

The Need for Innovation: Digitalization, Sustainable Cities, and Reforming Higher Education



*Top row, left to right: Miguel Urquiola, Gerald L. Curtis, Takatoshi Ito, Andrés Jaque
Bottom row, left to right: Yumiko Noda, Teruo Fujii, David E. Weinstein, Mary C. Boyce, Hiroo Mori, Merit E. Janow*

CJEB's Annual Tokyo Conference
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Welcoming Remarks

The Center on Japanese Economy and Business (CJEB) of Columbia Business School held its annual Tokyo conference on May 29, 2023. This conference supports the Center's overall mission to promote knowledge of the Japanese economy and its business systems in domestic, East Asian, and international contexts and acts as a conclusion to CJEB's public activities for the academic year. This year's conference was titled "The Need for Innovation: Digitalization, Sustainable Cities, and Reforming Higher Education," and it was co-sponsored by the Development Bank of Japan Inc.



David E. Weinstein

David E. Weinstein, CJEB Director and Carl S. Shoup Professor of the Japanese Economy at Columbia University, welcomed attendees to the first in-person Tokyo conference hosted by the Center since 2019. Professor Weinstein outlined recent economic and political changes in Japan and the United States, such as efforts by Japanese Prime Minister Kishida to strengthen ties with President Biden’s administration, enhance collaboration in the Indo-Pacific, and bolster Japan’s national defense goals.

Professor Weinstein remarked that it was an interesting time to be a specialist on the Japanese and American economies, with both countries facing various global challenges and opportunities ranging from China’s evolving role in the world to new, disruptive technologies and digital tools like ChatGPT. He went on to outline key topics the 2023 conference would cover, including higher education reform, global urbanization trends strengthening the need for smart, sustainable cities, and the road to digital transformation in Japan.

Professor Weinstein expressed his gratitude to CJEB corporate sponsors and staff and extended special appreciation to CJEB’s Founder, Professor Hugh Patrick, for establishing the Center. He concluded his opening remarks by highlighting CJEB’s continued efforts to contribute to a shared understanding of Japan and its business system, adding that he looks forward to seeing how Japan responds to rising domestic and global challenges and opportunities in the coming years.

Keynote Speech – The 21st Century University: An Enduring Foundation for Talent, Education, Discovery, and Innovation Launches a New Tradition of Impact

Mary C. Boyce, Provost and Professor of Mechanical Engineering at Columbia University, began her keynote speech by stating that higher education today finds itself in a historic moment as the sector expands its mission to more fully bring education and research activities to confront societal challenges, while further advancing its role as an innovator. Through expanded research, education, and innovation activities, universities are helping provide solutions that address the full spectrum of societal challenges, ranging from climate change and sustainability to health and medicine to social justice and equality.

Provost Boyce noted that despite these developments and changes in the sector, there were several enduring elements that universities carry forward as part of their core mission. Among these elements are research and education, with a special focus on fundamental research that advances knowledge for

its own sake as well as the liberal arts education as a core element in preparing undergraduates holistically for their future. American universities, in particular, have long been a cornerstone of democratic society and economic strength, and this role is only further amplified today.

Provost Boyce then elaborated on how the contemporary university is evolving and which developments serve as generators of change at the higher education level, stating that the challenges of today's world demand that universities embrace their potential to impact humanity, both locally and globally, and that new arrangements and partnerships need to be formed. She highlighted that Columbia has already embraced the task of better-translating scholarship into action by partnering with organizations from the private and public sectors. One example of this development is the Columbia Climate School, the first of its kind to be established in the United States.



Mary C. Boyce

Provost Boyce added that the research landscape in the United States is evolving, with the public sector expanding its funding focus toward turning knowledge into tangible solutions. As examples, she cited the National Institutes of Health's recent launch of the Advanced Research Projects Agency for Health (ARPA-H) and U.S. Congress's passing of the CHIPS Act.

Provost Boyce noted that universities are also uniquely positioned to address the intersection of new technologies and ethical and policy issues because they combine subject matter expertise with openness, transparency, and commitment to academic freedom, thereby providing a platform for advancing trustworthy solutions and propelling innovation to address societal challenges. This positioning, she explained, is critically important, especially on the frontiers of technologies, such as building out smart cities, where a spectrum of new interconnected technologies promises to create a more efficient, sustainable, and livable urban environment. These promising technologies have also been confronted with challenges on issues such as privacy, data security, and equity, and universities are uniquely equipped to tackle these issues. She added that academia's thoughtful approach to new technologies is also paramount to the development of artificial intelligence, where universities bring expertise to consider and mitigate unintended consequences.

Today's students want to have an impact, Provost Boyce remarked, adding that universities are starting to develop innovation ecosystems around design, development, and entrepreneurship, such as lab-to-market accelerators that take basic research ideas and turn them into real-world products so that they can go to market and more rapidly impact society as well as Design Challenges to engage students with designing solutions to specific societal challenges. As a result of this, the university as a start-up incubator has become a growing trend in the United States, with Columbia being a leader in this field.

In closing, Provost Boyce commented on the need for higher education to have global exchanges and partnerships to bring different ideas from across the world together and turn them into real-world solutions. She emphasized that given the current geopolitical landscape, it has never been more important for universities to think about this important global exchange. Columbia, for instance, is trying to meet this challenge by creating small outposts called Columbia Global Centers around the world to facilitate faculty and student engagements in different parts of the world as well as partnering with other universities to offer dual degree programs and further expanding research collaborations with other universities as well as industry and government.

Panel I – Higher Education for Innovation

Takatoshi Ito, Professor at the School of International and Public Affairs (SIPA) of Columbia University and Director of CJEB’s Program on Public Pension and Sovereign Funds, began the first panel by thanking Provost Boyce for her comments. He remarked that, based on his personal experience at Japanese and U.S. universities, there’s serious reform needed at Japanese universities in order for them to remain relevant as a source of innovation in Japan and to prevent them from slipping further in global rankings.

He also welcomed the panelists: Teruo Fujii, President of the University of Tokyo (UTokyo); Miguel Urquiola, Dean of Social Science and Professor of Economics at Columbia University; and Provost Boyce, who joined the panel as well.



Takatoshi Ito



Left to right: Miguel Urquiola, Teruo Fujii, Mary C. Boyce, Takatoshi Ito

President Fujii began his remarks by recalling that when he entered the office of President of the University of Tokyo in 2021, there was a growing realization that economic and materialistic development alone was not enough to increase human prosperity and well-being. At the time, his office deliberated on what role the university should play in this changing environment before releasing in September 2021 a new guiding principle for the University of Tokyo called “UTokyo COMPASS,” which aims to create the future through dialogue, promote diversity and inclusion, and make the university an institution that anyone in the world would want to join.



Teruo Fujii

President Fujii walked audience members through societal transformations that have direct implications on the role of the university: increased data traffic and a paradigm shift to a data-driven society. Due to these changes, there needs to be, President Fujii said, a shift in Japan from the linear career model—in which people first obtain an education, then work, and then retire—toward a model that allows people to re-skill themselves and participate in lifelong learning. As one example to aid this purpose, UTokyo Extension, a subsidiary of the University of Tokyo, has launched the Data Science School, which supports the development of AI and data science skills.

President Fujii said, however, that despite the rise in technological importance, it was also vital to remain aware of the continued societal importance of design, art, and liberal arts. To this aim, the Institute of Industrial Science at the University of Tokyo has partnered with the Royal College of Art (UK) to establish a DLX Design Academy, which offers corporate employees a program on design thinking.

Beyond lifelong learning initiatives, the University of Tokyo also emphasizes providing students with real-life experiences. President Fujii highlighted several strategic alliances and collaborations the university has set up with various companies, such as IBM and Mitsubishi Estate. He concluded by discussing UTokyo’s aims at strengthening its start-up ecosystem, including through added funding initiatives.



Miguel Urquiola

Professor Urquiola began by discussing his research on the historical research performance of universities, identifying why the research universities of certain countries have performed better than those of other countries and explaining the methodology used to gather data. He presented audience members with a graph that depicted several countries’ university research performance from about 1875 to about 2000, showing that Germany and France used to be the top performers, while the United States and Japan were at the bottom of the ranking around the time of the Civil War or the start of the Meiji Period. However, while the United States has since done

exceptionally well and is leading the list today, Japan has not, remaining far behind the U.S. in terms of research output.

Professor Urquiola explained that he attributes this difference to two main factors in the United States higher education landscape: (1) the fact that the U.S. has developed a market-oriented system with ample differentiation between schools (2) the fact that there is a vast variation of school or university reputation in the U.S., with some schools' reputations—as well as their access to resources, including funding—being heavily influenced by their quality of research output and research talent.

Professor Urquiola added that, while this market-based system worked for the United States, he believes there are different ways of achieving the two features that are elevating the U.S.'s research output. Reflecting on the United States's success, a central implication for other countries looking to improve their research output is that countries should not be afraid of differentiation between schools, including a large variation in prestige, price, and types of research, and a variation in school reputation, including incentives to measure research performance and fund research initiatives.

Professor Ito then began the panel discussion, during which speakers spoke about the impact and importance of the ability to attract and propel global talent on the success of research performance at universities, as well as efforts by higher education institutions to translate research into real-world solutions by supporting initiatives such as start-up creation. They also commented on the role of funding in advancing or hindering research and other activities and the importance of collaboration between universities, government, and the private sector to support society and address issues.



Left to right: Miguel Urquiola, Teruo Fujii, Takatoshi Ito, David E. Weinstein, Mary C. Boyce

Panel II – Smart and Sustainable Cities

Professor Weinstein opened the session by providing the audience with a general context for the panel's topic, explaining the importance of cities for innovation and productivity, as well as for reducing greenhouse gases. He explained that because cities tend to make people interact with each other more

frequently than rural areas while also offering denser networks of business services, they typically make humans more productive. At the same time, the high density in cities, combined with more people using public transportation while also having to travel shorter distances, makes cities significantly less carbon-intensive on a per-capita basis.

To illustrate these points, Professor Weinstein provided the audience with data on the productivity and carbon emission rates in major U.S. cities, adding that while building cities that look more like New York can lower carbon emissions substantially without the implementation of any new technologies, there are many U.S. government policies that work against furthering urbanization.



David E. Weinstein

Professor Weinstein then introduced the panelists:

Andrés Jaque, Dean of the Graduate School of Architecture, Planning and Preservation (GSAPP) of Columbia University; Yumiko Noda, Chairman & Representative Director of Veolia Japan K.K.; and Hiroo Mori, Director and Executive Vice President of Mori Building Co., Ltd.



Left to right: Hiroo Mori, Yumiko Noda, Andrés Jaque, David E. Weinstein

Dean Jaque began his comments by noting that the conversation around innovation has largely been transformed since he founded his practice twenty years ago. Today, the discourse operates very much in the ecological paradigm, addressing climate change and the biodiversity crisis. Design itself has changed, too, through a decoupling of materiality and activity/interaction, so that design today doesn't necessarily have to translate to new buildings. Rather, the idea of repurposing existing buildings became increasingly important in facing the environmental crisis. Infrastructure, as part of this change, has become just as important as architecture, Dean Jaque said, with projects such as waste management in the city of New York serving as crucial opportunities for architecture and design to have an impact in reducing emissions and inequality produced by environmental injustice.

As a result of the climate crisis, cities need to reassemble their societies, a task for which the ability to mobilize design in line with ecological considerations is necessary. It is this very mission that is at the center of GSAPP, which is making it possible to train graduates in interdisciplinary methodologies through coordination with other Columbia Schools. He added that design today is seen as something produced collectively, bringing together different stakeholders.



Andrés Jaque

Dean Jaque also discussed how another paradigm shift in design thinking has occurred around the re-utilization of materials. Many materials for all kinds of projects, for instance, are often already in the city and can be repurposed, and machine learning and artificial intelligence programs—combined with the design process—can help with identifying them. Dean Jaque concluded that cities today are viewed as a crucial device to increase the capacity for humans to interact with a large spectrum of biodiversity while also saving costs.

Yumiko Noda commenced her presentation by providing audience members with an overview of her employer, the Paris-based international company Veolia, whose main business pillars are water, waste, and energy. Veolia provides water treatment services for municipalities, as well as collecting, treating, and recycling waste while also producing energy from it. Ms. Noda emphasized that much of the company’s operations are circular, such as transforming waste into energy resources.



Yumiko Noda

Such circular-economy activities, Ms. Noda said, are critical from an environmental perspective, especially for Japan, which tends to be short on domestic resources and relies much on resources from outside of the country. Japan has made much progress in terms of moving toward a circular economy. Last year, for example, the Ministry of Environment released a “Circular Economy Roadmap,” and in March this year, the Ministry of Economy, Trade and Industry published a strategy paper outlining what Japan needs to do to foster a circular economy. Ms. Noda also provided examples of two small Japanese towns—Kamikatsu Town and Osaki Town—which have greatly reduced their waste by moving to a more circular model of waste management.

Ms. Noda also discussed the Japanese government’s Vision for a Digital Garden City Nation, which has four cornerstones: (1) to create jobs in rural areas outside of Tokyo with the aid of digital tools (2) to

create an inflow of people (3) to fulfill wishes for marriage, childbirth, and child-rearing (4) to develop an attractive region. In order to meet these objectives, the Japanese government is planning to build out its digital infrastructure while also developing digital talent and assistance to make sure people aren't left



Hiroo Mori

behind. The ultimate purpose of a city—to provide well-being via jobs and social connections—can be enabled by those digital tools, Ms. Noda concluded, because they would allow people to connect to the global market, even if they live in rural areas.

Mr. Mori spoke next, introducing audience members to Mori Building's city ranking system, which covers 48 cities across the world. While the canon of the top four cities in the ranking hasn't changed—New York, London, Paris, and Tokyo—Mr. Mori noted that Tokyo was able to overtake Paris recently, moving into the third position, but Paris may overtake Tokyo in 2023. Mori Building, as a developer, creates the rankings necessary to do SWOT

analysis to ensure that Tokyo can be more attractive and identify how cities at large can be made better, given that two-thirds of the global population is expected to be living in cities by 2050.

Next, Mr. Mori discussed how cities generally can be made more attractive from a development perspective. One way, he said, was to build up, but instead of having one skyscraper after the next, cities should use the areas around high-rises effectively, such as by adding gardens at the ground level. Another idea is to build residential skyscrapers near office buildings so that people have shorter commute times or so they could walk, further reducing the burden on transportation systems. To illustrate these ideas, Mr. Mori discussed several Mori Building projects that have reduced surface temperatures, added greenery, and lowered carbon emissions in general.

Mr. Mori then commented on projections for office building usage in a post-COVID-19 world, stating that he doesn't believe



Left to Right: Hiroo Mori, David E. Weinstein, Yumiko Noda, Andrés Jaque

the office will disappear altogether from Tokyo, where office capacity was at 48 percent two weeks ago, compared to pre-COVID-19 levels. The vacancy rate trend used to collate with the Nikkei Index, but data in recent years indicates that companies are rethinking the usage of their office space in different ways, and developers need to adjust. To conclude, Mr. Mori noted that his company has been seeking viable long-term solutions for the decline in office usage, and they are planning on providing new amenities and services going forward to make their office spaces more attractive and creative.

During the panel discussion, the speakers spoke about what they view as the principal barriers to implementing the new types of architecture and buildings that they discussed in their respective presentations. To conclude the session, Professor Weinstein thanked the panelists for sharing their viewpoints and audience members for their attention before briefly introducing the final section of the conference.

Keynote Speech – Digital Transformation in Japan: Navigating Key Challenges



Gerald L. Curtis

Gerald L. Curtis, Burgess Professor Emeritus of Political Science at Columbia University, introduced the second keynote speaker: His Excellency KONO Taro, Minister for Digital Transformation, Minister for Digital Reform, Minister for Consumer Affairs and Food Safety, and Minister in charge of Civil Service Reform of the Government of Japan. A ninth-term member of the House of Representatives, Minister Kono has had a distinguished career in public service, including having priorly served as the Japanese Foreign Minister, Defense Minister, and Minister in charge of the COVID-19 Vaccine Roll-out, among other roles.

As Minister for Digital Transformation, Minister Kono has been leading the effort to advance Japan's confidence in the digital sphere, coordinating efforts across government agencies and the private sector while also developing a new public infrastructure, for instance, by promoting the My Number digital ID system and accelerating research into the next generation of telecom networks post-5G, Professor Curtis said.

Minister Kono began his remarks by acknowledging glitches in the roll-out of the My Number ID system and apologizing to audience members in his capacity as Minister for Digital Transformation, adding that it is important to continue building out the system rather than discontinuing it. He explained that fundamental challenges would have been avoided if the digitization effort was accelerated sooner. For example, by adding phonetic spelling to the census, which currently uses only Chinese characters, the ID can properly identify an individual and can be linked to the right bank account, which currently use phonetics only. He also explained that some of the glitches were due to banking information being

entered manually, resulting in errors and delays. He pointed out the fact that the Ministry could have avoided this manual process and should have acted on the related issues when the first case was reported, and he emphasized the importance of further, swift digitization.

Next, Minister Kono briefed audience members on the meeting of digital ministers of the G7 that took place in Takasaki at the end of April. Data Free Flow with Trust (DFFT) was the dominant theme, even though rules differ widely in this sphere and there is no global standardization: While Europe has privacy-oriented data protection rules such as General Data Protection Regulation (GDPR), the United States has not adopted a national privacy standard. This disparity has led to situations such as Yahoo News being blocked from access in the United Kingdom for non-compliance, while autonomous car developers cannot legally move testing data out of China, Minister Kono explained. To improve interoperability and transparency on data flow in the short term, the G7 digital ministers at the meeting have agreed on setting up a standing international committee addressing global data flow concerns.



H.E. KONO Taro

Another area of concern at Japan's Digital Ministry has been generative artificial intelligence, its limited use of non-English training data, and the growing threat of disinformation. At the recent G7 meeting, the members agreed on the importance of DFFT and a collaborative effort. Minister Kono said there is a shared delegation with politicians from Germany, Italy, and other countries whose languages are also in the minority in artificial intelligence training data to address this issue. At the same time, Japanese literature is already digitized, so it can more easily be put into the training system, while for other languages—such as Tagalog, Indonesian, and Arabic—such digitalization may still be necessary so that they can be incorporated into AI systems.

Minister Kono then discussed the challenge of removing the *hanko* signature system, which has already been eliminated at the national administrative level with few exceptions, and the legal challenge to eliminate all ordinances and laws which require the analog use of paper so that digital signatures can be used instead. The goal of his ministry, Minister Kono said, was to transform all processes that could be done digitally while also driving digitalization in Japan. He mentioned the important role of the My Number system in this regard.

In conclusion, Minister Kono stressed the importance of digitization, especially because Japan is facing many issues stemming from its aging society and declining population size and that these problems require the country to work on artificial intelligence and digital technologies to support the anticipated shortage of labor and resources while people can focus on tasks to be done by humans. Japan needs

robots and artificial intelligence to maintain and improve its productivity and, therefore, must further advance its digitalization, Minister Kono emphasized, asking for cooperation.

Panel III – Panel Discussion



Merit E. Janow

Merit E. Janow, Dean Emerita of SIPA and Professor of Practice in International Economic Law and International Affairs at Columbia University, opened the panel by thanking Minister Kono for his remarks and congratulating him on a highly successful G7 meeting. She then asked him to elaborate on the international mechanism agreed upon during the meeting in order to maintain interoperability between systems and keep up free data flow.

In response, Minister Kono noted that the proposal on this matter is twofold, with one project focusing specifically on establishing a global database of data transfer rules as the current landscape is hard to decipher, especially for smaller to medium-sized enterprises. The second part of the proposal is to set up a regulatory sandbox for emerging technologies aimed at protecting privacy, whereby technologies could first be checked in a testing environment for their compliance with the member states' data regulations. For both these proposals, Minister Kono noted that the international framework is not limited to G7 member states, and that Japan wishes to expand cooperation to like-minded countries, including in the Global South, in order to facilitate the flow of business across countries with different data regulations.

Next, Professor Curtis asked Minister Kono to expand on the topic of AI in Japan, asking him to elaborate on his thinking regarding needed government regulations, despite the opportunity AI presents to Japan, as well as on the potential to collaborate with the United States and other countries on such guidelines. Minister Kono responded by emphasizing that AI assistance could help stabilize the Japanese labor market, given the country's declining population and the importance of Japan pursuing the opportunities AI could provide.

Minister Kono did, however, stress that there are risks as well, such as privacy concerns regarding the information fed into systems like ChatGPT or misinformation and fake news, prompting the Japanese government to be very careful in its use of such applications for now, in part through dialogue with companies such as Microsoft and OpenAI. Minister Kono also stressed the importance of coming up with a system to distinguish AI-generated technology from human creations. He added that AI has large implications for changes that need to happen in the education system, including entrance examinations, resulting in the need for a different skill set from the next generation.

Professor Janow then remarked on how, in the United States, there's much discussion on what kind of human and regulatory intervention is needed with AI, although the expertise on this subject lies largely within the private sector and universities, whose collaboration with the government, therefore, becomes crucial. She asked Minister Kono to expand on how he imagines this public-private sector collaboration to take place in Japan. He responded that while his ministry is prioritizing this issue, it's difficult to hire AI engineers with expertise because of restrictions on how much they can be paid in government roles, which tends to be significantly less than the corresponding private sector salary. This challenge, he added, points to a larger need for reform of the Japanese bureaucratic system, such as having people switch between private and public jobs more frequently instead of pursuing an entire career in one sector.



Left to right: Gerald L. Curtis, H.E. KONO Taro, Merit E. Janow

Professor Curtis followed with a question asking what exactly the most important reform is to make things better for Japan at large. Minister Kono pointed out that, as Minister in charge of Administrative Reform, he's seen that the bureaucratic culture is crumbling, with the government no longer being able to attract the best talent from the new generation. He trusts that the government will hire skilled individuals from the private sector instead of only career bureaucrats to allow for new ideas, new technology, and new management skills to come in. He added that the private industry is changing quickly, and if the government can't keep up, it would turn into a big shackle for society, so change is very much needed.

Closing Remarks

Professor Weinstein concluded the conference by thanking the two keynote speakers as well as all panelists for sharing their knowledge, the conference’s audience for its attentiveness, and CJEB’s corporate sponsors for their support, which allows the Center to continue its research and programmatic activities on the Japanese economy. He extended special thanks to the Development Bank of Japan for co-sponsoring the event and expressed hope he would see all the audience members again next year.



David E. Weinstein



Speaker Dinner