COLUMBIA | SIPA
School of International and Public Affairs

PROCEEDINGS OF
THE 2018 STATE OF THE FIELD WORKSHOP ON DIGITAL TRANSFORMATIONS

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School of International and Public Affairs
Columbia University

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CITI | Columbia Institute for Tele-Information

COLUMBIA UNIVERSITY Data Science Institute

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FOREWORD BY DEAN MERIT E. JANOW

On June 15, 2018, the Columbia University School of International and Public Affairs (SIPA) held its fourth annual Global Digital Futures Forum on Digital Transformations. This workshop, like the preceding three, convened leading scholars, technologists, and policy experts to assess important dimensions of the digital transformations that are profoundly affecting our world—whether in cyber security, democratic governance, the digital economy, or other areas.

At the prior gatherings, which took the form of open conferences, leading participants from a range of disciplines considered different but related sets of frontier digital policy questions. Each conference focused on urgent and emerging issues of the day such as the fragmentation of the internet, global differences in internet regulation and governance, and major cyber risks.

The 2018 workshop sought to build on this good work and to identify key issues in the evolving cyber landscape. It also aimed to establish certain benchmarks around the "State of the Field" of current academic and policy research related to a core set of digital policy issues and to consider the key challenges and opportunities that lie ahead.

The event was organized as a workshop to permit active participation and discussion by all attendees. Over the course of the day, whether examining cyber security, elections, or commercial developments arising from digital platforms, over 60 participants explored three closely related sets of questions:

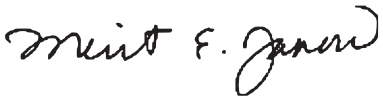
- **How might governance mechanisms adapt to the new digital age?**
- **Which aspects of the digital age require specific new policy and governance mechanisms?**
- **What is the state of research and data analysis around the underlying phenomena?**

The workshop considered areas where domestic and international governance or legal frameworks are already in place (e.g., through rules around international trade or antitrust analysis and enforcement) as well as areas that may require new policy and governance approaches (e.g., the Internet of Things, digital currencies, digital identities, and the role of online advertising in elections).

Clearly, this is a vast terrain where existing frameworks and policies provide sufficiently robust analytical pillars in some areas but not in other, highly fragmented ones. The unspoken agenda of this workshop was to reveal this terrain in order to consider the scope for linkages and alignment and the places where new approaches may be necessary or even urgent.

The 2018 workshop once again served as the premier forum for Columbia SIPA's broader Technology and Policy Initiative, launched in 2014 to develop new thinking and expertise at the intersection of digital technology, data, public policy, and SIPA's core fields. Through this multi-faceted effort, SIPA has undertaken new interdisciplinary research in areas such as cybersecurity, internet governance, and the digital economy; provided expanded training and instruction on a host of digital policy issues; supported graduate student and alumni entrepreneurship; and hosted a range of events and forums, among other activities.

Our hope is that the Tech and Policy Initiative will continue to broaden understanding of major challenges that have arisen from digital technology and data, while also preparing the next generation of leaders to navigate an increasingly complex, interconnected, and digital world.



Merit E. Janow
Dean, School of International and Public Affairs
Professor of Practice, International Economic Law and International Affairs

WORKSHOP OVERVIEW

What follows is a brief summary of each of the six panels held over the course of the workshop.

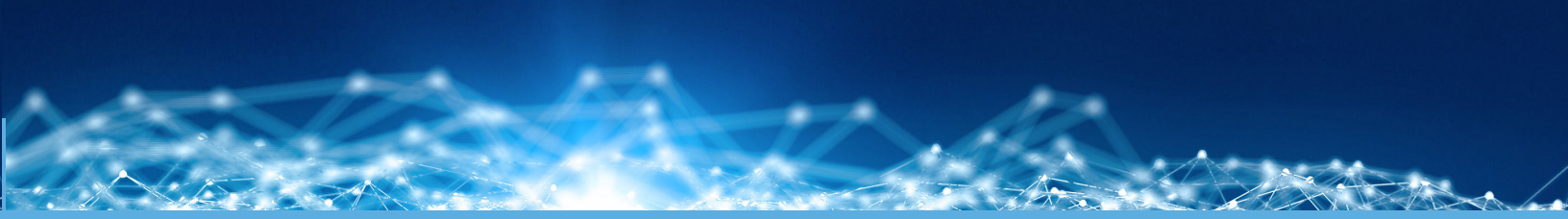
- **Platforms and Governance** considered the leading role major tech companies (non-state actors) occupy in global governance challenges (data privacy, access to information, human rights, etc.), as well as areas that have been managed by states and international institutions in other policy spheres but increasingly require the participation and leadership of private firms along with other stakeholders;
- **International Trade** considered existing legal and policy frameworks, gaps in coverage given digital trade, and necessary next steps;
- **Crypto-economics and Digital Payment Systems** considered the potential impact of cryptocurrencies and digital currency on the governance of monetary systems and the need for central banks and financial policy regulators to develop new thinking about these changes;
- **The Internet of Things and Governance** explored how the rapid expansion of connected Internet of Things (IoT) devices challenges governments (e.g., on privacy, security, lawful access, safety, etc.), which may in turn introduce new requirements for firms and hamper innovation;
- **Digital Identities** focused on the struggle of nation states all over the world to develop the technological underpinning for digital identity systems in a reliable, secure, and privacy-preserving manner, and on issues relating to the scope, use, and regulation of these systems;
- **Elections and Online Political Advertising** considered the profound impact of social media on citizen engagement and the US electoral process and asked how free and fair elections might be conducted with transparency and accountability in the age of social media and online advertising.

The technological, social, and economic environment associated with the digital world is new, volatile, and difficult to predict. Accordingly, policy frameworks will need to balance agility, predictability and inclusivity, a challenging combination.

We hope that this report contributes to further research that informs policy-making on digital issues from a global perspective, taking into account existing approaches across policy areas as well as the novel characteristics and challenges raised by ongoing digital transformation.

Part I Proceedings

Part II Appendix



Proceedings of State of The Field Workshop on Digital Transformations

Panel 1: Platforms and Governance in the Digital Age

Panel 2: International Trade in the Digital Age

Lunch Session: Crypto-economics, The Macro Effects of Digital Private Moneys and Payment Systems

Panel 3A: Antitrust in the Digital Age

Panel 3B: Internet of Things and Governance Issues

Panel 4: Digital Identities, Privacy, and Security Issues

Panel 5: New Technologies, Elections, and Online Advertising

PANEL 1

Platforms and Governance in The Digital Age

Laura DeNardis, Moderator
Professor, American University

Martha Finnemore
Professor, George Washington University

Tarleton Gillespie
Principal Research, Microsoft Research New England

Kate Klonick
Assistant Professor at Law, St. John's University Law School

Ambassador Karen Kornbluh (ret.)
Senior Fellow for Digital Policy, Council on Foreign Relations

Mark Raymond, Moderator
Wick Cary Assistant Professor of International Security, The University of Oklahoma

Laura Denardis

This panel brought together experts from several different disciplines—law, policy, and engineering—to consider platform and internet governance with respect to not only social media services but also underlying infrastructures. It addressed the role of private actors and their potential to act as regulatory agents, the problems that reliance upon private actors produces, and the role of nation states in light of the platforms.

Laura DeNardis framed the discussion around the interplay between platform governance and design in three areas. For the first, the privatization of governance, **DeNardi**s argued that conflicts over control of the internet increasingly affect democracy, civil liberties, privacy, and innovation.[1] Because the private sector owns and operates networks and makes design and administrative decisions, it has an important role in how some rights unfold. In response, **Martha Finnemore** pointed out that, with a lot of regulation coming from the private sector, it matters who will be the decider. One participant commented that concerns should be raised over the privatization of government tasks. Going further, another participant emphasized the importance of clarifying how private governance of the internet differs from traditional models of private contracting, asserting that certain issues should not be privately contracted. Echoing that sentiment, **Tarleton Gillespie** pointed out that one does not need to be on Facebook to be impacted by the flow of information within it, which shows that the erosion of privacy is a public problem that cannot be resolved through a private contract or negotiation.

DeNardis highlighted the need for "technology policy reconceptualization." Governments are using platforms as proxies for political control while simultaneously trying to regulate platforms inappropriately, focusing on data localization and other regulations that can have undesirable cross-border effects. **Kate Klonick** agreed with DeNardis that while large online platforms allow users to broadcast their speech, sometimes circumventing government censorship, they also make it easier for governments to co-opt data and target users—this triangle model of free speech therefore involves more actors than previous ones.[2] **Gillespie** added that, in this respect, content moderation is fundamental to what a platform is and involves an enormous apparatus, money, flows of decisions, and an appeals process. **Klonic**k called attention to these platforms' lack of accountability, which have discretionary power to change their rules at any time when functioning as a governance system. She also raised concerns about nation states' lack of accountability, which has enabled a "digital democracy deficit."

1DeNardis, L. (2014). The Global War for Internet Governance. New Haven: Yale University Press. [2]Balkin, J. (2018). Free Speech is a Triangle Model. Columbia Law Review, forthcoming.

DeNardis also examined the very notion of the "platform," arguing that it should encompass the underlying technical architecture, given that the deep levels of infrastructure that users cannot see powerfully impact freedom and the economy. In the same vein, a participant questioned whether we should supplement a general focus on "platforms" with an examination of the governance of software and software development.

Mark Raymond focused his remarks on global governance scholarship and the challenges of governing platforms, considering the power relations between nation states and companies. He cited Mark Zuckerberg's refusal to testify before the British Parliament as an example of the tensions on the sovereignty of smaller states that arise from such power imbalances. Elaborating upon this power imbalance, **Finnemore** pointed to gaps in the system of international representation that establishes rules for these platforms. For instance, the absence of the Global South in many international institutions reveals deep power asymmetries in the rules they formulate. More positively, one participant pointed to efforts aimed at building the institutions and capacities of actors around the world to engage in these issues. **Klonick** saw space for new approaches, including a transnational organization consisting of governments and companies that would differ from current multistakeholder institutions.

In line with DeNardis, **Raymond** highlighted the lack of reflection on the emergence of "critical governance infrastructure" and its privatization, adding that some forms of internet governance have become essential to broader systems of global governance such as international trade, human rights, and security. The result is a complex set of rules and institutions that lack agreements to deal with conflicts in different regimes, as well as international outcomes that can clash with domestic values and generate significant public tensions. The current system, he added, is "likely to break and likely to break badly." Procedures must be developed to address conflict between regimes and outcomes that oppose a particular society's deeply held values.

Highlighting the power of platforms,[3] **Gillespie** argued that they should be defined in terms of their roles and obligations. This approach could facilitate the regulation of adjacent objects: the bots that will be attached to the platform, the virtual reality systems that a platform will launch, etc. The failure of US and European regulation to consider platforms from this perspective evidences an important gap. **Gillespi**e cited the example of Facebook, which insists it is not a media company to avoid certain kinds of regulations.[4]

A radical reimagining of regulatory structures, **Gillespie** argued, is necessary to deal with the challenges posed by algorithmic systems, which distribute information at scale, are tailored to the user, and periodically change. Whether regulation must become more flexible or more responsive in order to deal with such "instantaneous responsiveness" is an open question.

Karen Kornbluh

Karen Kornbluh reinforced the need for accountability in view of the ongoing harms to democracy and the unresponsiveness of national governments to either their societies or platforms. She used the recent referendum on abortion in Ireland to exemplify the interplay between content and public opinion and the impact of online advertisements. Irish civil society organized the Transparent Referendum Initiative to identify for the public paid online ads—a great achievement. Reflecting on several recommendations, **Kornbluh** pointed to international norms on internet policy designed by the OECD to encourage the free flow of information as well as respect for human rights.[5] National governments could make policy within this framework on issues such as privacy, consumer protection, intellectual property, and cybersecurity.

Finnemore criticized the way policymakers currently try to govern cyberspace. She explained that the specific location where rules are institutionalized is of great importance because the bureaucracy responsible for implementation will have its own unique training and expertise. She argued for the necessity of bringing back an institution at the US national level akin to the Office of Technology Assessment to advise elected policymakers who are unprepared to legislate on complex technological issues. **Kornbluh** further critiqued current policymaking, expressing the fear that a lack of transparency leaves regulation subject to financial pressures.

[3]Gillespie, T. (2010). The Politics of "Platforms." New Media & Society, Vol. 12, Issue 3, pp. 347 – 364. [4]Napoli, P., and Caplan, R. (2016). When Media Companies Insist They're Not Media Companies and Why It Matters for Communications Policy. SSRN. [5]OECD (2014). Principles for Internet Policy Making. https://www.oecd.org/sti/ieconomy/oecd-principles-for-internet-policy-making.pdf

PANEL 2

International Trade in the Digital Age

Merit E. Janow, Moderator
Dean, Columbia SIPA

Joshua Meltzer
Senior Fellow, Brookings Institution

Usman Ahmed
Head of Global Public Policy, PayPal

Ricardo Meléndez-Ortiz
Co-Founder and Chief Executive, ICTSD

Mira Burri
Senior Lecturer, University of Lucerne

Mark Wu
Henry L. Stimson Professor, Harvard Law School

William Drake
International Fellow and Lecturer, University of Zurich

Mira Burri

Dean Merit E. Janow introduced the panel by observing that although digital trade has been an important driver of growth globally, the development of an appropriate rules framework for international trade in the digital age has lagged.

The panelists agreed that digital trade has contributed to economic growth, particularly in developing countries. However, they also noted that recent discussions have tended to focus on the negative implications of digital trade and the free flow of data, especially for developing countries, rather than on the economic benefits. **Joshua Meltzer** explained that the global internet and the free flow of data increase productivity in developing economies by promoting competition and allowing access to new services such as cloud computing and big data analytics. However, **Meltze**r argued that these benefits have so far been concentrated in certain countries and that it's not yet clear whether other economies will embrace this new wave of technologies to effectively boost productivity.

Usman Ahmed emphasized the relevance of new restrictions imposed on digital trade and data flows for businesses. For example, Vietnam recently introduced a new data localization policy, which the government asserts is compliant with its WTO obligations. Developing countries, Ahmed argued, are trying to balance the benefits of digital trade with citizen concerns about privacy and security. However, these measures tend to have protectionist components.

Panelists also discussed whether and how the current framework applies to digital trade. For **Ricardo Meléndez-Ortiz**, part of the difficulty of framing rules for the digital economy comes from the lack of a common definition for "digital trade"; it is important to clarify which digital trade issues are already covered under the current multilateral framework and which are not. Future discussion can then address the implementation of the new digital trade commitments present in recent bilateral and regional trade agreements.

Mira Burri argued that countries have failed to address complex new legal issues raised by the digital transformation and that the trade framework has not yet adapted. The structure of the WTO has not changed despite the fact that discussions on e-commerce started over 20 years ago. **Burri** asserts that this inertia has to do with the complexity of moving from regulating market access at the national level to regulating data privacy, consumer protection and competition issues at the international level.

Ahmed was wary of whether the WTO could expand its scope to regulate data flows, cybersecurity, freedom of speech, privacy and other issues related to digital trade within its current structure. As an alternative structure, he proposed that the WTO become more than a purely intergovernmental institution and incorporate regulatory cooperation or a multistakeholder framework.

Mark Wu argued that discussions around emerging digital trade issues are complicated because these issues are interlinked, highly complex, and poorly understood. Additionally, the traditional framework of trade governance and international trade discussions makes it hard for those without expertise in trade to join the debate. Wu stated that only about half of WTO members have rules related to digital issues and that in many cases those rules are superficial. Recently, the main developments in this space have tended to come from the Pacific region, with Japan, Australia, and Singapore, rather than the US, often leading discussions. However, he argued, this is still a small set of countries relative to those pushing against the development of new digital trade rules and commitments.

Ahmed raised a particular challenge related to the structure of the WTO as it stands today: because it was set up with a focus on mutual concessions for market access, the difficulty of measuring the benefits of cybersecurity as well as other multifaceted issues impedes international discussions.

Pursuing this last question, **Dean Janow** then focused the discussion on measurement issues related to digital trade and the economic activity that it supports.

Given the difficulty of measuring productivity and growth benefits from digital trade, **Meltzer** suggested considering four specific pillars. First, focusing on platforms and how they enable small businesses to reach the global market, thereby promoting trade opportunities, including in developing economies. This research can examine regulatory issues that influence whether platforms provide services effectively such as access to online payment systems, adequate IP rules, and data privacy. Second, the move towards services provides access to transformational technologies such as cloud computing and big data analytics, but also email services and lower communication costs more generally. This enables companies to provide cross-border services, which can be especially beneficial in developing countries. Third, the global value chain is already an important driver of productivity and wealth in developing countries and can continue to benefit these economies. Finally, smart solutions in manufacturing create value on top of traditional processes and goods. Manufacturing, an important development engine, can run out of steam without proper digital investments.

Meléndez-Ortiz argued that uncertainty regarding the way trade rules affect the allocation of resources and gains among different actors is a further impediment to trade negotiations. "First-order benefits" from adoption and usage of new technologies are substantial and can lead to rules for paperless trading, electronic authentication, cross-border information sharing by electronic means, transparency, and accountability with regards to ecommerce transactions. However, things become harder when it comes to "second-order benefits" that have to do with the development, management, and distribution of new technologies.

William Drake

Meléndez-Ortiz asserted that the trade framework should be organized in a way that enables developing countries to benefit from new technologies and create local economic opportunities. These second-order benefits relate to complicated and highly contentious issues such as source code access, data privacy, and data localization.

Wu pointed to uncertainty whether local firms actually capture the value created by digital trade. For instance, it remains unclear whether local data storage requirements truly facilitate industrial policies to create local champions (such as local payment providers). This measurement deficit impedes negotiation of new digital trade commitments: countries will be unwilling to agree to new rules until the benefits of such commitments becomes clear. **Burri**

Mark Wu

agreed, adding that the actual impact of digital trade restrictions on domestic and foreign firms remains largely unmeasured.

Dean Janow then asked the panelists to identify the knowledge gaps in most urgent need of attention from policymakers and academics. **William Drake** started by pointing to the many knowledge silos, which result in echo chamber conversations: without political contextualization, legal and economic analyses are arid and of limited use. Indeed, despite several studies showing the importance of digital trade to support productivity in developing countries, in the December 2017 WTO ministerial meeting, only 70 countries out of the more than 160 present were willing to consider negotiations around data flows. **Drake** pointed to the various gaps within the international trade community as it tackles digital issues: disciplinary gaps, gaps between scholars and practitioners, and gaps between civil society, the internet technical community, and other stakeholders. Overall, **Drake** argued, practitioners trust discussions around international trade less than those addressing other internet policy issues, seeing them as closed, nontransparent processes that do not welcome their participation.

Meltzer added that more research is needed to determine if and how trade discussions should address the tension between privacy and data protection on the one hand, and on the other, the promotion of trade and the opportunities that the free flow of data generates. Each country's views on privacy are deeply rooted in its history and culture. Although there has been some convergence upon common privacy principles, it remains unclear how personal data can be protected in a third jurisdiction where local authorities have no mandate to guard it. This looming concern impels governments to restrict data transfers when they are uncomfortable with the way the data is handled. **Burri** asked whether the current language in trade agreements on digital issues translates in practice into new domestic law commitments, contributing to the liberalization of digital trade, or whether countries largely make commitments in line with their previous domestic regime. She also highlighted the evolution from the view that privacy restricts trade to the EU vision of privacy rules as non-negotiable in a trade context, and emphasized the need to closely monitor the inclusion of privacy rules in future trade discussions.

Meléndez-Ortiz pointed to the need to investigate the new dynamics of digital era negotiation, which go beyond the traditional mercantilist approach. Concerns around development strategies and deep, rapid changes in technology make it hard for governments to identify the issues most relevant for trade discussions today. Relatedly, **Wu** argued that even on traditional trade issues, such as common rules around authentication and paperless trade, it's often more difficult than expected to achieve commitments.

The panel concluded with **Drake** offering the example of the community of epistemic scholars that helped drive the discussion around international telecommunications and trade in services. This community helped people re-conceptualize the ontology of network-based transactions and see that they could be subject to trade rules. He noted that internet-based transactions lack an analogous community; rather than a single forum, it has many silos. The profound knowledge gaps between silos and between threads of discussion must be addressed if international trade rules are to adapt to the new digital era.

Crypto-economics, The Macro Effects of Digital Private Moneys and Payment Systems

Eli Noam, Moderator
Professor, Columbia Business School

Max Raskin
Adjunct Professor, NYU Law School

George Selgin
Director, Center for Monetary and Financial Alternatives -- Cato Institute

Eli Noam

New electronic technologies with strong encryption make it possible to create secure tokens of value, and global connectivity circulates this currency in far-reaching commerce. In the coming years, "money" will inevitably undergo rapid technological changes, and the monetary system will be tested. Central banks, financial institutions, and regulators need to develop new frameworks for thinking about these changes. This panel explored the future of private cryptocurrencies, the impact of cryptocurrencies on governmental and economic stability, the feasibility of government-created cryptocurrencies managed by central banks, and the potential of such cryptocurrencies to become a tool for central banks in stabilizing and guiding the economy.

Eli Noam started by asking the panelists to consider whether governments will ban or coexist with cryptocurrencies. In response, **George Selgin** pointed out that from a long historical perspective, there has been a trend towards convergence, with three or four coins dominating the market, but that modern states have countered this tendency and killed natural competition by seeking a monopoly on the currencies issued within their boundaries. Thus, a banking system with private cryptocurrencies is a hard sell. However, examples of coexistence, such as a coin called "Day" that has 1:1 parity with the dollar, are emerging.

Max Raskin

In discussing the future of cryptocurrencies, panelists addressed not just coexistence but also scalability. **Max Raskin** rejected the common assumption that crypto advocates have not thought about scaling up, arguing that the crypto and blockchain space has innovated plenty in terms of scalability and sustainability (e.g. energy conservation and mining costs). **Raskin** also mentioned that the field is debating how best to increase transaction volume. The community is split between advocates of a silver-standard structure (i.e., the creation of more currencies with a standard serving as an exchange) and advocates of a structure based on the lightning network that builds currencies off the existing bitcoin infrastructure. The latter would allow the creation of a banking or visa system on top of bitcoin (and potentially other cryptocurrencies) without changing existing protocols. **Selgin** added that private cryptocurrencies seeking to remain relevant could instead integrate themselves with the existing banking system via a type of visa or IOU scheme, especially given that the estimated efficiency from blockchain-based systems is superior to that of credit card-type systems. But this, as **Selgin** noted, is not the route digital money seems to be taking, even as comparisons between cryptocurrencies and visa-type systems have become commonplace.

Several concerns were raised about the impact of cryptocurrencies on governmental and economic stability. **Noam** noted that a stable currency is a public good and that cryptocurrencies that became inflationary would be a public risk. Moreover, with no oversight, these currencies come with the risk of external manipulation and insider trading, though few such examples have arisen so far. The concentration of mining power in China has prompted related fears of takeover through a '51% attack', which cryptocurrencies are vulnerable to.

Selgin suggested comparing cryptocurrencies, especially bitcoin, to commodity standards, even though there are some important differences. For instance, cryptocurrencies typically lack an underlying asset value and non-monetary use besides being a popular medium of exchange. Their resultant potential to become worthless is a serious threat to the economy; people holding such currencies are "taking a gamble," betting on their appreciation independent of the underlying macroeconomic properties.

Selgin criticized the analogy between oil and bitcoin because while the amount of oil reserves keeps increasing, that of bitcoin does not and will not. Nevertheless, according to Selgin, competition among cryptocurrencies could plausibly stabilize the economy when the underlying technical infrastructure generates a rules-based supply. In this scenario, cryptocurrencies could be macroeconomically friendly. Raskin asked whether governments should step in and tax private cryptocurrencies.

The final part of the discussion centered on central bank digital currencies (CBDC) and cryptocurrencies as tools for central banks. Should central banks create their own CBDC, and if so, how? **Noam** contrasted a CBDC controlled by a central bank and a distributed and decentralized ledger such as a blockchain. **Raskin** argued that because independent cryptocurrencies can act as exogenous checks to governments, as they have done in Argentina and Venezuela, we should be skeptical of them becoming central bank tools. Nevertheless, it is clear that central banks are already exploring ways of converting some of their money into CBDC. **Selgin** brought back the idea of an algorithmic rule as a powerful tool, given that even discretionary central banks with good intentions have abused their power. He suggested that such a rule would also improve the performance of central banks. **Raskin** pointed out that these rules are made by people and so can still be problematic.

To end, **Noam** left the panel with some questions. He asked whether a cryptocurrency exchange could be a powerful tool to control the system and whether (though he doubted it) there could be a floating exchange for cryptocurrencies. He also asked the audience to consider the ramifications of denying legal tender status to cryptocurrency or forbidding its use in contracts. **Noam** pointed out some advantages of CBDCs: they allow for negative interest rates, can facilitate the fine-tuning of monetary interventions, and can potentially make central banks more effective. **Selgin** said that allowing people to have an account in the central bank, with or without cryptocurrencies, would provide the same advantages. **Raskin** echoed this sentiment, saying that most money is already digital (e.g. in Scandinavia, only 15% of the monetary supply is cash). Thus, we do not necessarily need blockchains to transition to cashless societies. In addition, **Selgin** said that a legal tender law would be ineffective because people would keep exchanging cryptocurrencies in alternative markets, as they already do today.

Participants expressed the need to discuss analogies beyond bitcoin and to look at other cryptocurrencies, as well as the use of smart contracts and utility tokens, when talking about crypto economies. **Selgin** also drew attention to the impact big retailers like Amazon and Walmart can have on cryptocurrencies; private entities also have an important role to play in the future of crypto economies.

PANEL 3A

Antitrust in the Digital Age

Howard Shelanski, Moderator
Professor, Georgetown Law School

Scott Hemphill
Professor, NYU Law School

Gene Kimmelman
CEO, Public Knowledge

David Pitofsky
General Counsel and Chief Compliance Officer, News Corp

The emergence of a handful of global digital platforms, notably in the US and China, has brought benefits to consumers, innovation, and inclusion. At the same time, these platforms raise a number of antitrust concerns such as price discrimination, barriers to entry and data access, network effects, and the applicability of traditional antitrust frameworks. This panel explored the need for modern enforcement approaches embedded in new regulatory frameworks and the effects of these market mechanisms on competition and innovation in digital industries.

Howard Shelanski

Howard Shelanski opened the panel around questions of the market power of digital platforms. These platforms, acting as intermediaries between content producers and consumers, provide content and aggregate consumer preferences and choices. Current platforms have amassed important intermediary power, but measuring this power and the problems it raises has proven challenging. Are these platforms too powerful in the sense that they may harm consumers and deter entry into markets, or are they powerful because network effects allow them to deliver superior services? As these platforms draw more and more consumer attention, they are increasingly in a position to pressure content providers into complying with rules that may not be in those providers' interest.

David Pitofsky illustrated this point with the example of the book industry, where the power of platforms forestalled negotiations, leaving publishers with a take-it-or-leave-it option. It may also have diminished incentives for editors to invest in speculative ideas and innovation. Dominant platforms use clauses similar to "Most Favored Nation" (MFN) status, preventing content providers from offering lower prices through different channels. These clauses may constitute antitrust violations, but determining whether that is truly the case would require the development of new antitrust tools.

A second important question relates to overlapping markets, i.e. when big platforms are on several markets at the same time. Google and Facebook are getting bigger and extending their ability to operate on distinct markets, yet they compete fiercely on advertising. Hence, determining the state of competition on digital platforms may be difficult, and engagement in antitrust activities requires a reshaping of market definitions, as **Scott Hemphill** pointed out. Once definitions have been clearly established, new regulation could allow platforms to engage in multiple activities on multiple markets. Particular attention should be paid to intermediaries that engage a platform through

David Pitofsky, Gene Kimmelman and Scott Hemphill

multiple markets. A dominant intermediary position in one market could give platforms an edge as they enter other markets. **Pitofsky** illustrated this problem by pointing out that Google and Facebook are present at every step in the online advertising ecosystem. Such competition concentration may create incentives for collusion or abuse of a dominant position and deter entry by new actors. The use of the same data to serve consumers on several markets also reinforces the need for a broader definition and application of antitrust tools.

The role of data is a third and important point in modern antitrust: how do data concentrations shape market power? Can a concentration of data among a few large platforms deter the entry of new players, and how would we know if it did? Data allows the customization of products and services, acting as a barrier to entry by providing two net advantages to established firms. Firstly, the incumbent has more information on consumer demand and need not share it with competitors. Secondly, users' inability to transfer data and meta-data from one service to another creates large switching costs. If properly implemented, the right to data portability established in the General Data Protection Regulation (GDPR) may offer a solution to such problems. **Shelanski** also pointed out that firms repackage and sell their users' data to data brokers. An economic analysis of data brokerage would help answer important questions regarding antitrust. Indeed, data brokers have the ability to influence market competition as intermediaries for the personal data of users. When vertically integrated with services, can this data brokerage power represent a competitive advantage?

Shelanski raised a fourth concern related to mergers and collective bargaining. To counter the market power of large platforms and increase their own bargaining power, firms merge or cooperate (vertically or horizontally). The recent example of the AT&T and Time Warner merger underlines an antitrust regulation tradeoff. Vertical mergers generally increase the risk of market domination and foreclosure; however, in markets dominated by a single platform, such mergers may also redistribute bargaining power and increase competition.

Assessing how cooperation between competitors affects markets occupied by powerful platforms is fundamental for competition policy. **Hemphill** pointed out that understanding the circumstances under which rivals cooperate and the effects of this cooperation on markets may help us better tailor our remedies.

Finally, **Shelanski** stressed that we may need policy tools other than antitrust law to solve these issues. **Gene Kimmelman** explained that antitrust laws are poorly equipped to operate in the digital age. Firstly, they may simply fail to prevent market power concentration. Startups emerge every day with new business models and technologies, and regulators must assess the competitive risks associated with the acquisition of these startups by dominant platforms. However, regulators may not be able to accurately gauge the present and future implications of such concentration. Secondly, **Kimmelman** urged the addition of different policy tools to antitrust law in order to expand its reach and flexibility. For example, antitrust may not help consumers with privacy or ethical concerns and so must be surrounded by powerful regulation that can be leveraged easily in antitrust cases.

PANEL 3B

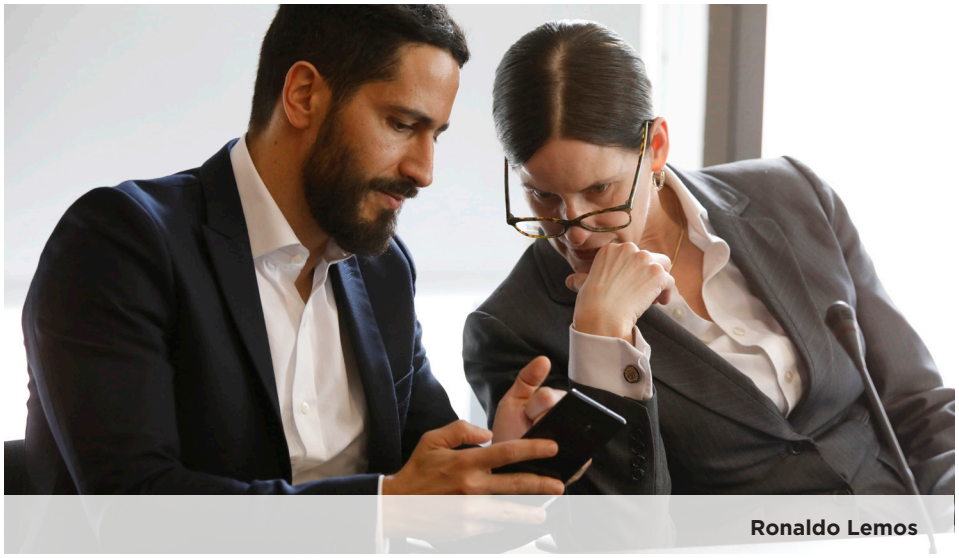
Internet of Things and Governance Issues

Laura DeNardis, Moderator
Professor, American University

Ronaldo Lemos
Director, Instituto de Tecnologia & Sociedade do Rio de Janeiro

Gilad Rosner
Founder, the IoT Privacy Forum

Stefaan Verhulst
Co-Founder and Chief Researcher, Governance Laboratory, NYU



Ronaldo Lemos

The main theme that emerged from this conversation was that the Internet of Things (IoT) raises a governance issue rather than a series of consumer harm issues. Because IoT is pervading many areas that are critical to macro-system functions, it requires much more scrutiny than it currently receives. In particular, cities are becoming increasingly reliant on the successful and secure deployment of IoT technologies.

The internet is currently governed across political boundaries, and panelists asked whether this governance structure is sustainable in the face of IoT. Critical pieces of infrastructure rely on the same internet technology that maintains social media and other online accounts. The reliance of entire infrastructure systems on the internet heightens the stakes of conversations about cybersecurity.

Stefaan Verhulst

Laura DeNardis articulated this concern in her opening remarks on cybersecurity. She argued that cybersecurity is a paramount human rights concern because it implicates all aspects of economic and social life for many people around the world. She noted that particular features of IoT have serious implications for broader internet governance. Firstly, in the US context, she pointed to intermediaries' expansive immunity privileges with regards to the content they host. Secondly, the compartmentalization of internet infrastructure reveals important lessons for how it should be governed. Finally, the importance of the private sector as a stakeholder in IoT security should not be overlooked.

Ronaldo Lemos raised an example at the nexus of IoT and governance: the new Brazilian national IoT plan. IoT enables surveillance technologies that were previously unfathomable, potentially destroying the foundation of consent to data sharing. **Lemos** suggested giving users more rights and control over their own data via traditional intellectual property protections. He advocated for reimagining the data framework so that the surveillance state would properly compensate the people suffering privacy harms from its existence.

The conversation concluded with a discussion of the ethical implications of IoT's incursion into offline spaces. **Gilad Rosner** noted that IoT will enable previously inconceivable invasions of privacy and blur current regulatory boundaries that govern the use of private data. **Stefaan Verhulst** forecasted that agencies and organizations might jump on poor-quality data and, as a result, make bad decisions. IoT enables governments to collect reams of data, but there is no guarantee that this data will be useful for decision-making. The mere existence of data may tempt agencies to use it in inappropriate ways; therefore, scholars and activists need to think about how best to prevent data misuse.

PANEL 4

Digital Identities, Privacy, and Security Issues

Ronaldo Lemos, Moderator
Director, Instituto de Tecnologia & Sociedade do Rio de Janeiro

Vipin Bharathan
Blockchain Strategist, BNP Paribas

Helen Nissenbaum
Professor, Cornell Tech

Karen Ottoni
Ecosystem Manager, Hyperledger

Elizabeth Renieris
Global Policy Counsel, evernym

Jeannette Wing
Avanessians Director, the Data Science Institute at Columbia University

Hugo Zylberberg
Former Fellow for Technology and Policy, Columbia University

Users spend more time online than ever before. They manage their online lives using different services leveraging different identities. The systems organizing these "digital identities" have a significant impact on users, firms in the digital economy, and government and its regulatory systems. The rise of digital technology and online services stresses the need for efficient management of users' identities. Further, identity systems have traditionally introduced the possibility of implicit and explicit trust into societies.

Ronaldo Lemos underscored that, as this transition to new digital architectures takes place, governments need to understand digital identity management and ameliorate the tensions that might arise. Researchers have addressed how governments can implement a digital identity strategy (DIS) knowing that it may impact economic incentives, national security, business models, and citizens' freedom of choice. **Hugo Zylberberg** suggested that, given the importance of tailoring a DIS to each country's characteristics, it's crucial to understand how the social, economic, and political environment affects digital identity management.

Elizabeth Renieris emphasized the importance of the selection and design of identity systems. With traditional or "siloed" identity systems, a first design, organizations issue credentials to users who wish to access their services; users must then manage separate credentials for as many services as they choose to access. With third-party identity systems, "third-party" organizations authenticate users for credential service providers (CSP). This system allows users to manage fewer identities while delegating trust.

Finally, self-sovereign identity (SSI) systems take into account privacy-by-design principles. SSI in theory authorizes individuals to store their various identities in a blockchain wallet and use them as needed to access services. Credentials can be self-issued or issued by third parties, and each organization can choose whether to trust the identities supplied by users. Users can store many different identities and employ them across a variety of environments with varied risk and trust levels. **Vipin Bharatha**n suggested that blockchain may be a technical enabler in an SSI model to manage digital credentials, even if proper incentive design requires such solutions to be strongly backed by law. **Zylberberg** pointed out that rules over the definition of SSI are important for preventing the commoditization of identities.

Helen Nissenbaum

Jeannette Wing

Another defining characteristic of identity management pertains to the regulatory context around personal data protection. By establishing the context and boundaries for firm use of digital identities, such regulations may drive the design of technological solutions. **Helen Nissenbaum** compared the effects of different privacy regimes on digital identity management and questioned the very notion of consent. For example, US regulation lets firms require, without justification, that users provide real partial or complete identities before accessing services. This compels users to engage in a tradeoff between the privacy costs of supplying the information and the benefits of using the services. In the EU and under the GDPR, firms cannot require users to provide information that does not directly relate to the business before accessing a service. This boosts internet users' ability to protect their digital identities by limiting what information they are forced to share with service providers. Such contextual privacy may impact citizens' participation in society, as indicated by the proliferation of pseudonyms online, especially in ecosystems of open innovation and certain online communities. **Karen Ottoni** pointed out that in this case, light-touch regulation putting citizens in charge of managing their own identities fosters open communities and stimulates collective effort.

Jeannette Wing tackled the security underlying any digital identity system by showing that, for the past ten years, computer scientists have been developing technical capabilities to interlock digital identity management with privacy-by-design. This has produced three distinct approaches: differential privacy, applied cryptography and hardware-based privacy. While companies such as Google use some of these solutions, they are still not widespread in data management. The panelists left open the question of whether different digital identity management models could make better use of these technologies and more effectively protect user privacy.

PANEL 5

New Technologies, Elections, and Online Advertising

Ann Ravel, Moderator
Lecturer, UC Berkeley Law

Augustin Chaintreau
Assistant Professor, Columbia University

Camille Francois
Research and Analysis Director, Graphika

Sean Kanuck
Affiliate, Stanford CISAC

Gordon Goldstein
Adjunct Senior Fellow, Council on Foreign Relations

Young Mie Kim Bret Schafer
Social Media Analyst and Communications Officer, Alliance for Securing Democracy

Patrick Waelbroeck
Professor, Département Sciences Economiques et Sociales

David Carroll
Associate Professor, Media Design, The New School

Ann Ravel

The ability to participate in debates online has transformed how people engage in democratic processes at all levels. Social media has had a particularly profound effect on public debate in electoral processes. This panel examined the growing role of online advertising in political campaigns and organizations and the future of free and fair elections in a time of ubiquitous reliance on social media.

Ann Ravel opened the panel with questions relating to the definition of "political advertisement." The scope and limits of this term are unclear. In a time of numerous threats to democracy, the system relies on an informed citizenry that can identify who is trying to alter its views. Attribution is therefore key in online political advertising. Micro-targeting also challenges the democratic process as we know it by undermining openness and awareness of certain political views, leaving some people in the dark about their political options.

Gordon Goldstein highlighted the threat that online political advertisements pose to national security in the US, just one of numerous countries in which elections have been hacked. The Cambridge Analytica scandal, a salient example of the power of online political messaging, raises the question of whether Facebook should be required to complete audits about its involvement in the 2016 election. Facebook, a global information ecosystem with billions of users, was never conceived of or designed to be an arena for political advertising. Whether Facebook is best regulated under Section 230 of the Communications Decency Act is a question that deserves more attention. Also of concern is the US Congress' limited understanding of the nuances and technical reality of social media, which may undermine its attempts to craft effective policies.

One major proposal has been the Honest Ads Act, a bill currently before the US Senate. **Bret Schafer** surmised that tech companies tend to be comfortable with the Act because regulations on political advertising are unlikely to disrupt their business models. Had it been in place, the Honest Ads Act would not necessarily have changed the result of the 2016 elections because "misinformation campaigns" probably would not meet the criteria for political advertisement. Inaccurate information and sensationalist news spread differently in different contexts, as the use of WhatsApp rather than Facebook or Twitter for sharing news pieces leading up to elections in other countries (e.g. Mexico and India) demonstrates..

There are promising ways forward for studying this new era of online political advertisement. **Young Mie Kim** studies political advertising strategy, with a particular focus on paid advertising and its influence on election outcomes. Online political advertising differs from broad advertising in that the data is stored and tends (or ought) to be public, yet facilitates hidden micro-targeting. In a recent large-scale empirical study, Kim demonstrated that anonymous groups paid for a significant number of Facebook ads on divisive political issues, such as immigration and race, targeted towards low-income white voters. The study of ads on platforms like social media is impeded because those ads are not public.

Other studies, such as those done by **Augustin Chaintreau**, reminded participants that online data surveillance is not unique to Facebook; consider Gmail's use of email contents for advertisements. Studies like **Chaintreau's** on Gmail's email advertising are transferable to the study of political ads on social media websites, although research into the sharing and spread of information is certainly more complex with mediums like Facebook and tools like bots. **Chaintreau**, too, asserted that the Honest Ads Act would be beneficial insofar as it compelled transparency with respect to the identity of the person paying for an online ad. **David Carroll** further insisted, based on his personal experience and involvement in the Cambridge Analytica scandal, that the use of data by tech companies and third parties warrants regulation.

Young Mie Kim

Patrick Waelbroeck's economic approach to trust — examining the risk associated with a transaction — frames spam, identity threats, trolls, and online harassment as negative risks associated with online political advertising that can devastate digital markets. The asymmetric information at the disposal of internet users demonstrates that they do not understand the risks of using the internet and social media. Internet users have reason to mistrust tech companies' data gathering and can take many small measures to protect their privacy and withhold their data.

Augustin Chaintreau and Camille Francois

Finally, **Camille Francois** proposed threat models as a useful framework for understanding online political ads. Solutions can be sought through a cybersecurity frame, which raises questions like: who are the threat actors? What technical indicators can facilitate attribution? How do bots manoeuver to the heart of a community and gain political influence? In this respect, different techniques are used in different countries, and vulnerable groups like women are disproportionately silenced online. Finally, nation states are increasingly adopting trolling tactics to affect elections both domestically and abroad.

Appendix

Framing and Agenda

Speaker Biographies

FRAMING

Over the last four years, with support from the Carnegie Corporation, Columbia SIPA has embarked on an ambitious initiative to develop new thinking and expertise at the intersection of digital technology, data, public policy and SIPA's core fields. The Tech & Policy Initiative is engaging leading scholars, CEOs, entrepreneurs, legal and policy experts, and members of civil society to identify and help solve future digital policy challenges in three areas: cybersecurity, internet governance, and the digital economy.

This Workshop builds on three previous annual gatherings, called the SIPA Global Digital Futures Policy Forum. Working with scholars at Columbia University and other experts, this year is set up as a "workshop" to invite active participation by all attendees, with lead speakers considering the state of academic and policy research and identifying critical policy issues and questions for the future.

The Workshop considers areas that are well known as important for the future as well as emerging digital public policy issues. Over the course of the day, participants will examine selected policy issues of our digital age – notably platforms and governance; international trade; antitrust and the platform economy; internet of things and governance; as well as policy issues related to digital private moneys, digital identities and elections and online advertising. The general topics and confirmed lead speakers are identified in the following pages.

STATE OF THE FIELD WORKSHOP ON DIGITAL TRANSFORMATIONS 2018 AGENDA

8:30am – 9am
Breakfast and Registration

9am
Welcome & Introduction

9:10am - 10:25am

Plenary 1
Platforms and Governance in the Digital Age

10:35am - 11:50am

Plenary 2
International Trade in the Digital Age

12pm – 1:15pm
Lunch Session: Crypto-Economics
The Macro Effects of Digital Private Moneys and Payment Systems

1:25pm - 2:40pm

Session 1A
Antitrust in the Digital Age

Session 1B
Internet of Things and Governance in the Digital Age

2:50pm - 3:05pm
Reporting back from the breakout sessions

3:10pm - 4:25pm

Plenary 3
Digital Identities, Privacy and Security Issues

4:35pm - 5:50pm

Plenary 4
New Technologies, Elections and Online Advertising

6pm - 8pm
Cocktail Reception

1. Platforms and Governance Issues in the Digital Age

Moderators / Lead Speakers:

- Laura DeNardis (American University) (moderator)
- Mark Raymond (University of Oklahoma) (moderator)
- Martha Finnemore (George Washington University)
- Tarleton Gillespie (Microsoft Research)
- Kate Klonick (Yale Law School)
- Karen Kornbluh (CFR)

What's Changed?

The global growth and adoption of services provided by a handful of platform companies has been associated with economic and social benefits. It has also made these platforms de facto stakeholders in global governance challenges formerly managed by states and international institutions. At the same time, the legacy Internet governance regime is being enmeshed in a broader cyber regime complex that is itself still in an increasingly contentious formation process. This contention has been driven by the growing determination of states to reassert their sovereign authority in an issue-area that had previously been characterized by the prevalence of multi-stakeholder governance modalities dominated by private-sector actors. As "regulating the platforms" becomes an element of the mainstream public debates, this panel will explore how multi-stakeholder institutions can associate all stakeholders while promoting compliance with international law and human rights.

2. International Trade in the Digital Age

Moderators / Lead Speakers:

- Merit Janow (Columbia SIPA) (moderator)
- Usman Ahmed (PayPal)
- Mira Burri (University of Lucerne)
- William Drake (University of Zurich)
- Ricardo Meléndez-Ortiz (International Center for Trade and Sustainable Development)
- Joshua Meltzer (Brookings Institution)
- Mark Wu (Harvard Law School)

What's Changed?

Platforms increasingly mediate economic opportunities globally and shape international trade flows. The rules of the international trading system barely cover digital trade, although some agreements, such as TPP and KORUS, contain expanded rules around data. Are additional laws or policy frameworks needed? If so, how best to advance such arrangements? What are the sources of tension between nations? How to advance harmonization or convergence?

3. Crypto-economics: The Macro Effects of Digital Private Moneys and Payment Systems

Moderators / Lead Speakers:

- Eli Noam (Columbia Business School) (moderator)
- Max Raskin (NYU)
- George Selgin (CATO Institute)

What's Changed?

Money originated historically from commodities with an inherent value. Today, new electronic technologies like strong encryption make it possible to create secure tokens of value, and global connectivity enables this currency as a means of commerce globally. The digitalization of money creates opportunities, both for populations who did not have access to financial services thus far, but also for connected populations adopting tools such as crypto-currencies and electronic payment systems. Furthermore, alongside government money, private currencies may compete in terms of features, performance, privacy and trustworthiness. In the next decade, we will inevitably see "money" experiencing rapid technological change – and the current monetary system may be tested. Central banks, financial institutions and financial policy regulators need to understand and develop new frameworks for thinking about these changes. This session may usefully consider the magnitude and nature of the changes, possible approaches going forward and important research and analytical questions.

4. Antitrust in the Digital Age

Moderators / Lead Speakers:

- Howard Shelanski (Georgetown Law) (moderator)
- Scott Hemphill (NYU)
- Gene Kimmelman (Public Knowledge)
- David Pitofsky (NewsCorp)

What's Changed?

The emergence of a handful of global digital platforms, notably in the US and China has brought benefits to consumers, innovation, and inclusion. At the same time, these platforms raise a number of antitrust concerns e.g. price discrimination, barriers to entry and data access, the economics of multisided markets, whether traditional antitrust frameworks readily apply, and if so, how. This panel will explore how network effects, data aggregation, and consumer behavior affect competition and innovation in digital industries, and will examine enforcement approaches.

5. Internet of Things and Governance in the Digital Age

Moderators / Lead Speakers:

- Laura DeNardis (American University) (moderator)
- Mark Raymond (University of Oklahoma) (moderator)
- Ronaldo Lemos (ITS Rio)
- Veni Markovski (ICANN)
- Gilad Rosner (Internet of Things Privacy Forum)
- Stefaan Verhulst (The GovLab)

What's Changed?

Internet technologies are rapidly proliferating across virtually every domain of organized human activity. The rapid adoption of these technologies creates and exacerbates various governance challenges at both the domestic and global levels. Without adequate governance mechanisms, firms will find it difficult and costly to develop, adopt, deploy and maintain IoT systems that are simultaneously compliant with various national and international laws and regulations (e.g. for privacy, security, lawful access, safety, etc.) in the jurisdictions in which they operate.

6. Digital Identities, Privacy and Security Issues

Moderators / Lead Speakers:

- Ronaldo Lemos (ITS Rio) (moderator)
- Hugo Zylberberg (Formerly Columbia SIPA) (moderator)
- Vipin Bharathan (dlt.nyc)
- Helen Nissenbaum (Cornell Tech)
- Karen Ottoni (Linux Foundation)
- Elizabeth Renieris (Evernym)
- Jeannette Wing (Columbia Data Science Institute, Computer Science Department)

What's Changed?

Online participation is an increasingly important aspect of human life. Individuals need to be able to prove their identity digitally, as they are in the analog world, in a reliable, secure and privacy-preserving manner. States all over the world are struggling with the challenge of creating the technological underpinning for digital identities, but these necessary technologies come with a new set of issues related to their scope, use, as well as regulation. This panel will explore the policy issues related to such digital identity systems, most prominently privacy, security and technological architecture.

7. New Technologies, Elections and Online Advertising

Moderators / Lead Speakers:

- Ann Ravel (Berkeley) (moderator)
- David Carroll (The New School)
- Augustin Chaintreau (Columbia University)
- Camille François (Graphika)
- Gordon Goldstein (Council on Foreign Relations)
- Young Mie Kim (University of Wisconsin-Madison, Campaign Legal Center)
- Bret Schafer (Alliance for Securing Democracy)
- Patrick Waelbroeck (Télécom ParisTech)

What's Changed?

Participatory processes are an essential building block of modern democracies, and online participation and the digitization of the public debate is transforming how citizens can participate in governance at all levels. Social media have a profound impact on how citizens engaged in the public debate in electoral process. In particular, political campaigns and organizations are increasingly relying on online advertising, which makes transparency and accountability more difficult with each election. How do we conduct free and fair elections in the age of social media and online advertising?

SPEAKER BIOGRAPHIES

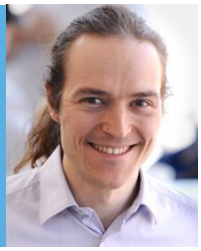
Usman Ahmed is the Head of Global Public Policy at PayPal Inc. His work covers a variety of global issues including financial services regulation, innovation, international trade, and entrepreneurship. He has given talks on these subjects at conferences and universities around the world and has published in the World Economic Forum Global Information Technology Report, MIT Press Innovations Journal, and the Boston University International Law Journal. He is also an Adjunct Professor of Law at Georgetown University Law School where he teaches a course on Fintech Law and Policy.

Vipin Bharathan is the Founder at dtl.nyc, a blockchain company based in New York City. He is working toward the convergence of Blockchain, Big Data, AI & Robotics while conscious of the intersection of emerging technology with privacy, human interactions and community. He has over 30 years experience as a hands-on developer and development manager.

Mira Burri is senior lecturer and managing director for internationalisation at the Faculty of Law of the University of Lucerne since April 2016 teaching International Law of Contemporary Media, Digital Copyright, Internet Law and International Intellectual Property Law. Prior to joining the University of Lucerne, Burri was a senior fellow at the World Trade Institute at the University of Bern, where she led a project on digital technologies and trade governance as part of the Swiss National Centre of Competence in Research (NCCR): Trade Regulation.

David Carroll is an Associate Professor of media design and Director of the MFA Design and Technology graduate program at the School of Art, Media and Technology at Parsons The New School for Design. His pedagogy and research surrounds digital media, especially for mobile devices, towards a critical practice and theory of software and interaction design as social engagement. His work crosses multiple fields of art, design, education, sciences, humanities, and policy among both private and public-interest enterprises. He founded the Center for Mobile Creativity to support research grants from Pearson Foundation, MacArthur Foundation, NIH/ NIDA, NSF and Nokia Research Centers.

SPEAKER BIOGRAPHIES



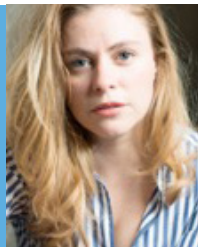
Augustin Chaintreau is an Assistant Professor of Computer Science at Columbia University where he directs the Mobile Social Lab. His research tries to balance the benefits of leveraging personal data and social networks with protecting fairness and privacy. His latest results address transparency in personalization, the role of human mobility in privacy across several domains, the efficiency of crowdsourced content curation and the fairness of incentives to share personal data. His research has appeared in The New York Times, Washington Post, Economist, and Guardian.

Laura DeNardis is a leading scholar of Internet governance and a tenured Professor in the School of Communication at American University in Washington, DC. With a background in information engineering and a doctorate in Science and Technology Studies (STS), her research studies some of the most pressing global Internet policy problems of our time, such as cybersecurity, digital privacy, freedom of expression online, and geopolitical struggles over control of the Internet.

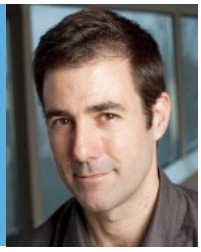
William J. Drake is an International Fellow and Lecturer in the Institute of Mass Communication and Media Research at the University of Zurich. He is also a faculty member of the European and South schools on Internet governance, and an Affiliated Researcher at the Institute for Tele-Information, Columbia University.

Martha Finnemore is University Professor of Political Science and International Affairs at George Washington University in Washington, DC. Her research focuses on global governance, international organizations, ethics, and social theory. She is the co-author (with Michael Barnett) of Rules for the World: International Organizations in Global Politics, which won the International Studies Association's award for Best Book in 2006. She is a Fellow of the American Academy of Arts and Sciences, and has been a visiting Research Fellow at the Brookings Institution and Stanford University.

SPEAKER BIOGRAPHIES



Camille Francois works on cyber conflict and digital rights online. She currently serves as the Research and Analysis Director at Graphika, where she leads the company's work to detect and mitigate disinformation, media manipulation and harassment in partnership with major technology platforms, human rights groups and universities around the world. Francois has advised governments and parliamentary committees on both sides of the Atlantic on policy issues related to cybersecurity and digital rights. She is a Mozilla Fellow, a Berkman-Klein Center affiliate, and a Fulbright scholar.



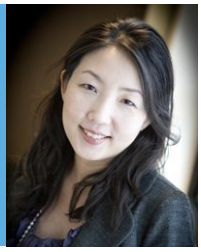
Tarleton Gillespie is a Principal Researcher at Microsoft Research New England, part of the Social Media Collective research group. He is an affiliated associate professor at Cornell University, in the Department of Communication and the Department of Information Science. He co-founded the blog Culture Digitally. He is the author of Wired Shut: Copyright and the Shape of Digital Culture (MIT, 2007), the co-editor of Media Technologies: Essays on Communication, Materiality, and Society (MIT, 2014); his newest book is Custodians of the Internet: Platforms, Content Moderation, and the Hidden Decisions that Shape Social Media (Yale, 2018).

Gordon Goldstein is an Adjunct Senior Fellow at CFR and previously managing director at Silver Lake, the world's largest investment firm in the global technology industry. He represented Silver Lake as a member of the U.S. delegation to the World Conference on International Telecommunications convened in 2012 in the United Arab Emirates and served on the American delegation to the UN International Telecommunication Union Plenipotentiary Conference in South Korea in 2014.

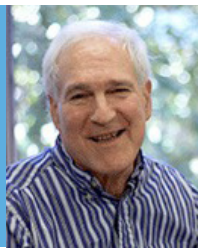
SPEAKER BIOGRAPHIES

Scott Hemphill teaches and writes about antitrust, intellectual property, and regulation of industry. His research focuses on the law and economics of competition and innovation, and his scholarship ranges broadly, from drug patents to net neutrality to fashion and intellectual property. Hemphill's recent work examines the antitrust problem of parallel exclusion in concentrated industries and anticompetitive settlements of patent litigation by drug makers. He joined NYU from Columbia Law School, where he was a professor of law.

Merit E. Janow is Dean of SIPA and an internationally recognized expert in international trade and investment, with extensive experience in academia, government, international organizations and business. In addition, she is an Asia regional expert and teaches graduate courses in international trade/WTO law, comparative antitrust law, China in the global economy, international trade and investment policy, among others. She has written several books, numerous articles and frequently speaks before business, policy, and academic audiences around the world. She has a JD from Columbia Law School where she was a Stone Scholar and a BA in Asian Studies with honors from the University of Michigan. She is a member of the Council on Foreign Relations and the Trilateral Commission.



Young Mie Kim is a Professor of the School of Journalism and Mass Communication and a Faculty Affiliate of the Department of Political Science at the University of Wisconsin-Madison. Kim's research concerns media and politics in the age of data-driven digital media, specifically the role digital media play in political communication among political leaders, non-party groups (issue advocacy groups), and citizens. Kim's recent research project, Project DATA (Digital Ad Tracking & Analysis), empirically investigates the sponsors/sources, content, and targets of digital political campaigns across multiple platforms with a user-based, real-time, ad tracking tool that reverse engineers the algorithms of political campaigns.

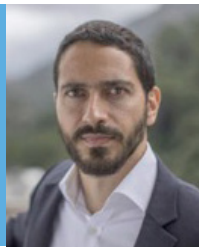


Gene Kimmelman is the President and CEO of Public Knowledge. Public Knowledge promotes freedom of expression, an open internet, and access to affordable communications tools and creative works. Previously, Gene served as Director of the Internet Freedom and Human Rights project at the New America Foundation, and as Chief Counsel for the U.S. Department of Justice's Antitrust Division. Prior to joining the Department of Justice, Gene served as Vice President for Federal and International Affairs at Consumers Union.

SPEAKER BIOGRAPHIES

Kate Klonick joined the Law School faculty at St. John's University in 2018. She teaches Property, Internet Law, and a seminar on land use. Klonick's research centers on law and technology, using cognitive and social psychology as a framework. That has led to study in the areas of decision making, intellectual property, property, communications torts, norms, shaming, and governance. It has also led to interest in robotics, artificial intelligence, and Internet law. Most recently she has been studying and writing about private Internet platforms and how they govern online speech.

Ambassador Karen Kornbluh is Senior Fellow and Director of Global Media Fund's Digital Innovation Democracy Initiative (DIDI) which works to help shape a future in which technology strengthens rather than undermines democratic values. This program contends with the challenge of online disinformation as well as other technology policy issues including 21st century jobs and innovation, democratic implications of frontier technologies, and cyber dimensions of national security. She is a leading voice at the intersection of digital and economic policy, technology, and foreign affairs.

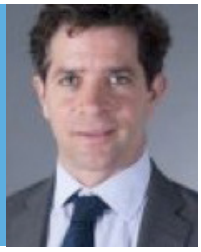


Ronaldo Lemos is an internationally respected Brazilian scholar and commentator on intellectual property, culture, and technology. He founded the Center for Technology & Society at the Fundação Getulio Vargas (FGV) Law School, where he is also head professor of intellectual property law. He is a professor at Columbia University's School for International Public Affairs where he teaches technology and policy. He is also Project Lead of Creative Commons Brazil and Brazil´s liaison to the director at the MIT Media Lab.

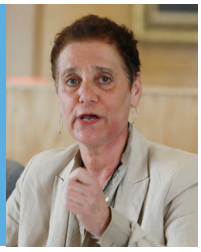
Veni Markovski is the ICANN Vice-President where he is responsible for the relations with the United Nations, the UN Agencies in New York, and the Permanent Missions to the United Nations. In September 1990, Mr Markovski started his work on the internet, as a system operator of the first Sofia-based bulletin-board system in Bulgaria, part of FidoNet.

SPEAKER BIOGRAPHIES

Ricardo Meléndez-Ortiz is co-founder and Chief Executive at the International Centre for Trade and Sustainable Development (ICTSD), and a former Delegate of Colombia for trade, investment, environment, and development negotiations. Since 1997, Mr. Meléndez-Ortiz has been the publisher of BRIDGES and its sister periodicals. He is currently Principal Convener of the E15 Initiative, a major joint undertaking with the World Economic Forum, working with over 370 experts to propose options on the future of the global trade and investment system.



Joshua Meltzer is a Senior Fellow in the Global Economy and Development program at the Brookings Institution. At Brookings, Meltzer works on international trade law and policy issues with a focus on the World Trade Organization and large free trade agreements such as the Trans-Pacific Partnership Agreement. Specific areas of focus include digital trade where he leads the Digital Economy and Trade Project. Meltzer also works on financing for sustainable infrastructure.



Helen Nissenbaum is a Professor at Cornell Tech and in the Information Science Department at Cornell University. Her research takes an ethical perspectives on policy, law, science, and engineering relating to information technology, computing, digital media and data science. Topics have included privacy, trust, accountability, security, and values in technology design. Her books include Obfuscation: A User's Guide for Privacy and Protest, with Finn Brunton (MIT Press, 2015) and Privacy in Context: Technology, Policy, and the Integrity of Social Life (Stanford, 2010).

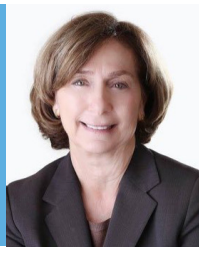
Eli Noam is a Professor of Economics and Finance at the Columbia Business School and its Garrett Professor of Public Policy and Business Responsibility. His research focuses on the economics and management of media, Internet, and communications, both in America and around the world. He previously served as New York State's Public Service Commissioner, regulating the telecommunications and energy industries and on a White House Presidential Board on electronic technology. He has previously been chairman of the International Media Management Academic Association, 2012-2014, and has been a member of advisory boards for the Federal government's telecommunications network, and of the IRS computer system, of the National Computer Systems Laboratory, the National Commission on the Status of Women in Computing, the Governor's Task Force on New Media, and of the Intek Corporation.

SPEAKER BIOGRAPHIES

Karen Ottoni is currently Ecosystem Manager at Hyperledger, which is an open source collaborative effort created to advance cross-industry blockchain technologies. Hosted by The Linux Foundation, it's a global collaboration including leaders in finance, banking, Internet of things, supply chains, manufacturing and technology. Ottoni works with the 230+ members to help them leverage Hyperledger projects and resources for their blockchain initiatives, and fosters the growth of the developer community.

David B. Pitofsky is Executive Vice President, General Counsel and Chief Compliance Officer of News Corp. As General Counsel, Pitofsky oversees global legal operations including litigation, mergers and acquisitions, ethics and corporate governance matters. As Chief Compliance Officer, he chairs the Company's Compliance Steering Committee. He joined News Corp. in 2013 as Deputy General Counsel and Deputy Chief Compliance Officer.

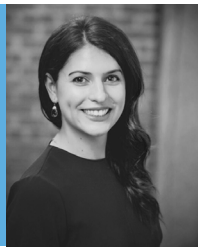
Max Raskin is an Adjunct Professor of Law at NYU Law School. He teaches courses on digital currency, blockchains and the future of financial services while also writing for many established publications on the topics of digital currencies, decentralized ledgers, and the future of central banking.



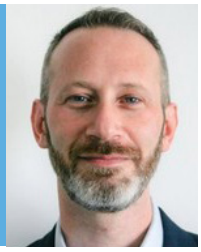
Ann Ravel is a lecturer at University of California Berkeley Law. She was nominated to the Federal Election Commission by President Barack Obama on June 21, 2013. After her appointment received the unanimous consent of the United States Senate, Ravel joined the Commission on October 25, 2013. She served as Vice Chair of the Commission for 2014 and Vice Chair for 2015 before leaving in 2017. In 2014, she was named a California Attorney of the Year by California Lawyer magazine for her work in Government law, and in 2007, the State Bar of California named her Public Attorney of the Year for her contributions to public service.

SPEAKER BIOGRAPHIES

Mark Raymond is the Wick Cary Assistant Professor of International Security in the Department of International and Area Studies at the University of Oklahoma. He holds a Ph.D. in political science from the University of Toronto. His research and teaching interests include International Relations theory, international law and organization, and international security. His current book project examines the role of procedural rules in shaping the politics of global rule-making. He is the co-editor, with Gordon Smith, of Organized Chaos: Reimagining the Internet.



Elizabeth M. Renieris is an entrepreneurial attorney, thought-leader and strategic consultant who is passionate about emerging technologies and their impact on privacy, identity, society, and collective consciousness. She is particularly interested in the unique challenges posed by blockchain and distributed ledger technologies (DLT), artificial intelligence (AI) and machine learning. In her role as Global Policy Counsel, she advises Evernym on both foreign and domestic legal and policy challenges, particularly as they relate to self-sovereign identity (SSI), trust frameworks, and data protection and privacy matters. Renieris is particularly focused on reaching a "new deal on data" that is user-centric, user-controlled, and privacy-enhancing.



Dr. Gilad L. Rosner is a privacy and information policy researcher, and founder of the IoT Privacy Forum. Rosner's broader work focuses on identity management, US & EU privacy and data protection regimes, and online trust. His research has been used by the UK House of Commons Science & Technology Committee report on Responsible Use of Data, and he is a featured expert on the BBC and O'Reilly. His 20-year IT career has spanned ID management technologies, digital media, automation and telecommunications.

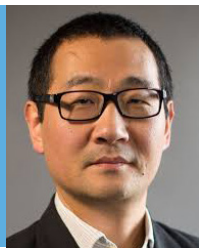
Bret Schafer is the Alliance for Securing Democracy's social media analyst and communications officer. He has a master's in public diplomacy from the University of Southern California, and a BS in communications with a major in radio/television/film from Northwestern University. As an expert in computational propaganda, he has appeared in The New York Times, USA Today, The Wall Street Journal, and Los Angeles Times, and he has regularly been interviewed on NPR, PBS, and BBC radio.

SPEAKER BIOGRAPHIES

George Selgin is a Senior Fellow and Director of the Center for Monetary and Financial Alternatives at the Cato Institute and Professor Emeritus of Economics at the University of Georgia. His research covers a broad range of topics within the field of monetary economics, including monetary history, macroeconomic theory, and the history of monetary thought. Selgin is one of the founders, along with Kevin Dowd and Lawrence H. White, of the Modern Free Banking School, which draws its inspiration from the writings of F. A. Hayek on denationalization of money and choice in currency.

Howard Shelanski practices antitrust law and is a member of the law firm of Davis Polk & Wardwell LLP. As a professor at Georgetown Law, Shelanski's teaching and research focus on antitrust and regulation. In addition to numerous articles, he has co-authored leading casebooks, treatises and edited volumes in both antitrust and telecommunications law. From 2013 to 2017, he served as Administrator of the White House Office of Information and Regulatory Affairs (OIRA).

Stefaan G. Verhulst Co-Founder and Chief Research and Development Officer of the Governance Laboratory @NYU (GovLab) where he is responsible for building a research foundation on how to transform governance using advances in science and technology. He is the Curator and Editor of the Living Library and The Digest. Verhulst's latest scholarship centers on how technology can improve people's lives and the creation of more effective and collaborative forms of governance. Specifically, he is interested in the perils and promise of collaborative technologies and how to harness the unprecedented volume of information to advance the public good.

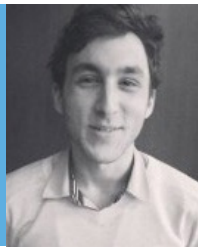


Patrick Waelbroeck is a Professor of industrial economics and econometrics at Télécom ParisTech where he teaches econometrics, Internet economics and economics of personal data at the graduate level. He is a member of the editorial board of the Journal of Cultural Economics. He is also a member of the board of the international association European Policy for Intellectual Property. He was president of the association during 2013-2014. Waelbroeck is also a founding member of the Chair "Valeurs et Politiques des Informations Personnelles" (Institut Mines-Télécom) that addresses legal, economic, technical and philosophical issues related to personal data.

SPEAKER BIOGRAPHIES

Jeannette Wing is Avanessians Director of the Data Science Institute and Professor of Computer Science at Columbia University. She previously worked at Microsoft, where she served as Corporate Vice President of Microsoft Research, overseeing a global network of research labs. She is widely recognized for her intellectual leadership in computer science, particularly in trustworthy computing. Before joining Microsoft, Wing held positions at Carnegie Mellon University and at the National Science Foundation. Her areas of research expertise include security and privacy; formal methods; programming languages; and distributed and concurrent systems. She holds bachelors, masters, and doctoral degrees from MIT.

Mark Wu is the Henry L. Stimson Professor at Harvard Law School. His research focuses on international trade law, including issues concerning emerging economies, digital trade, intellectual property, trade remedies, environment, and investment. At Harvard, Wu is a Faculty Director of the Berkman Klein Center for Internet and Society. In 2016, he was appointed by the World Trade Organization to serve on the Advisory Board for the WTO Chairs Programme. Wu also serves on the World Economic Forum's Global Future Council on Trade and Foreign Direct Investment. In addition, he works with the World Bank on assessing trade agreements and serves on multiple expert groups convened by the International Centre for Trade and Sustainable Development.



Hugo Zylberberg is a Manager at the Cyber Intelligence group at PwC France and is a former Digital and Cyber Fellow at Columbia University's School of International and Public Affairs, in charge of coordinating the programs on Cybersecurity, Internet Governance and the Digital Economy. He is also a member of the Research Center Values and Policies of Personal Data at the Institut Mines-Telecom in Paris. He graduated with a Master in Public Policy from the Harvard Kennedy School and a Master of Science from the Ecole polytechnique. He has previously worked as a business developer for an open source software company and co-founded The Future Society, an organization aimed at raising awareness about the technologies that fundamentally transform the way we live.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