a national public health institute, for example). Typical for these institutions is that they provide advice in areas where there is

a high level of technical complexity, a constant and occasionally urgent need for advice, and often both a national and an international layer of legislation.

Parallel to the government research institutes are often *government agencies* responsible for developing and implementing lower-level technical regulation within the frameworks of politically decided laws (a national health agency, for example). In some countries, the responsibility for the two functions of research-based advice and lower-level legislation is carried out by the same institution, although this does not live up to the ideal of separating research-based assessment and regulatory decision-making.

In the Anglo-Saxon world, political decision-makers often have *science advisors in the ministries* to advise the minister, and to help build bridges between experts in research institutes and universities and the policy-makers.

Above the national levels of policy-making sit supranational systems such as the European Union and the United Nations. They also rely heavily on research-based policy advice for political decision-making and have developed elaborate systems to ensure that expert advice and political decisions can meet each other at the right time and place. In the EU, specialized agencies, such as the European Food Safety Authority (EFSA), the European Medicines Agency (EMA), the European Chemicals Agency (ECHA), and the European Environment Agency (EEA), to mention a few of the 30 decentralized agencies, support the European Commission, the Council, and the Parliament in the political decision-making process. The agencies rely heavily on experts from member states for science advice and for technical assistance. This typically takes place in permanent panels of experts, in ad hoc expert fora, or by other mechanisms (see Figure 1).

The EU, unlike its member states, does not have a large pool of universities and public research institutes from which it can draw expert advice at short notice. The Joint Research Centre constitutes the Commission's in-house service for science-based advice within environment, health, energy, and a few other areas.

The science-for-policy process typically involves the following steps. First, there is a scoping process where the policy-maker and the science advisor(s) clarify whether the political question can be "meaningfully" informed by research-based information and advice. The available time, resources, and process are also agreed. Once the question has been formulated, and the framework conditions clarified, the science advisor(s) take over. They collect and evaluate all the relevant research-based and other relevant information, and prepare a synthesis and draft response, which is presented to the policy-maker for discussion. The policy-maker may request additional analysis, qualification, and/or quantification of different scenarios before the final science advice is given. There is no fixed format for a piece of science-based advice. It can be given orally by a single expert in a matter of minutes, or it can amount to thousands of pages and represent several years of work by multiple experts.

It is a common frustration for scientists that policy-makers often seem to give less prominence to the weight of the scientific advice in the ultimate decision-making. However, it is the policy-maker's prerogative to include any type of information and consideration (there are other legitimate factors, such as the urge to become re-elected) before they arrive at a decision. They are, after all, ultimately held accountable for their decisions by the electorate.

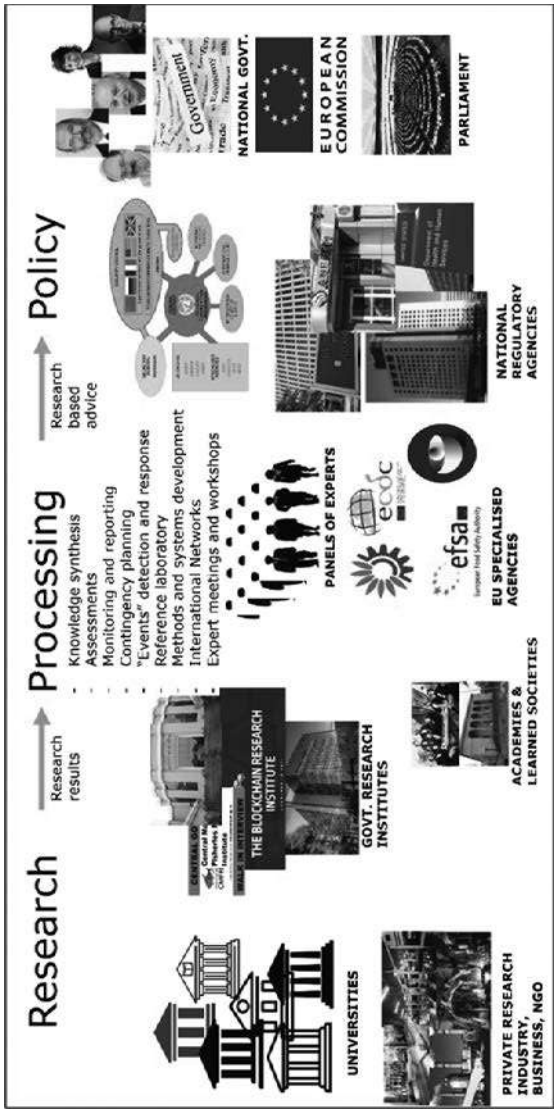

Figure 1 – Main actors in the European science-for-policy system

THE EUROPEAN COMMISSION'S SCIENCE ADVICE MECHANISM

In 2012, the European Commission, inspired by the mechanisms in some member states, appointed its first Chief Scientific Advisor (CSA) to the President. The function was abandoned in 2014, in the transition between the José Manuel Barosso and the Jean-Claude Juncker presidencies. The CSA had fallen out with the "green lobby" for being too positive on genetic modification (GM), and the pressure on the Commission to dismantle the function had apparently grown too large. However, strong pressures from pro-science groups made the Juncker Commission reconsider, and following an evaluation of the experiences with the CSA mechanism, the Commission decided to establish a modified mechanism for direct science-based advice. The mechanism was named the EC Scientific Advice Mechanism (SAM), which comprises three elements: a high-level Group of Chief Scientific Advisors consisting of seven members; a secretariat supporting the Group of Chief Scientific Advisors and SAPEA (the Science Advice for Policy by European Academies consortium); and a coalition of national academies of science and learned societies supporting the work of the Group of Chief Scientific Advisors. SAM is an independent expert group of the Commission, supported by a secretariat in the Directorate-General for Research and Innovation. The Group of Chief Scientific Advisors was established gradually from 2015, and I was appointed to be its first Chair by the Commissioner for Research, Innovation and Science, Carlos Moedas.

The Commission decision in October 2015 to set up SAM stated:

> Policy making requires robust evidence, impact assessment and adequate monitoring and evaluation. High quality scientific advice, provided at the right time, greatly improves the quality of EU legislation, and therefore contributes directly to the better regulation agenda.
>
> In view of obtaining the best possible scientific evidence and advice, a new Scientific Advice Mechanism has been put in place to provide the Commission with high quality, timely and independent scientific advice. In order to improve the interaction between policy demand and the supply of scientific advice and to ensure the independence, scientific integrity and transparency of the advice provided, the Commission may need to call upon the expertise of high-level scientific advisors.
>
> This group should provide independent scientific advice on specific policy issues where such advice is critical to the development of Union policies or legislation. The advice provided by the group should identify the most important and relevant evidence and empirical findings from any scientific field that can support decision-making on the specified policy issues (European Commission, 2015).

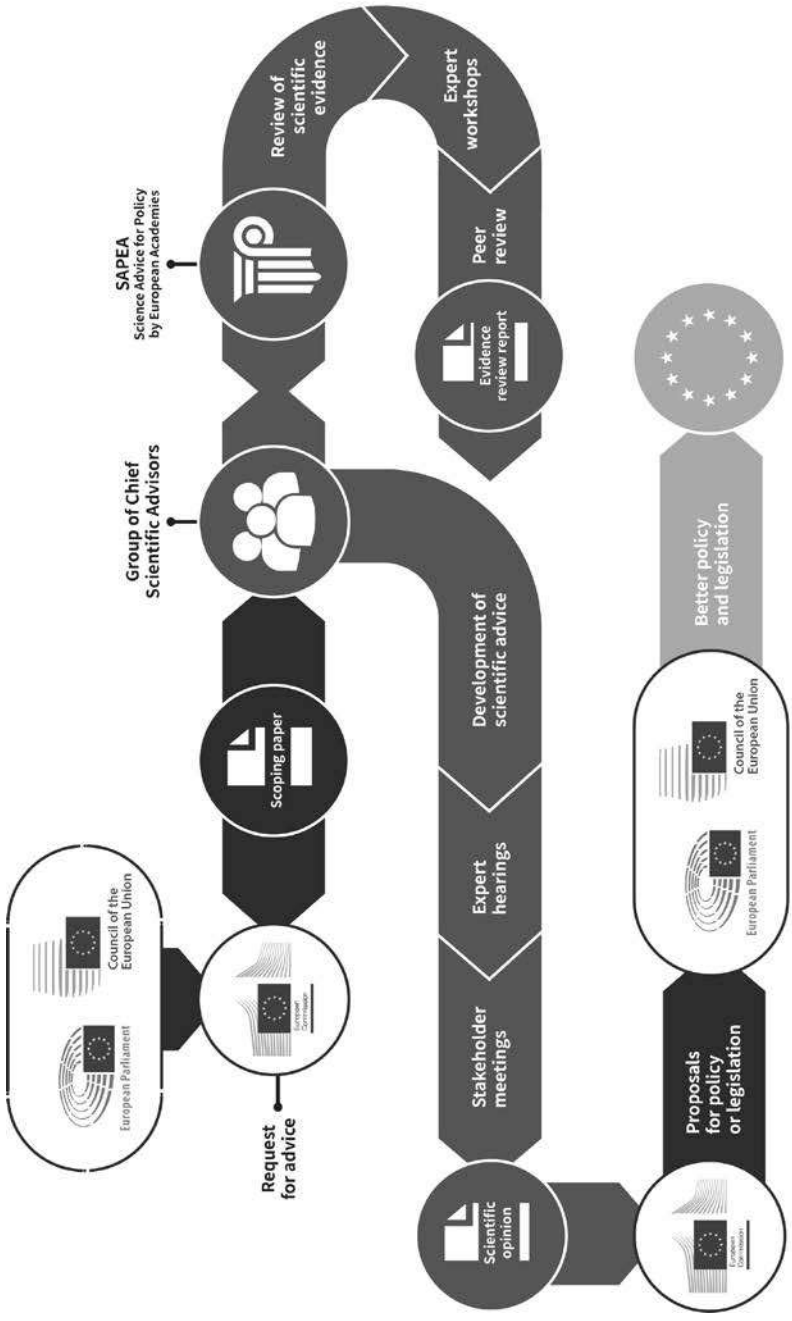

Figure 2 – The SAM structure and process.
Source: Scientific Advice Mechanism, 2025.

Unlike other national or European scientific advice mechanisms, SAM advises on almost all topics and in all policy areas. It mainly responds to requests from the commissioners, who need advice in a policy area, typically in which they are in the process of developing new policies. The Parliament and the Council can also make requests to SAM through the Commission. Finally, SAM can self-task.

My own background is in science advice in the field of animal and human health, mainly in relation to microbial threats, and I admit that I was a bit skeptical when I was introduced to the idea of a "full-service" science advice mechanism like SAM. Producing robust science advice requires deep expertise in the topic at hand and a good understanding of the political and societal context. Often, the detailed processes of producing science advice on a particular topic, for instance, the toxicology of food ingredients, have been developed and refined over decades, and it was therefore difficult for me to grasp how a mechanism such as SAM, would be able to produce high-quality advice in almost any imaginable policy area. But my skepticism was put to rest. Now I see SAM as a model that could be copied at national levels to strengthen the influence of independent science-based information in the broader policy-making processes in a country, and to scale the European mechanism.

However, is there a justification for installing SAM-like mechanisms at the national level? I will argue why I think this is the case after the next example.

THE DANISH EXAMPLE OF MERGING NATIONAL GOVERNMENT RESEARCH INSTITUTES INTO UNIVERSITIES

Another example, which is still relatively unique in Europe, is the merger in 2007 of 13 government research institutes into universities in Denmark (see Table 1). The merger had several objectives, the main one being that all publicly funded research and researchers should contribute to the teaching of university students. Another objective was to make the broad expertise of the universities available for science advice. Finally, one objective was to make the different science-advising tasks subject to competitive tendering at regular intervals.

The reform faced many obstacles from the beginning, which meant that it was, and remains, only a partial success. One problem was resistance among academics in the university sector, who feared that academic freedom would be threatened by the introduction of policy-advising services in the universities. Another barrier was the lack of funding to support the merger, and instead, a reduction of the funding for the science-advising tasks was justified by perceived efficiency gains from the merger. Finally, a large bureaucratic burden was put on the science-advising functions from the ministries and agencies, who felt that they had lost control over "their" experts and therefore wanted to keep them close through detailed contractual management. Taken together,

these barriers meant that science advice, contrary to intentions, has remained relatively insular in Danish universities, and the potential synergies, flexibility, and scalability of the services have not been fully exploited.

	Universities	National Research Institutes
Before 2007	12	13
After 2007	8	3

Table 1 – Reform of the Danish research institution landscape, 2006/07

CAN THE SCIENCE ADVICE MECHANISM MODEL BE APPLIED AT A NATIONAL LEVEL?

The traditional science advice mechanisms often suffer from shortcomings, which may become apparent in a crisis situation, such as a pandemic. Current systems typically reflect past problems more than current and potential future problems, and they often have a mono-disciplinary or sector-narrow focus. They can become institutionally embedded in government institutes, sometimes directly under the control of the ministry developing the policies, and, like most government institutes, have limited resources. Finally, systems are often highly national/local in their configuration.

However, modern-day complex societal problems and their potential solutions often run across traditional regulatory borders, challenging mono-disciplinary scientific assessment and causing political coordination problems. Traditional systems may lack the flexibility and capacity to always use the most relevant and best experts, and they lack the ability and agility to work seamlessly across traditional regulatory and academic borders.

I believe that the SAM model could be a valuable supplement to national science-advising systems. It would provide several benefits; most importantly, it would leverage all the multidisciplinary expertise present to address complex political problems. It would provide access to science advice in all policy areas, including new or emerging policy fields, and would sustain a culture of science-policy dialogue, which could serve as a countermeasure to other strong forces and influences impacting politicians and policy-making processes.

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Chapter 15

Truth, Trust, and the AI Age: A University Perspective on Navigating the Complex Science-Society Interface

Joël Mesot & Roman Klingler

"Veritas" (truth) is the motto of Harvard – the oldest U.S. university, founded in 1636 – and this is not an isolated case. The search for truth was the inspiration for the founding of many universities. And to this day, it expresses the global research community's self-image of orienting itself to the best possible facts in the search for new knowledge, based on a verifiable, scientific method.

In this chapter, we will explore the relationship between the concepts of truth and trust on the one hand, and science and society on the other. We expect to shed some light on the conditions under which these relationships not only exist but also flourish. We are witnessing major technological and geopolitical transformations and, therefore, will conduct our discussion against the backdrop of the AI revolution, and, as we write these lines, we cannot help but take into account the upheavals under the current U.S. administration in the world of science.

TRUTH AND SCIENCE

From a scientific perspective, it is important to emphasize that we must view the search for truth as a continuous process. It is never completed, as the findings

are never final. What is considered scientifically proven today was an unproven thesis yesterday, and may be overtaken by new findings tomorrow. Scientific progress thrives on questioning findings, and to put it somewhat pointedly, science is the current state of error. According to Karl Popper, a scientific theory is good if it can be refuted (falsified), and science approaches the truth by eliminating theories that turn out to be inadequate. However, there is another dimension that runs counter to science's claim to absolute truth. Science never takes place in a vacuum, but always in specific social and political realities which are based on particular value systems. All of this influences the interpretation of scientific findings and may explain why some countries are more open to certain technological advances than others.

The history of science is lined with fascinating examples where new worldviews and discoveries emerge and supersede the previous scientific consensus. At the end of the nineteenth century, it was often said that, except for a few details, physics had solved all problems. Then came the quantum revolution, triggered by a breakthrough from Max Planck, who introduced the concept of quantized energy to explain black-body radiation. 2025 happens to be the International Year of Quantum Science and Technology (IYQ, 2025), in which we celebrate the publication of a paper by Werner Heisenberg (Speicher, 2025) on quantum mechanics. Here, he not only broke away from the classical mechanics of Sir Isaac Newton but also postulated such ghostly phenomena as the dual nature of light or quantum superposition. Of course, this realization did not take hold overnight; it took years of scientific debate and the contributions of a large number of brilliant minds before a new scientific consensus was established. And the difficulties in interpreting the theory are still keeping scientists busy today.

However, the new view into the world of the smallest things was groundbreaking. The course of the first quantum revolution gave rise to technological innovations such as microchips and lasers. It also laid the foundation for today's second quantum revolution with the development of the quantum computer and quantum cryptography.

We have established that the search for scientific truth must be comprehensible and verifiable. With theory, observation, and designed experiment, three different approaches have emerged over the centuries that can fulfill these criteria. We owe the first important steps towards the development of scientific thinking to the Greeks and other ancient cultures. They were masters of observation, and from their amazement in observing natural phenomena, philosophers developed theories about what holds the world together. In doing so, they emancipated themselves with their search for explanation from the world of the gods to the world of phenomena. It was no longer an angry father of the gods, Zeus, who hurled thunder and lightning down from Olympus – there had to be other causes for a thunderstorm. Opinions naturally differed. While Democritus believed he had found the cause in fire atoms, Aristotle, in

Meteorologica – the first textbook on meteorology – was of the opinion that clouds form from moist earth precipitates in combination with heat and ignite as lightning strikes.

As in the explanation of other natural phenomena, measuring instruments played a central role in meteorology in order to empirically verify the theories. Centuries later, after the Greeks had laid the foundations, Galileo Galilei and Santorio Santorio built the first thermometer at the beginning of the seventeenth century, and the barometer followed shortly thereafter. Today, we know that lightning occurs when small water droplets and ice crystals rub against each other in a cloud, creating an electrical voltage that results in a powerful spark discharge. We also understand the weather much better today than we did in the days of Aristotle or Galileo. Forecasts have developed with the help of numerical weather models that make use of the huge amounts of data we can collect and analyze from measuring stations in space and on the ground. Without the advances in high-performance computing and data science in recent years, this deepened understanding and better predictability of weather phenomena would not have been possible.

Many questions, though, remain unanswered. Highly complex and interrelated weather phenomena continue to pose a challenge for today's scientists when it comes to making forecasts. Artificial intelligence (AI) could prove to be a game changer, since machine-learning models are increasingly reported to deliver more accurate forecasts than physics-based forecasting systems can, and this much faster and with much less computing power. Various recent models incorporate observations from satellites, weather stations, and other sensors and produce both global and local forecasts.

Scientific progress is neither straightforward nor free of contradictions. On the contrary, the friction of different approaches and the critical examination and questioning of existing knowledge are what make up the scientific approach. However, the fact that scientific knowledge only ever reflects a provisional state of knowledge does not mean that it has no validity. On the contrary, probably no other method of gaining knowledge has so many safeguards built in to put new knowledge through its paces. To paraphrase Winston Churchill, the scientific enterprise may well be the worst method of knowledge, apart from all the others that have been tried from time to time.

The dawn of the AI age is opening unprecedented opportunities for innovation, including in science. The unique abilities of AI to recognize patterns and process huge amounts of data offer the potential for a new dimension to scientific work. AI can not only accelerate this work, but it can also lead to discoveries that are not possible with previous methods, especially for highly non-linear phenomena. At the same time, AI methods also pose major challenges for the reliability and credibility of the results. Fundamental methodological and ethical questions arise when dealing with AI. The stakes are high.

If we fail to harness the potential of AI for the benefit of humanity, we run the risk of depriving ourselves of all the benefits that technological and scientific progress can have for the world. The penetration of AI into all areas of life brings us to the second important topic of this chapter: trust.

TRUST AND SCIENCE

Trust is the glue for very different types of relationships. Trust shapes relationships between people, between science, societal and political spheres, as well as on a diplomatic level between state actors. It is the invisible force that allows us to do things without checking or questioning them. It is also invoked when a government raises the so-called question of trust in parliament. Trust is therefore one of the most important social resources for the functioning of democratic societies and the peaceful coexistence of the global community of states. While humans have always been at the center of a relationship of trust, in the dawning age of AI, we are increasingly faced with the question: how much control are we willing to cede to a machine? Before we address this question, we turn to the relationship between science and society.

There is often talk in the media of a crisis of confidence in science. At least in this generalized form, this statement does not seem justified. A recently published survey carried out in 68 countries (Cologna et al., 2025) points to a generally intact relationship of trust: in all countries surveyed, a majority of the population trusts scientists, considering them to be qualified (78%), honest (57%), and concerned about the welfare of society (56%). However, fewer people worldwide believe that researchers pay attention to other opinions (42%). This underlines the obligation of science to seek dialogue with all relevant stakeholders and to recognize that what is scientifically obvious is not always congruent with what is politically feasible or socially acceptable.

We experienced how difficult dialogue can be during the Covid-19 pandemic, when scientific task forces advised the state authorities in many countries. Lack of clarity regarding responsibilities, contradictory communication with the outside world, and the new experience for most researchers of their recommendations having concrete consequences for people's everyday lives were just some of the challenges that the scientific expert committees faced at the beginning of the pandemic. In Switzerland, we have – hopefully – learned our lessons from these experiences. An important realization is that there needs to be a permanent exchange between the authorities and the scientific community on key issues with crisis potential. The federal government has therefore set up expert committees on topics such as health, cybersecurity, and disinformation, which can be activated quickly if a crisis breaks out. Here, too, it is important to increase mutual understanding and build trust between

science and politics before the state apparatus operates in crisis mode. At ETH Zurich, we are pursuing a similar goal through the establishment of a School of Public Policy.

Now that the Covid crisis is over, we are already facing the next test: one whose possible consequences threaten to shake the foundations of free science. We are referring here to the worrying events in the U.S. It appears that the current administration is in open conflict with universities and government agencies such as the U.S. Agency for International Development (USAID), the National Institutes of Health (NIH), NASA, and many more. As in other policy areas, the U.S. administration is making further government support for universities dependent on the fulfillment of certain conditions. In doing so, it is not only curtailing academic autonomy, but it also breaks with Vannevar Bush's 1945 manifesto *Science, the Endless Frontier* (Bush, 2021), which has shaped the relationship between the federal government and the science system in the U.S. since the end of the Second World War. Adopted by Congress in 1950, it led to the creation of the National Science Foundation (NSF), which assigned to the government a major role in funding autonomous university research. Many consider this "pact" to have been instrumental in the rise of the U.S. as a dominant power in science and technology (Cole, 2025).

The great uncertainty within the science ecosystem at large, and at many U.S. universities specifically, is prompting some researchers to look for academic jobs in Europe or other regions of the world. However, anyone who is happy about this from a competitive perspective is thinking too shortsightedly. No one in the academic world can have an interest in seeing the leading advocate of science permanently weakened. The U.S. is too important as a science nation, and the global scientific community is too interconnected. In addition, the curtailment of freedom of research and teaching has implications for democracy worldwide. As the science magazine *Nature* (2025) put it in an editorial: "An assault on science anywhere is an assault on science everywhere".

AUTONOMY AND ACCOUNTABILITY

It goes without saying that trust always implies a sense of responsibility. University leaders must adhere to governance rules, and they are accountable for their actions to politicians and the public, especially if they represent a public university that is financed by taxpayers' money. A university, in our understanding, has a duty, therefore, to address the needs and concerns of society as a whole, not just a small segment. This also includes a culture of tolerance and mutual respect. Trust is not simply given but earned. It is reflected in an institution's reputation as an indicator of the degree of trust that politicians and society in general place in a university at any given time. The concept that best allows for navigating between the poles of academic

freedom and accountability is the university as an autonomous institution. Such a concept recognizes that academic freedom also has its limits, but at the same time, it gives the university the greatest possible freedom of action. This autonomy manifests itself concretely in the recruitment of talent, the allocation of resources, and the strategic orientation of the institution.

While trust usually takes time to build, we have all experienced how quickly it can be destroyed. If this occurs, it is not only science that is at risk of being damaged, but also democracy. After all, democracy requires responsible citizens who are able to make informed decisions. And for this, they need trustworthy sources to form their opinions. Science is not the only source in our complex and modern societies, but it is an essential source for making good decisions for the Res Publica (the "public thing" or "commonwealth"). Researchers who fulfill their role as honest brokers by bringing the current state of knowledge (as well as the existing uncertainties!) into the discussion, ensuring it is as fact-based as possible, make a key contribution to a vibrant democracy. Against the backdrop of polarization and the blurring of facts and opinions in our societies, it has become increasingly important for science to contribute to major debates.

Let us look now at the question of trust in relation to AI, which is becoming more and more integrated into our lives, both consciously and unconsciously. We see two levels that need to be distinguished: first, a political and social level, and second, a more technical and methodological level. There are numerous studies that attempt to assess the impact of AI on employment: which sectors will be affected by it, when, and to what extent. For Switzerland, a recently published study commissioned by Google (Implement Consulting Group, 2024) predicts a GDP growth of 11% by 2050, provided that the potential of generative AI is utilized in all sectors. At the same time, the study states that around 8% of jobs would be replaced by AI, 26% of jobs would see no major impact, while 66% of jobs would see a significant increase in productivity as a result of the integration of AI.

Training and continuing education – the key words here are re-skilling and upskilling – belong at the top of our political agendas if society is to benefit from the AI revolution. The transformation process can only succeed if people do not have to fear being among the losers in the revolution. In a survey in Switzerland (Ramp et al., 2024), an equal number of respondents expressed a positive (35%) and negative (34%) attitude towards AI-based technologies, while 27% had a neutral attitude. It is noteworthy that the positive attitude grew with a higher educational level. While only a quarter of people with compulsory school qualifications (24%) had a positive attitude, this figure increased to half (50%) among those with a university or university of applied sciences degree.

AI inspires both enormous hopes and provokes profound fears. People's skepticism stems not only from concerns about their own professional futures but also from the methodological weaknesses of current AI models. It is

obvious that, beyond all the astonishing advances in this technology, there are still issues, such as the tendency of AI models to hallucinate (see IBM, 2023), that research needs to address. Commercial providers of large language models (LLMs) lack transparency about the source code used to train and run the model, the weights of the model, or information on data usage. And even though the models are constantly being improved, generative AI still has the reputation of being an opaque black box, which is an obstacle to gaining trust in this technology.

The development in the field is impressive, and disruption seems to be the order of the day. The Chinese startup DeepSeek sent shockwaves through the global tech industry when it presented a powerful AI language model in early 2025 that can apparently be operated much more efficiently and cost-effectively than the dominant chatbots from U.S. companies like OpenAI, Google, and others. Recent research at ETH Zurich demonstrates that current AI applications still have considerable potential for improved efficiency. Computer scientists have presented an algorithm that continuously refines the response of an AI language model and achieves the same output performance as the best LLMs with up to 40 times less computational effort (Hübotter et al., 2025).

MOMENTUM FOR RESPONSIBLE AI

The ubiquity of AI systems, coupled with the growing realization that widespread adoption is linked to the trustworthiness of the technology, has triggered several initiatives for responsible AI. Numerous global multi-stakeholder initiatives led by private, public, and intergovernmental organizations are attempting to create a common vision for what responsible AI ought to be and how such a vision can be realized. Notable amongst these at the diplomatic level is the United Nations General Assembly (2024) resolution on promoting "safe, secure, and trustworthy" AI systems, adopted in March 2024. Another, more recent public-private initiative is the AI Alliance led by IBM and Meta, of which ETH Zurich is a member (see AI Alliance, n.d.). In 2020, the ETH AI Center was established with the goal of contributing to the development of cutting-edge AI technology that meets ethical standards.

The ETH Ethics and Policy Network focuses more closely on helping define these ethical parameters and translating them into actionable policy. At the national level, the Swiss National AI Institute (SNAI), launched by ETH Zurich and its sister institution EPFL in 2024, aims to advance the development of transparent, trustworthy, and inclusive AI systems. In this vein, the two schools developed the first Swiss LLM, to be released in 2025. The model is fluent in over 1,000 languages and will make the source code,

weights of the model, and the training data publicly available, thus supporting adoption across science, government, education, and the private sector.

All these initiatives for responsible AI will play a critical role in the kind of technology we will be seeing in the future, and each contribution matters. However, global coordination of refining normative principles, technical standards, and ethical benchmarks is critically important. Despite the proliferation of initiatives, scholarship, and policy on responsible AI, there is still substantial debate on how ethical principles should be interpreted and what they mean in practice. Openness, traceability, fairness, and accountability are, without any doubt, essential principles for trustworthy AI development. In other words, at the regulatory level, it remains to be seen if the various viewpoints will continue to converge and if solutions will be found to effectively protect against misuse while remaining open enough to promote innovation.

PROGRESS AND POWER

We live in times of major geopolitical upheaval and uncertainty. While the Western liberal order, with its attributes of multilateralism, rules-based international relations, and a democratic value system, is challenged, a new reality is emerging before our eyes. This is characterized by major power rivalry, an increase in open conflicts, and a growing number of authoritarian regimes. These trends represent difficult framework conditions for building trust in international relations, as the latest *Strategic Trends 2025* from the Center for Security Studies at ETH Zurich analyzes (Grgić & Möckli, 2025).

It is therefore even more important that universities not only defend their academic freedom and advocate optimal framework conditions, but also advocate the application of digital technologies for the betterment of humanity. Technological progress that automatically leads to economic advancement for all cannot be taken for granted, as the two economists and Nobel Prize winners Daron Acemoglu and Simon Johnson (2023) have shown in their stride through "our thousand-year struggle over technology and prosperity". On the contrary, often in history, only a few have benefited from technological innovations, with productivity gains simply automating work rather than creating new tasks for workers. Empowering people rather than replacing and debilitating them must be the goal for the dawning AI age. Technological progress cannot be stopped, the authors write, but we can certainly shape it. This is a call to action for all of us, as universities or as citizens, to strengthen trust in science and engage in dialogue with society.

The current geopolitical situation makes it challenging to look into the future with confidence. Thus, it is all the more important that we dedicate ourselves to doing so. We must focus our imagination on the largely untapped potential that technology, when used wisely, holds: pushing the boundaries of knowledge,

combating disease, freeing us from dangerous and cumbersome activities, and increasing prosperity for all. A worthwhile journey.

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Chapter 16

Restoring Trust in Science to Enlighten Societies in Crisis: a Challenge Facing Universities in the Twenty-First Century. A Specific Analysis Based on the Institutional Evolution at Play in French Universities

Édouard Kaminski

Since the beginning of the twenty-first century, France's universities have undergone a profound transformation. This change is marked by the public authorities' unprecedented and uninterrupted commitment to establishing a dozen or so world-class universities. These new universities have been restructured, granted more autonomy, and provided with better financing. As a result, they have strengthened their longstanding mission of educating young people, firmly anchoring it in high-level research. In an increasingly tense world, marked by crises, misinformation, and the erosion of trust in science, French universities are more committed than ever to defending academic freedom. But beyond that, they have adopted strategies to promote their positive impact on society, particularly regarding socioeconomic development and scientific diplomacy. They now face a more global

duty to bolster public confidence in science and inform public policy with their expertise. This chapter is a personal testimony and analysis based on a career in academia. It examines the changes occurring in French universities and their ability to restore – or at least to maintain – trust in science. It also discusses the challenges they face in doing so.

A PERSONAL JOURNEY FROM BASIC SCIENCE TO SOCIETAL AWARENESS

Those of us who make up Generation X were born at the end of the 30-year post-war boom (see, e.g., Howe and Strauss, 1993), or "*les trente glorieuses*" as we say in French, and grew up in a world that was still largely structured by the two blocs of the West and the USSR. At that time, when we spoke of crises in France, it was primarily the economic crisis, which seemed to be a permanent state of affairs. In this context, higher education was seen as the best way to ensure professional integration and a salary that would allow one to take advantage of the opportunities offered by technological progress. After reducing the time needed for household chores with the invention of household appliances, technological progress had given rise to new ways of enjoying free time, such as new TV channels (including MTV and music videos), home cinema, electronic games, and the beginning of internet surfing. Furthermore, the fall of the Berlin Wall, the failed coup against Mikhail Gorbachev's democratic reforms, the Oslo Accords, or the establishment of European citizenship by the Maastricht Treaty, and finally, the decline in unemployment in France at the turn of the twenty-first century, all heralded a future of peace, progress, and prosperity.

It was with this mindset that I chose a career as a teacher-researcher at a French university, after completing a short postdoctoral fellowship in the United States. This overseas experience had convinced me that research, rather than simply teaching and transmitting knowledge, was the right path for me. At the time, I was completely unaware that the university was a social entity beyond the "student movements" and their potential triggers regarding classic issues such as the selection of students (in a context where universities were not allowed to select students based on their grades) and tuition fees. These issues had no real connection to socioeconomic subjects or the working-class world that defined 1968. In other words, the institution's role was limited to graduation, and I thought that my role was primarily to advance knowledge. At that time, I specialized in fluid dynamics, taking an experimental approach dedicated to the understanding of the formation and thermal evolution of rocky planets, as well as the physics of volcanic phenomena. While I regularly highlighted the impact of my work on volcanic risk management, I also made sure that my research was not perceived as purely utilitarian, and I emphasized

its most fundamental aspects. In short, my vision – and appetite – were "art for art's sake" (Cassagne, 1906). After 25 years in my career, it would be an understatement to say that the world has changed profoundly. These changes, as well as a personal gradual shift toward collective responsibility that culminated in my election as university president, have called into question the certainties and convictions I held when I started in higher education.

Twenty-five years ago, who could have imagined that Russia would wage a war of conquest on Europe's doorstep? Who could have imagined that anti-Semitism would rise again from the womb of "the bitch that bore the bastard" (Brecht, 1981), that the Israeli army would be accused of genocide in Palestine, or that the morning news would cover the latest whims of the President of the United States or the consequences of his disputes with the richest man in the world (who, by the way, would have become the master of American space policy)? Who could have imagined the seemingly inevitable development of climate and environmental crises fueled by the same technological progress that improved living standards and comfort at the end of the twentieth century, and has protected the Western population from malnutrition and famine by increasing agricultural yields? How could we have imagined that science would be viewed with suspicion, with scientists seen as an out-of-touch caste contemptuous of the masses and plotting to hide "the truth" from them, so as to better manipulate and enslave them for the benefit of the elite? How could we have imagined that the principles of the scientific approach – rigor, integrity, ethics, and peer review – would be called into question and denigrated in favor of "common sense" and self-proclaimed experts who offer explanations no longer than a 60-second video or 140-character text?

Amidst the chaos of our societies, universities must seize the opportunity presented by the unprecedented expansion of higher education – we use the word "massification" in France – to address the challenge of restoring meaning to our shared future and illuminating it with science. But can we really entrust this mission to French universities when, for centuries, they have failed to assert their place in society?

FROM INSTITUTIONAL OBLITERATION TO THE AFFIRMATION OF FRENCH UNIVERSITIES' IMPACT ON SOCIETY

To restore confidence in science and the future, I think universities must invest in three key areas. First, they must pursue fundamental and curiosity-driven research activities, as well as applied research activities related to understanding and managing today's and tomorrow's major transitions and crises and/or priorities identified by parliament/the government – all

without compromising academic freedom. Second, they must offer high-level training that gives students the necessary skills for professional integration, along with the essential knowledge for understanding the complexities of the natural and human worlds and developing critical thinking skills. Third, they must become places where young people are awakened and opened to the world through engagement, inclusion, cultural cross-fertilization, and internationalization. In other words, they must provide the new generation with the intellectual tools necessary to become enlightened citizens who can resist fake news and misinformation and make reasonable choices for society.

Regardless of the value and quality of what they offer their students, universities should never be built as ivory towers where church Latin is replaced by a language of specialists that is impervious to the popular vernacular and that guarantees the comfort of learned clerics who are cut off from the world and unaffected by its contingencies. This shortcoming actually quickly affected the French universities created throughout the Middle Ages. They gradually became ultra-conservative, closed, and worm-eaten intellectual edifices, which led to their demise during the Revolution. Even worse, the pact of trust between universities and the country was broken for a long time, as the public authorities preferred to create new schools. This ranged from the establishment of the Collège Royal (Collège de France) by François I, to carry the momentum of the Renaissance to which universities were resistant, to the "*(grandes) écoles professionnelles*" (professional schools) that replaced universities during the Revolution and the first empire. Even the Third Republic, which prioritized education in the republican pact, failed to develop a vision for universities' role associated with an appropriate status. It was not until the Faure Law of 1968 that we moved away from the rigid, facultative logic of the past by creating "*unités de formation et de recherche*" (training and research units) in place of the old ring-fenced faculties, and, most importantly, central councils to define institutional policy.

In the aftermath of the events of 1968, the conditions seemed ripe for French universities to develop their positive impact on society: a link between education and research, a cross-disciplinary approach, and the ability to implement an institutional policy. However, because of the lack of integration between the research policies of universities and research organizations (CNRS, Inserm, etc.) that were created by public authorities after World War II to circumvent unattractive universities, and a lack of autonomy placing them at the bottom of the league table in Europe, French universities have been unable to "raise their game" to meet society's expectations, and to build the essential bond of trust if the work of academics and universities is to be considered in the development of public policies.

It was in 2009 that a real revolution took place for the French higher education sector. In recession-hit France, plagued by one of the largest budget deficits in its history, the French president made an unexpected decision: he launched a major loan, "*le grand emprunt*" (Juppé & Rocard, 2000), to support

a massive investment policy. Some of the loan's interest would finance excellent research teams, with a multi-year approach, enabling the teams to plan ahead. This idea was further developed into a project to establish a dozen or so excellent, critical-sized, and comprehensive universities with budgets and ambitions that would position them at the highest international level. This initiative also addressed the realization by public authorities and society that international higher education was definitively competitive, and that French universities performed poorly in this context, as illustrated by the Shanghai Ranking. For the first time in many years, the conditions were right for French universities to transform and to endorse their new mission of positively impacting society.

The university restructuring movement orchestrated by *le grand emprunt* is probably one of the rare examples of successful public policy in higher education in France. By encouraging restructuring under the supervision of an independent international jury impervious to French political issues, *le grand emprunt* helped create world-class universities such as the pioneering University of Strasbourg, the top-ranked University of Paris-Saclay, or Université Paris Cité, which was the last one established, only five years ago. Beyond the creation of these new "comprehensive" universities, *le grand emprunt* established a new relationship between public authorities and universities. These new universities had to commit to a series of expectations set by the international jury to receive their permanent endowment fund. Although *le grand emprunt* was primarily focused on performance in research and innovation, the "accountable" rationale became a fundamental value for these universities. This instilled the idea that the universities had emerged from a rigorous selection process and that they must now "measure up".

Conversely, universities not involved in *le grand emprunt* selection process had to question their long-term strategic positioning and the justification for their existence. They could no longer compete with the "universities of excellence" on a de facto level playing field. This created a differentiation between comprehensive, research-intensive "universities of excellence", which were specifically endowed by *le grand emprunt* to carry out their international ambitions, and universities rooted in their local areas. These universities developed strong links with local authorities and aligned themselves more closely with the skills and talent needs of their socioeconomic base. In both cases, this evolution has prompted universities to fully embrace their role in public policy, albeit on different scales, and develop a distinctive identity that reflects their impact on society. *Le grand emprunt* supported universities in their efforts to differentiate themselves, providing consistent expectations and funding regardless of changes in political majorities. In 2021-2023, it further financed the "ExcellencES" call for proposals, which provided the final support for universities' new positioning. This enabled each institution to adopt a signature and finance its strategy of differentiation and impact recognition. For example, La Rochelle Université defines itself as a human-scale institution

committed to anticipating the challenges of the environmental transition. Through interdisciplinary collaboration and a commitment to excellence, the university is establishing itself as a leading training and research institution in the context of the Intelligent Sustainable Urban Coastline initiative. Similarly, Université Paris Cité is emphasizing its strengths in health, earth sciences, and human and social sciences research in its signature: "Planetary Health: Healthy human beings in healthy societies on a healthy planet". In all cases, society is offered the same contract of trust: to invest in universities to prepare for the future and reinforce their positive regional, national, and international impact.

A NEW MANTRA FOR UNIVERSITIES: "ALL FOR EXCELLENCE, EXCELLENCE FOR ALL"

One of the potential pitfalls of public authorities' desire to create well- or better-funded universities of excellence is the risk of their transformation into elitist, Malthusian establishments. This would widen the gap between the masses and the elite, who would be welcomed into these universities. This approach echoes the logic of "*grandes écoles*", "*grand corps d'État*", and other "French-style" *cursus honorum*, which, under the guise of republican elitism, increasingly tend towards the social reproduction of the elites. In this respect, it is essential to uphold the principles of the French higher education model in universities, which guarantees access to higher education for all baccalaureate holders (the diploma delivered at the end of high school), although access to the best universities depends on final-year secondary school results. This model is affordable, with scholarships covering the cost for students. With these conditions in place, French universities can be both positioned on an international model of elite training with real roots in research and also affirm their vocation to welcome a large proportion of young people. About 75% of the age group passes the baccalaureate and has the possibility of going on to university. With these conditions in place, it is possible to renew the republican pact linking the university and the nation with confidence.

The first step in building a bond of trust between the population and universities, and hence between the population and science, is confirming that they are places where knowledge is not only freely created but also openly shared and accessible to all. Inclusive policies that enable universities to welcome young people of all backgrounds – including people with disabilities, minorities, athletes, high-level musicians, family caregivers, dedicated students, grant recipients, returning students, and any student with specific needs or a specific educational path – are, in my view, a cornerstone of the university system. It would be worthwhile to give further thought to introducing a universal study allowance, which would enable each student to pursue a university education with confidence,

largely free from social, familial, or geographical constraints. With such an allowance, the nation would affirm its confidence in young people – the sole bearers of the future – and in its universities, the primary tools for recognizing and developing the talents of these young people. Opening higher education to the largest possible percentage of baccalaureate holders while maintaining the research activity of our teaching and research staff, who are at the highest international level, would ensure a good recruitment rate and cultivate a close link between the population and the science developed within our universities.

Welcoming the largest fraction possible of a generation to our universities reinforces their understanding of the scientific process, rigor, and integrity; the importance of scientific proof; and the value of doubt and debate among peers. Hopefully, this will give future citizens a sharper critical sense and make them less susceptible to Manichaean rhetoric and simplistic solutions that seem sensible but deny the complexity of issues and fail to consider positive and negative externalities. This will be a difficult battle in any case, especially if the academic approach remains "formal" and the scientific method is confined to theoretical subjects. Therefore, it is essential that university training remains deeply rooted in the real world. Sandwich courses with time shared between the amphitheater and companies – which are unfortunately under threat in France today – are a perfect example because they minimize the distance between defining notions in class and applying them in the professional world. Laboratory internships are just as important but more specific because they involve students who are already convinced of the relevance of the scientific approach.

It is also important to promote interdisciplinarity to prevent trust from being established solely within a disciplinary silo. For example, a student trained as a soft-matter physicist shall trust the scientific findings about the origin of the Big Bang, but they might not trust what biologists and doctors say about RNA vaccines. Combating the ultracrepidarianism of social networks and their algorithms' ability to manipulate false information will always be difficult, but the more students believe in the rigor of the scientific process, the more likely they are to resist manipulation. In other words, we need to transition from a society where scientific knowledge and culture are reserved for an intellectual elite to a scientific democracy that empowers as many people as possible. This is also the best way to overcome prejudices and develop a culture of compromise. It is probably also mandatory to make a real commitment to Europe in the future, having understood not only what the project could cost in terms of national sovereignty (a direct perception) but also what it could offer society as a whole in the face of today's dominant superpowers (the conclusion reached after a more global and thoughtful analysis).

French universities should then naturally take on the vocation of training the country's future managerial and political elites by combining the dual role of being open to the greatest number of people and being at the top of

international research competition. This will represent a new small revolution in French society and its purely elitist tradition of *grandes écoles*, apart from in law and health training, which are already exclusively present at universities. By training elites who will be positioned in ministerial cabinets tomorrow, from whom political advisors and politicians will be drawn – all of whom will be trained in the scientific method – universities will finally enable the circulation of knowledge between public authorities and research laboratories. Knowing how to conduct sociological surveys, being trained in the main principles of economics, and/or understanding the difference between data, modeling, and prediction are essential prerequisites for developing rigorously evaluated "evidence-based" policies. In other words, this will complement at last the planning capacity of the centralized French state.

THE PATH TO SUCCESS IS NOT WITHOUT ITS CHALLENGES

In theory, building confidence in science seems simple: invest in attractive, powerful universities; take in young people on a large scale; train educated, competent, and cultured political and socioeconomic top management; feed public policies with advances made by research carried out in university laboratories that participated in the training of elites; and reap the rewards of this investment by mechanically infusing science into society. To some extent, this has been the project at work in France since the beginning of the twenty-first century. However, its progress has encountered a particular obstacle: the academic community's lack of confidence in the public authorities' commitment to promoting autonomous universities and in the initiative led by university presidents. Some in the community view the changes taking place in French universities as the implementation of an "ultraliberal" plan that will eventually privatize universities and close them to the masses. These opponents of *le grand emprunt* principles reject the differentiation of universities and the notion that universities should explicitly take into account their positive impact on society. They accuse presidents of being mere instruments of governmental will rather than defenders of the "purity" of the university concept – "art for art's sake". They conceive of the university only through the freedom of research and the governance of clerics who alone know what is good or bad for their congregation.

All constituted bodies are, probably even by definition, reluctant to reform. However, the reforms currently underway and promoted by French university presidents can only be pursued if trust is maintained or re-established. In France, at least, a university president must continue to be elected by a board of directors (*le conseil d'administration*) that both represents the entire university community and includes external members. Purely internal boards of directors,

as advocated by some trade unions, risk becoming insular and returning to the ivory-tower syndrome. Conversely, purely external boards of directors and presidents create a risk of breaching trust with the community. *Affectio societatis* is a main ingredient of trust: communities need to be able to empathize with their president because he or she has an accomplished research career and has been committed to teaching and student success. Otherwise, the label of apparatchik or pure "manager" will demonstrate that this presidency cannot be trusted.

A second key factor in the evolution of universities and an essential ingredient in building trust is the student population, which is the largest group on campus. For a long time in France, elected student representatives were seen as mere heirs to May '68 and future leaders of left-wing political parties. Today, students are increasingly concerned with their university life and what can be described as the student experience. We must give them the opportunity to participate not only in democratic bodies but also in executive governance. This will allow them to be a force of proposal and be fully involved in improving the student experience beyond the quality of courses. By enriching the overall university experience of students, recognizing their commitment to internal politics and associations, and adapting to their specific needs and expectations, universities will develop a stronger bond with their students and maintain it when they become alumni. Active and committed alumni will be more sensitive to the heritage handed down to them by their alma mater, especially scientific methodology. Thus, they will hopefully remain inoculated against anti-science attacks.

Lastly, the question of the political positioning of universities in social debates should be mentioned. While universities must turn toward society to appear as indispensable investments and crucibles of solutions to the world's problems, they should also avoid becoming overly politicized to maintain trust with the population. Adopting partisan stances on controversial issues, national social issues, or international questions can pose a risk to this bond. Advocating for one political vision will strengthen the bond with one part of the population but break it with another. However, it is essential for our universities to defend the values of respect, inclusion, and intercultural dialogue that they have always upheld. They must lead debates by accepting confrontation and recognizing the importance of consensus to carry the voice of the university beyond any particular camp, no matter how powerful it may be within the community. Depending on the subject, it is a fine line to walk; trust is probably gained at this price.

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Chapter 17

Japanese Research Universities at a Crossroads

Nagahiro Minato

Issues concerning universities in Japan have never been a matter of such broad social interest as they are today. The trend seems to reflect the distinctive social changes in Japan that have become evident in the past three decades or so. After the collapse of the economic bubble in the late 1980s, until which time the stock market had enjoyed unusual growth beyond economic reality and sustainability, the nation experienced a long-lasting period of stalled economic growth. That period of prolonged economic shrinkage, which also caused the spread of an atmosphere of social stagnancy that lasted until recently, is often referred to as Japan's three "lost decades". Among the reasons for the economic stagnation might be the failure of the Japanese industrial sector to adapt to the dramatically evolving technological innovations in various new disciplines, including information and communication technology (ICT), and the rapid globalization of those disciplines. While interaction between the industrial sector and universities used to be minimal, or even non-existent, in previous research and development (R&D) conducted by companies, the situation forced companies to interact and collaborate with research universities to develop both cutting-edge technologies and human resources versed in them. As such, "academia-industry collaboration" has become an important focus, involving both the government and industrial sectors, and major research universities are strongly encouraged to participate as important players in social innovation, and to be equipped with effective mechanisms for collaboration with the industrial sector.

During the three "lost decades", another major issue became apparent, that is, the continuing low total fertility rates, which have been at around 1.2-1.5 children per woman since the 1990s (MHLW, 2020; MHLW, 2023). While Japan has enjoyed the benefit of a "demographic bonus" over the last century, with its abundant working population, the prolonged low fertility rates during the three lost decades have canceled out that bonus completely, and in coming decades the nation will be confronted with a "demographic onus" accompanied by the prolongation of the average lifespan. This drastic demographic change is also likely to impact universities, because the student numbers eligible for university admission are expected to decline even more severely, decreasing by over 30% by 2040 (MEXT, 2025a, p. 9). On the other hand, the total number of four-year universities in Japan has increased by about 50% during the past three decades (MEXT, 2025a, p. 85). Because the admission rates of high-school students to four-year universities appear to be plateauing at around 60% (MEXT, 2025a, pp. 70, 268), the increasing mismatch between the numbers of universities and students will become a serious issue for the entire Japanese university system in the coming decade.

These two issues, which seem to be independent of each other but have likely been caused by many of the same underlying social factors over the past three decades or so, prompt us to reassess the optimal social role for Japanese research universities in the coming decades.

THE TREND OF ACADEMIA-INDUSTRY COLLABORATION

Until the mid-1980s, when Japan exhibited unprecedented economic growth, with the second largest GDP in the world, driven mostly by its heavy-manufacturing industries, the nation's major business enterprises were equipped with their own research institutes, where the R&D was conducted using cutting-edge facilities and technologies, along with the efficient training, through practical experience, of skilled engineers. R&D at the companies was largely self-contained, with minimal, if any, interaction with academic research at universities. In those days, there was a rather clear distinction between research for development in industry and academic research at universities. This is exemplified by the report by Vannevar Bush, in which he asserts that public research grants should be spent on academic research, but not on development research (Bush, 1945). However, as robust industrial innovation was driven by emerging information technology (IT) and its rapid globalization in the 1990s, industry in Japan failed to adjust to the global IT-based technological transformation. This was the beginning of a

long period of stalled growth in Japanese industry, and most companies were forced to scale down, or even close their research institutes in the following decades.

Emerging Expectations Placed on Universities

As such, it was rather natural that Japan's research universities came to the front of the stage with respect to the technological inventions in various emerging fields, such as IT, computer science, nanomaterials, biotechnologies, and, more importantly, the human resources versed in them. With strong backing from the industrial sector, the government began to strongly encourage national universities to initiate "academia-industry collaboration", providing various incentives for such efforts. Thus, in the past decade or two, most research universities in Japan have been well equipped with regard to departments for the implementation of academia-industry collaboration, including the management of intellectual property and technology licensing. It is noted that this trend has incidentally opened up a new source of external grants for universities in the form of indirect costs for collaborative activities.

The Evolution of Academia-Industry Collaboration

In the early phase of academia-industry collaboration, the collaboration used to be rather unidirectional, such as the provision of new academic findings and/or technologies for developmental use by companies. More recently, however, a portion of academia-industry collaboration has evolved into a more comprehensive style that takes place over longer terms, in which the academic and industrial partners genuinely collaborate, with research assets and researchers from both sides working toward solutions to major issues of shared interest, such as the development of novel energy sources or drugs for certain diseases based on new disciplines. This new trend of academia-industry collaboration is often called "co-creative collaboration". Such collaboration may sound rather unpractical and inefficient, due to a less clear focus on development, but based on Kyoto University's experience, the model can often be quite rewarding in terms of expanding the vision and experience of both sides, even if it is not immediately linked to specific products.

Entrepreneurship in Research Universities

Another prominent trend has emerged in universities as a kind of extension of academia-industry collaboration, that is, the aspiration of university researchers themselves to develop startup ventures based on their own original ideas, research outcomes, or entrepreneurship. While entrepreneurship is a valid path for facilitating the direct transformation of research outcomes

from academia into social value, it requires many disciplines distinct from research per se, and it is therefore crucial for universities encouraging startup ventures to provide their students and faculty with proper education courses and practical experience of entrepreneurship. Some universities may additionally have their own venture capital (VC) fund to directly support startup ventures, often called "creative VC". For instance, Kyoto University's VC fund has invested in more than 60 startup ventures originating from the university, most of which are based on original inventions in the fields of energy, new materials, biomedicine, food and agriculture, and other fields. Such startups, which seek to address global issues, are often called "impact startups". Further, for real groundbreaking fundamental discoveries with great, if not immediate, potential for application in diverse areas, the establishment of incorporated associations bridging the university with various companies with diverse interests can be considered. Kyoto University has launched such incorporated associations to promote the R&D of induced pluripotent stem cells (iPSCs) and photonic crystal surface-emitting lasers (PCSELs), and expects the spinout of various startup ventures from them.

The Road to Financial Self-Reliance of Universities

While these activities related to academia-industry collaboration and academic startup ventures represent direct responses to the emerging social expectations placed on universities, they also open a promising new way for universities to achieve financial self-reliance. The funding of national universities in Japan used to depend largely on restricted budgets, such as a fixed management expenses grant from the government and various public research grants. External income sources, such as indirect costs associated with academia-industry collaboration and capital gains from university-funded startup ventures, are important financial resources that can be used discretionarily to enhance the universities' capabilities. After all, such activities may provide an excellent ecosystem for enhancing the research and education at universities.

In the past three decades, activities related to academia-industry collaboration have emerged as an important facet of research universities. While the contents of collaboration have evolved in diverse ways, it appears that universities are taking more active and leading roles in social innovation. The commitment is certainly non-profit in nature, but it substantially contributes to the development of financial self-reliance for the universities, as well as a potentially good eco-cycle for the enhancement of their research and education.

MAJOR DEMOGRAPHIC CHANGES IN JAPAN

As stated, the total fertility rate in Japan severely declined in the 1990s and

has remained at very low levels ever since. It is predicted to cause a radical demographic change in coming decades, with a steady increase in the over-65 population and a sharp decline in those under 18. Accordingly, the absolute number of people eligible to be university students is expected to decline by more than 10% in the coming decade (MEXT, 2025a, p. 9). On the other hand, the total number of universities in Japan has steadily increased from approximately 500 in 1990 to as many as 800 today, as the rates of university admission have increased (MEXT, 2025a, p. 85). However, the university admission rate seems to have reached a plateau at around 60% (MEXT, 2025a, pp. 70, 268), and therefore, the progress of the mismatch between the number of universities and the number of students will become a serious problem in Japan's higher education system very soon.

Opening Universities to International Students

This demographic change in Japan does not take into consideration the number of immigrants, which is among the lowest in the world (less than 3%) (Immigration Services Agency, 2024; Statistics Bureau, 2024). However, despite a rather strict immigration policy, the government has implemented aggressive initiatives to encourage universities to enroll international students since 2000, and the number of international students enrolled at universities has increased remarkably from around 50,000 before 2000 to nearly 150,000 in 2024, of which more than half are students in graduate courses for MD or PhD degrees. Nonetheless, the ratios of international students still remain quite low (less than 5%) as compared to those of most OECD countries (JASSO, 2025, p. 4). There may have been several obstacles that made international students reluctant to enroll in Japanese universities, including the language barrier and a shortage of scholarships. In recent years, however, most major universities provide full English-based curricula as well as a variety of scholarships and tuition exemption systems, and so those may no longer be serious problems for international students. Rather, the major concern of international students may be their career paths after graduation or obtaining degrees. In the past, they were expected to go back to their home countries after graduating from university or completing their degree courses, but given the current demographic conditions, it is quite important that international students educated at higher education institutions in Japan can stay to pursue their preferred careers there. Also, Japanese society must be much more open and inclusive for them. Most major universities, including Kyoto University, are now prepared to support international graduates in pursuing their chosen career paths – academic or non-academic – in collaboration with industry and other diverse social sectors.

Enhancement of Graduate-School Education

Another concern regarding the steady decrease in university students is that, as the absolute number of students will decrease in the future, even if the current graduate-school enrollment rate is maintained, the absolute number of degree holders will also ultimately decrease. Therefore, in order to maintain and further increase the absolute number of degree holders, it will be necessary to substantially increase the graduate school enrollment rate, which is a considerable challenge given the current situation. In this respect, it is notable that, historically, graduate schools have not been very popular in Japan. For instance, the number of bachelor's degree holders per million capita in Japan is largely comparable to other major OECD countries, but the number of doctoral degree holders (MD or PhD) in Japan is much smaller when compared to the 2021 figures for the UK, Germany, or the U.S.: about 10-20% for MD holders and less than 40% for PhD holders (MEXT, 2025b, pp. 46, 47). Also, according to the data from the Japanese government, the proportion of doctoral degree holders among the CEOs of large-scale companies in the U.S. is around 70%, whereas in Japan, that figure remains at less than 20%, and the situation is similar with respect to politicians and government officials (MEXT, 2025b, p. 64). This is certainly due to the low numbers of bachelor's degree holders progressing to graduate school, which is only 10-13% for all of the relevant decades (MEXT, 2025b, p. 13). Among the reasons for those low figures, the most salient one is probably the enduring historic perception in universities that a doctoral degree, in particular a PhD, is a qualification required exclusively for an academic career, and accordingly, Japanese society outside academia, including the industrial sector, is not prepared to recognize the merits of doctoral degree holders. However, as stated above, a strong demand is emerging in the government and industrial sectors for human resources with the highest level of education, as represented by doctoral degree holders. Therefore, to increase the number of doctoral degree holders, even in the face of decreasing absolute university student numbers, it will be important to implement the comprehensive reform of the graduate-school education system and program contents, and to promote the understanding of the merits of doctoral degree holders and their potential roles in wider social sectors outside academia.

Differentiation of University Missions

However, it will not be an easy task to increase the number of graduate school students seeking doctoral degrees in the face of the steady decrease of the absolute number of university students. Increasing the number of graduate students from overseas as much as possible by assuring their postgraduate career paths in Japan might help to a certain extent, but the effects may be minimal, if any. In the 1990s, a government policy emphasizing graduate-school education urged all

of Japan's national universities, which number more than 80, to provide graduate courses in addition to their undergraduate programs, irrespective of their scale. However, this policy, which applied to all 80-plus national universities, resulted in only a minimal increase in the number of graduate school students, from around 7% to 11% (MEXT, 2025b, p. 6). This is probably because the government's implementation stressed the emphasis of graduate courses in "all of the national universities", rather than the revision of the curricula and diploma policies of the graduate schools and the reform of the education courses based on that, toward general transferrable skills in addition to pure academic training, for instance. In this respect, it would be more practical and efficient to more or less allocate the undergraduate and graduate education missions among many national universities, reminiscent of the 1960 California Master Plan for Higher Education. Doing so could lead to the genuine empowerment of graduate schools in Japan to sustain the population of doctoral degree holders, albeit amid the progressive decline of total student numbers.

THE MISSIONS OF RESEARCH UNIVERSITIES REVISITED

Universities in Japan are confronting two major issues with respect to their relationship with society and sustainability. One is the overwhelmingly increasing demand for a more active and direct contribution by universities, particularly research-oriented universities, to technology development and industrial empowerment for social innovation. Naturally, that demand tends to be much stronger with regard to national universities. The other issue is the steady decline of the absolute number of university students – a trend that can be traced back across the past three decades, as very low fertility rates have persisted, but which will become even more evident in the coming decade. To maintain the absolute number of students in higher education in the coming decades, Japan's university education system needs to be efficiently adjusted, including the promotion of globalization and the enhancement of graduate-school education.

For over a century, the core principle of Japan's leading universities has been, and still is, academic freedom in research and education. That principle is particularly stressed in classic research universities such as Kyoto University, which was founded as an imperial university with a historic mission to develop original science and technology, as Japan had taken a new step forward as a modern nation in the nineteenth century. That said, Kyoto University intends to rearticulate its contemporary missions as follows:

1. Academic freedom ensuring that basic research, driven by the motivation and curiosity of researchers, is fully secured and sustained. After all, this is the

fountainhead of true invention and innovation that can transform society, and any threat that restricts it must be avoided.
2. The university will endeavor to transform the reliable knowledge and new inventions it generates into social value to contribute to society and humanity, and for that mission, it will establish adequate mechanisms and foster human resources versed in such activities.
3. As a leading research university, it shall emphasize its graduate schools and enhance the highest levels of graduate education to produce numerous doctoral degree holders in diverse disciplines who will play active roles in broad sectors of society.
4. Lastly, it shall provide open and fair platforms for comprehensive and multidisciplinary approaches to addressing major contemporary problems, aiming to promote common good and justice, and integrating both academic and non-academic sectors.

Fulfilling these functions should lead to the establishment of a more trusting and reliable relationship between the university and society.

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CONCLUSION: TRUST, TRUTH, AND THE FUTURE OF UNIVERSITIES

The 2025 Glion Colloquium took place at a time of profound societal changes. The accelerating pace of technological, demographic, economic, and environmental transformations has disrupted traditional systems of knowledge, reshaped public expectations, and challenged the legitimacy of universities as both producers and guardians of truth. At the same time, the very foundations of public trust (in facts, expertise, and institutions) are being tested as never before. In this complex landscape, the subject chosen for the 2025 Glion Colloquium, *Trust and Truth – How They Impact the Complex Relationship between Science and Society*, resonates not only as an intellectual challenge but as an existential question for higher education institutions. As the Colloquium's conclusions underline, trust and truth are inseparable: trust without truth lacks foundation, while truth without trust loses its social legitimacy. The credibility, relevance, and impact of science depend on this mutual reinforcement.

TRUST AND TRUTH: THE CORE OF SCIENCE'S SOCIAL CONTRACT

Science is a collective pursuit of truth, an ever-evolving, self-correcting process aimed at approximating reality. Yet, as several participants in the Colloquium reminded us, truth in science is rarely absolute. It is shaped by context, by evidence, and by the continual questioning of assumptions. This epistemic humility is one of science's greatest strengths, but it can also be its greatest vulnerability when misunderstood by a public accustomed to certainty. Trust and truth lie at the heart of science's role in society, but we should be aware that perceptions of reality may vary from person to person, which means that truth is not an absolute concept.

Building trust, and rebuilding it when it is lost, therefore requires a renewed social contract between science and society, one that embraces uncertainty as an integral part of the scientific process rather than a sign of weakness or deception. As the discussions at the Glion Colloquium highlighted, effective communication is central to this effort. Scientific experts must not only convey their findings but also explain how knowledge evolves, why consensus sometimes shifts, and what ethical principles guide their work. Truth must be transparent, not simply asserted. Trust, which takes years to build and can be lost instantly, must be nurtured both internally, among students, faculty, early-career researchers, and staff, and externally, toward citizens and policy-makers alike.

Yet truth alone is insufficient. Trust depends on relationships between universities and their students, between science and the public, and between science, knowledge, and power. It is earned through consistent behavior, openness to dialogue, and accountability. For universities, this means embodying the values they teach, which means intellectual honesty, inclusivity, and respect for diversity of thought. Glion Colloquium participants emphasized that building trust "within" universities is as vital as earning it "outside". Inclusion, transparency, and active listening are prerequisites for credibility.

THE RESPONSIBILITY OF THE UNIVERSITY IN THE AGE OF ARTIFICIAL INTELLIGENCE

One of the central challenges discussed at the Glion Colloquium was the rise of Artificial Intelligence and its implications for the pursuit of truth. AI can analyze data, generate hypotheses, and simulate decision-making, but it cannot assume moral responsibility. As several contributors emphasized, universities must not allow AI to take over the responsibility of producing truth. Universities must remain the ultimate guarantors of truth, ensuring that human judgment, moral reasoning, and public accountability guide technological tools rather than the reverse.

Algorithms can process information, but they cannot discern meaning or wisdom. They can reproduce patterns, but they cannot reflect on purpose or values. The danger lies not in technology itself but in forgetting human judgment of it. Universities must therefore lead the way in defining ethical frameworks for the use of AI in research, teaching, and governance. They must educate students and researchers to see AI not as an oracle but as a tool, one that must be guided by human discernment, moral reasoning, and public accountability. The discussions that took place in Glion insisted that while AI extends analytical power, it cannot replace ethical reflection. Preserving the human dimension of knowledge – curiosity, empathy, and responsibility – is essential to sustaining trust in science.

BUILDING TRUST: FROM THE CAMPUS TO THE COMMUNITY

Trust begins at home. Within universities, it must be cultivated among students, faculty, and staff through an ethos of inclusion, transparency, and shared purpose. As the discussions revealed, this internal trust is fragile. Institutions that fail to listen to their communities may be confronted with the risk of losing the support of the individuals who embody their mission. To reinforce trust internally, universities must ensure that students feel a genuine sense of belonging within the academic community.

To restore this internal cohesion, universities must create environments that are not only safe but also brave. They must protect freedom of expression while promoting the courage to engage with difficult ideas. Shielding students from discomfort may offer temporary relief, but it deprives them of the intellectual resilience and moral depth that democratic societies require. Brave spaces, rather than safe ones, are where students learn to wrestle with complexity, confront competing values, and discover their own voices as citizens of both the university and the world. Participants of the Glion Colloquium explicitly called for "brave spaces", not merely safe ones, where students can confront difficult truths and engage in open dialogue.

Genuine engagement involves listening before reacting, acknowledging legitimate concerns and integrating them into reform processes. This includes taking seriously the concerns of student and community activists, who should be included in meaningful participation in institutional life.

Nonetheless, when activism becomes violent or destructive, it can become an impediment to understanding, compromise, or change. So, it is essential to work together as a community to build avenues for genuine, constructive dialogue across differences, especially in these polarized times. Trust is not built through public statements or policy documents alone; it grows through dialogue, shared responsibility, and lived experiences.

Externally, universities must extend this trust-building to the communities that surround them. They can do so by leveraging their research and expertise for

public benefit, through citizen-science initiatives, participatory research, and partnerships that allow local populations to co-create knowledge. Glion Colloquium participants urge universities to "leverage their capabilities to benefit neighboring communities" and to engage the public directly in research processes, enabling citizens to ask questions and understand how science works. When the public becomes a participant rather than a spectator, science becomes not only more transparent but also more human. Such engagement restores confidence that universities exist not merely for themselves but for the common good.

SCIENCE FOR POLICY TO REINFORCE THE DIALOGUE WITH THE PUBLIC

One of the strongest messages to emerge from the Colloquium was the need for sustained dialogue between science and politics, experts and citizens, and universities and the media. The widening gap between scientific expertise and political decision-making has eroded public confidence and hindered evidence-based policy-making. To bridge this divide, universities must embrace science for policy as a central part of their mission, while preserving the independence of science policy, guided by transparent and peer-based advisory mechanisms. Universities should promote this dialogue and engage with those who feel most distant from or resistant to science. Trust grows through the inclusion of marginalized voices.

Equally critical is the culture of ethics of research. The trustworthiness of universities depends on their commitment to integrity, through clear codes of conduct, open data practices, and accountability mechanisms that apply equally to all. Ethics cannot be left apart as a nice-to-think-of principle. It must be integrated at every level of the institution, from laboratory to leadership. Promoting a robust culture of ethical research, with transparency and institutional accountability, is a cornerstone of trust.

Finally, the media plays a decisive role in shaping public understanding of science. Universities must build stronger partnerships with journalists, not only to disseminate findings accurately but also to foster informed debate. Communication must serve democracy. By giving scientists the communication skills they need and by establishing relationships of mutual respect with media and journalists, universities can help rebuild the civic space where trust and truth meet.

Glion Colloquium participants called for training scientists in clear, accurate communication and for strategic partnerships with media to foster informed public dialogue.

TOWARDS A NEW DEAL FOR HIGHER EDUCATION INSTITUTIONS

Throughout the Glion Colloquium discussions, one subject resurfaced regularly: universities must recenter their mission around their students as citizens.

This does not mean abandoning research or professional training but integrating them into a broader vision of civic education. Students should be viewed as future stewards of knowledge, justice, and democracy. Universities should orient their mission around students as citizens of the academic community, linking learning to democratic participation.

To sustain this mission, universities must embody the values they seek to teach. They must be inclusive in composition, transparent in governance, and accountable in action. They must cultivate a sense of belonging among all students and staff, regardless of origin or belief. They must be exemplars of the kind of society we wish to build – pluralistic, ethical, and open to dialogue.

CONCLUSION: THE COURAGE TO LEAD WITH TRUST AND TRUTH

The reflections that emerged at the Glion Colloquium converge on a simple yet profound conviction: the university remains one of the last institutions capable of uniting trust and truth in a fragmented world. Its mission, however, cannot be fulfilled by tradition alone. It requires courage, the courage to fight misinformation, to challenge injustice, and to reinvent itself in the light of new realities.

The Glion Colloquium's closing message emphasizes that universities must lead with courage, clarity, and a deep commitment to their students' lived realities, anchoring trust not in rhetoric but in daily practice.

Universities must therefore lead with clarity, humility, and purpose. They must dare to be both critical and compassionate, both rigorous and inclusive. Trust, once lost, cannot be regained easily. It must be earned, daily, through honesty, coherence, and service. Truth, meanwhile, must remain the guiding principle.

Universities are not merely repositories of knowledge but guardians of the public good. The challenges before us – climate change, inequality, polarization, and technological disruption – demand not only innovation but integrity. By connecting ourselves to the twin imperatives of trust and truth, universities can help humanity navigate uncertainty with wisdom, courage, and compassion.

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