



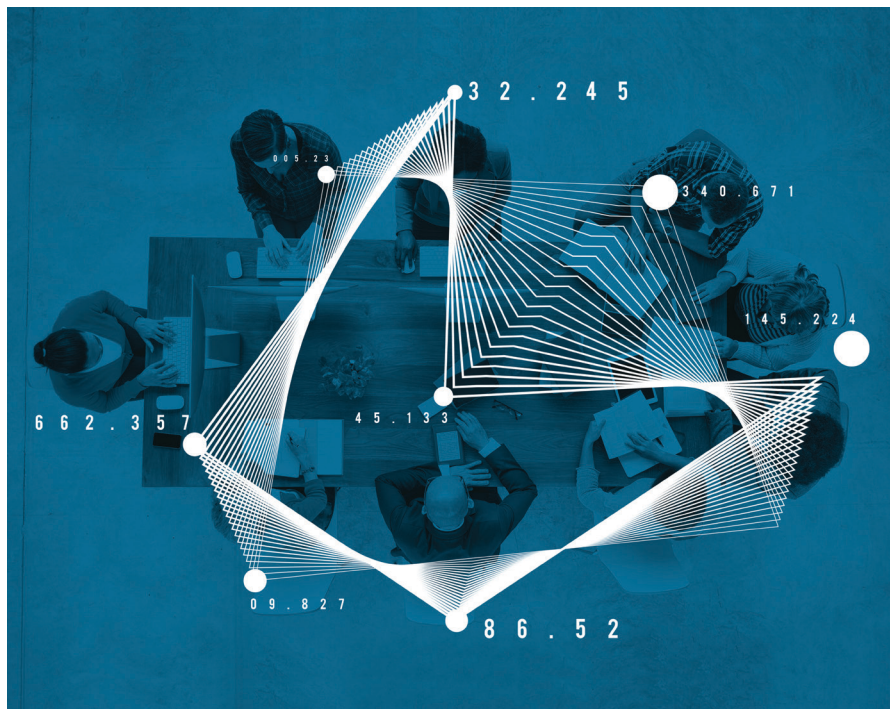
Viewpoint

Futures of Digital Governance

Seeking to increase the interoperability among the technical and social sciences toward new forms of governance associated with digital technology.

DIGITAL TECHNOLOGIES INCREASINGLY shape the way we live our lives, whether we interact with friends, engage with our communities, form our opinions about the world, or work and sometimes play and entertain ourselves. In parts of the world, various sectors of society—health, transportation, education, government, or media—are going through what is often described as a digital transformation process. The opportunities and challenges associated with these technology-induced changes in society and their implications for individuals are subject to extensive research and work by experts in different disciplines and from various areas of practice as well as the public at large.

While it has been widely acknowledged that digital technologies at least have the potential to make our lives better and play an important role in supporting sustainable development goals, contemporary public debates emphasize—in the aftermath of numerous high-profile incidents including damaging cyberattacks, foreign election interference, and large-scale privacy breaches—a growing list of concerns. Heated debates about the best way forward given threats of surveillance, discrimination, misinformation, and market power misuse take place in various forums and at many levels, from local city governments to regional lawmakers, resulting in a



flurry of different initiatives, policies, and regulations. International organizations as well as standard setting organizations are important actors leading the global development of technical and normative frameworks, for instance in key areas such as AI and human rights (for example, Council of Europe, OECD) or 5G technology (for example, ITU, IEEE).

While the responses vary in substance and form across geographies and are shaped by values and traditions, the political economy, and geo-

political interests, we observe in our work a common theme: The notion that traditional institutions, processes, and rights that proved to be helpful when dealing with previous waves of societal transformations might be insufficient vis-à-vis the complex and fast-changing set of ethical, legal, and societal issues emerging from the development and use of digital technologies. While innovation is typically associated with technology development, the scale, scope, and speed of next-generation digital technologies, such as

the metaverse, point toward a need for another type of innovation: innovation in the realm of governance.

Governance is a concept with many meanings. In the present context, it can be understood as an umbrella term for all forms of collective regulation of societal matters, ranging from institutionalized civil society self-regulation to various forms of collaboration between state and private actors and to sovereign actions of states.⁴ In this Viewpoint, we focus on matters emerging from the development and use of digital technologies, spanning across previous innovations such as the Internet to the recent advancements in AI, in short: digital governance.

With this framing in mind, we present two analytically distinct, but interconnected arguments at a critical moment when societies are struggling to imagine new forms of governance to deal with the expanding list of risks associated with digital technology: One, we argue that the recent history of digital governance reveals patterns that might inform its future evolution. Specifically, we suggest one such pattern carries a risk of creating a path dependency that might hinder the imagination and development of innovative governance responses to novel problems induced by digital technologies. Two, as one way to overcome path dependency and create a baseline condition for more systemic innovation in governance, we propose a concerted effort among different communities of practice in different parts of the world, with universities in a leadership role, to increase the interoperability (“working-together”) among the technical and social science as well as the humanities.

Patterns and the Risk of Path Dependencies

When envisioning the future of governance of digital technology, it might be helpful to look at history. Since the 1970s the Internet, arguably one of the most generative digital technologies of the past century, provides a well-researched case study when it comes to the promise and limitations of governance innovation in light of socio-technological developments.⁷ A cursory look back at the evolution of Internet governance from an inno-

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novation perspective reveals two main contradictory patterns. The first pattern describes occasional instances where novel governance mechanisms, broadly defined, have emerged. The second and by far more dominant pattern refers to what can be seen as the default position of governance: the application of familiar mechanisms even to new problems.

Many of the legal, policy, and other societal issues related to the increased adoption and use of the Internet and the applications it has enabled are dealt with through traditional forms of governance. For instance, despite all the attention it received, the General Data Protection Directive in the European Union follows beaten paths in terms of its approach and instruments, except a few innovative tweaks. Disinformation legislation such as Germany’s Network Enforcement Act or Singapore’s Protection from Online Falsehoods and Manipulation Act are other examples of societies using traditional modes of top-down legislation to address the new challenges brought by digital technology, leading to mixed results in terms of their effectiveness and impact on fundamental rights.

Particularly in the earlier days of Internet adoption, however, moments of governance innovation occurred in light of novel challenges. These innovations have been the exception to the default pattern. The most remarkable and controversial example has been ICANN, an institutional innovation in the form of a multistakeholder group and non-profit organization in charge of coordinating the name and numerical spaces of the Internet. More recently, the Facebook Oversight Board is arguably a significant experiment with a new form of governance, while its legitimacy and effectiveness remain contested. Innovation in digital

governance can also emphasize the process dimensions, as a flourishing of initiatives to create bill of rights for the Internet age (“digital constitutionalism”) or various efforts aimed at stipulating AI Governance and Ethics standards illustrate.^{3,6}

Despite distinct moments of governance innovation, societies in our observation have by and large reverted to familiar forms of governance over the past decades to address the manifold IP, privacy, security, liability, antitrust, harmful content, child safety, misinformation, taxation, and myriad other issues. Back to the present day and at the dawn of the AI age, the calls to break up powerful tech platforms, to revoke liability safe harbors for intermediaries, or to strengthen laws to protect online, ... largely resemble the default pattern by putting forward forms and means of governance that are reminiscent of the analog age.

While the dominance of this response mode is understandable and predictable, we worry it might result in problematic path dependencies when it comes to AI and other advanced technologies that are likely to become more pervasive over the decades to come. Given the anticipated scale, scope, and quality of issues emerging from the use of these technological advancements, it is unlikely that traditional means of governance will live up to the challenge. What is needed in the field of digital governance, instead, “are ideas for new institutions and institutional relationships that can come to closure, however temporary, on some of these questions, and, like the project of law and political processes themselves, understand that all views will not and cannot be reconciled.”⁸

In light of the current technological quicksilver environment and as a means to counter the risk of path dependency, we propose a significant public investment, supported by philanthropy and the private sector, that enables the creation of globally interconnected spaces for interdisciplinary imagination, experimentation, and building as a necessary condition for systematic and more frequent innovation in governance. Such an effort in innovation of governance needs to complement the ongoing massive investments in technology.

Creating Spaces to Imagine and Build Governance Futures

An important starting point toward such a larger effort in our view is a higher degree of interoperability across technical and social sciences as well as the humanities, with universities serving a key enabling and facilitating role. While governance innovations of the Internet era, as mentioned earlier, are mostly process innovations, we predict the main sources of innovation for governance in the age of AI will emerge from novel substantive combinations of social and technological insights, approaches, and arrangements.

The investments in a more sustained and purposeful working-together across disciplines with the goal to foster innovation in governance needs to span across various areas of activity. Research is a case in point. The inclusion of computing research, for instance, can play an important supporting role when it comes to the field of digital governance, as recent scholarship highlights. As a diagnostic, it can help us to better understand social problems created by technologies or serve as a catalyst by helping to define a social problem more precisely. For example, the research described in Buolamwini and Gebru² studied bias in automated facial analysis algorithms and datasets with respect to phenotypes. This kind of interdisciplinary research provided evidence to inform movements against certain uses of facial recognition and corresponding public policy interventions. Computing research can also serve functions such as rebuttal and synecdoche, which can call the attention of policymakers to social problems caused by algorithms and systems.¹

Governing future issues of the digital world challenges existing knowledge about government, polity, and policy. Research on digital governance can benefit from the polycentric theoretical work developed by Elinor Ostrom, Nobel Prize in Economic Sciences, that can be applied to global governance problems. Polycentric connotes many centers of decision making that are formally independent of each other. Drawing on Ostrom's theory, new governance

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models can be conceptualized as novel arrangements of polycentric institutions and processes to govern in a legitimate, inclusive, and secure manner the use of digital resources to produce sustainable services and public policies implemented by governments and firms in a non-territorial and results-based manner. Ostrom argues that “instead of focusing *only* on global efforts (which are indeed a necessary part of the long-term solution), it is better to encourage polycentric efforts to reduce the risks” that are associated with global challenges, such as the expansion of the use of advanced digital technologies in a global scale.⁵

In addition to targeted research that brings together different areas of science, including computer science, law, economics, political science, and environmental science, the proposed investment in increasing the capacity for digital governance innovation must promote strategic efforts in the fields of education and translation. Whether innovative governance thinking will ultimately be implementable on the ground in no small part depends on the training of the next generation of policymakers, and whether they have fluency in different disciplinary languages. Further, in order to better address information gaps and resource asymmetries, universities and other public interest organizations will need to design new interfaces and protocols, such as policy practices and residency programs, to offer guidance and implementation support as various institutions

seek to embrace governance innovations coming out of more integrated socio-technological research.

Looking back, universities and their members played a vital role in digital governance through both scholarship and practice, in activities as diverse as bringing idiosyncratic forms of governance (“rough consensus and running code”) to the Internet Engineering Task Force (IETF), giving birth to ICANN, or piloting Creative Commons. At present, several of the ideas and programs envisioned in this article (among others) aimed at future-proofing digital governance are successfully piloted at academic institutions, including those we are affiliated with, demonstrating academia's potential to build collaborative and interdisciplinary capacities for problem solving with the public interest as a lodestar. Going forward, we need to expand upon this wealth of knowledge and creativity and double-down on attempts to invest not only in technological, but also digital governance innovation by launching a globally networked effort to shape the futures of digital governance for the coming age of AI. **C**

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