Jesse Sowell

Assistant Professor
Department of International Affairs
Bush School of Government and Public Service
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Current Positions

2018-   *Assistant Professor*
               Department of International Affairs
               Bush School of Government and Public Service
               Research Fellow, Cybersecurity Center
               Research Fellow, Mays Innovation Research Center
               Texas A&M University (College Station, TX)

2020-   *Research Affiliate and Advisory Board Member, Program on Emerging Technologies (PoET)*
               Department of Political Science
               Massachusetts Institute of Technology (Cambridge, MA)

Previous Position

2018-2020   *Honorary Lecturer*
               Department of Science, Technology, Engineering, and Public Policy (STEaPP)
               University College London (London, UK)

2016-2018   *Postdoctoral Cybersecurity Fellow*
               Center for International Security and Cooperation
               Stanford University (Stanford, CA)

Degrees

2015   **Ph.D. in Technology, Management, and Policy**
               Massachusetts Institute of Technology, Cambridge, MA
               Dissertation: *Finding Order in a Contentious Internet*
               Committee: Kenneth Oye, Chair (Political Science); David Clark, Supervisor (Computer Science); Nazli Choucri (Political Science); Frank Field (Technology and Policy); Charles Fine (Management Science)

2010   **S.M. in Technology and Policy**
               Massachusetts Institute of Technology
               Thesis: *Deficiencies in Online Privacy Policies: Factors and Policy Recommendations*
               Supervisor: David Clark (Computer Science)

2007   **M.S. in Criminal Justice**
               Michigan State University, East Lansing, MI

2005   **M.S. in Computer Science**
               Michigan State University, East Lansing, MI

2001   **B.S. in Computer Science**
               Clemson University, Clemson, SC
               Graduated with General and Departmental Honors

Research Interests

Internet and digital technologies policy; international security and cybersecurity; institutional economics; transnational institutions; cybersecurity indicators and metrics; qualitative and quantitative methods; mixed-methods metrics development; commons-based Internet resource management; science and technology policy interfaces; credible knowledge assessment; infrastructure economics, operations, and security; complex engineering systems regulation and governance; private regimes and regulation; common resource theory and governance; political authority

Publications

Journal Articles

Sowell, J. 2020. *Evaluating Competition in the Internet's Infrastructure: A View of GAFAM from the Internet Exchanges*. Special Issue of *Journal of Cyber Policy* on Internet Consolidation.

Brass, I. and Sowell, J. 2020. *Adaptive Governance for the Internet of Things (IoT): Coping with Emerging Security Risks*. Special Issue of *Regulation & Governance* on Governance of Emerging Disruptive Technologies.

Under Review

Operational Epistemic Authority in the Internet's Infrastructure
(under review by *International Organization*)

Regional Politics of Submarine Cables
(with Lane Burdette, under review by *Contemporary Security Policy*)

The Digital Dictator Dilemma: A Comparative Study of Authoritarianism and Internet Shutdowns in Africa
(with Sarah Logan, under review by *International Organization*)

Book Chapters

Sowell, J. 2019. *A Conceptual Model of Planned Adaptation (PA)*. In *Decision Making Under Deep Uncertainty: From Theory to Practice*, edited by Vincent A. W. J. Marchau, Warren E. Walker, Pieter J. T. M. Bloemen, and Steven W. Popper. pp. 289–320. Springer International Publishing.

Short Policy Articles

Sowell, J. 2018. *The Role of Norms in Internet Security: Reputation and its Limits*
Published by Lawfare on 8 May 2018

Project Reports

Sowell, J. 2018. *Combining Capabilities for Cybersecurity Incident Response*. Center for International Security and Cooperation. Stanford University. Stanford, CA. (Available upon request)

Conference and Workshop Papers

Ku, C., Sowell, J., Bartoszewski, J., and Morriss, A. 2021. *Networks & Resilience in International Financial Networks*
Presented by Sowell in the *Global Rules and Illicit Economic Flows* panel at the 2021 APSA Annual Meeting & Exhibition on 30 September 2021 (Seattle, Washington).

Brass, I., Sowell, J., Blackstock, J., and Carr, M. 2017. *The Role of Transnational Expert Associations in Governing the Cybersecurity Risk of the Internet of Things*
3rd International Conference on Public Policy (ICPP3) (Singapore).

Howard, L. and Sowell, J. 2015. *A Comparison of Public Policy Approaches to the IPv4-IPv6 Transition*
44th Research Conference on Communication, Information and Internet Policy. Telecommunications Policy

Research Consortium (Arlington, VA).

Sowell, J. 2013. *Framing the Value of Internet Exchange Participation*
42nd Research Conference on Communication, Information and Internet Policy. Telecommunications Policy Research Consortium (Arlington, VA)

Sowell, J. 2012. *Empirical Studies of Bottom-Up Internet Governance*
41st Research Conference on Communication, Information and Internet Policy. Telecommunications Policy Research Consortium (Arlington, VA).

Sowell, J. 2010. *Mixed Context and Privacy*
39th Research Conference on Communication, Information and Internet Policy. Telecommunications Policy Research Consortium (Arlington, VA).

Selected Works in Progress   Need to delete some of these as also under review

Keeping the Internet Glued Together: Common Resource Management Among Transnational Peers
(targeting *International Journal of the Commons*)

Who Turned the Internet Off? Modeling the Relationship Between Regime Type and Internet Shudowns
(with Sarah Logan, journal to be determined)

Where Risk Runs Deep: Quantifying Diversity and Redundancy in the Global Submarine Cable Network
(with Lane Burdette, targeting *Telecommunications Policy*)

History and Structure of the Internet's Anti-Abuse Regime: From Spam to Disinformation
(targeting *Journal of Online Safety and Trust*)

The Internet's Operational Regime Complex
(targeting *Perspectives on Politics*)

Grants

2019-2021	*Mapping Cybercrime Operational Networks: Incentive Structures and Platform Economics* T3: Texas A&M Triads for Transformation ($30k), Principal Investigator with: Narasimha Reddy: Professor, Department of Electrical and Computer Engineering, College of Engineering; Associate Dean of Research Korok Ray: Associate Professor, Department of Accounting, Mays Business School; Director, Mays Innovation Research Center
2017-2018	*Documenting Combined Capabilities for Internet Security* Stanford Cyber Initiative ($75k), Principal Author with Amy Zegart, Herb Lin, and Harold Trinkunas
2017-2018	*Developing a Reliable Capacity to Deploy Combined Capabilities in Internet Security* Freeman Spogli Institute's International Policy Implementation Lab ($50k), Principal Author with Amy Zegart, Herb Lin, and Harold Trinkunas
2013-2015	*Characterizing Internet Exchange Value: Moving Beyond Transit Savings* Google Faculty Research Award ($85k), Principal Author with David Clark

Previous Experience

Academic

2016-2018	*Cybersecurity Postdoctoral Fellow* Center for International Security and Cooperation (CISAC) Stanford University (Stanford, CA)

Research on engagement between cybersecurity trust groups and state actors (law enforcement in particular). Supported by two grants (as primary author) totaling $125k. Managed research assistants and organized multiple stakeholder workshops colocated with industry meetings, culminating in 2018 report on *Combining Capabilities for Cybersecurity Incident Response*. Combined Capabilities Project is ongoing.

2008-2015   *Research Assistant*
Advanced Network Architecture (ANA) Group
Computer Science and Artificial Intelligence Laboratory (CSAIL)
Massachusetts Institute of Technology (Cambridge, MA)

Doctoral research on the non-state institutions that ensures the Internet remains glued together in a secure and stable way. Based on extensive interviews and global fieldwork among network operator and cybersecurity communities. Data analysis included qualitative analysis of interviews and policy documents, text mining, and quantitative analysis (R) of resource delegation trends and network structures.

2001-2005   *Research Assistant*
Software Engineering and Network Systems (SENS) Lab
Department of Computer Science and Engineering (CSE)
Michigan State University (East Lansing, MI)

Research on architecture and design of middleware. Prototyping of reliable and fault tolerant network communication protocols from formal modeling through design, architecture, and prototype development, deployed in Java-based middleware frameworks. Primary languages used were Java and C.

1998-2001   *Research Assistant*
TECNET
Department of Computer Science
Clemson University (Clemson, SC)

Developed and deployed dynamic web applications for managing process scheduling. Also managed research lab workstations (SUN and Linux systems), lab network, and security monitoring. Primary development in C, Perl, Javascript, and MySQL.

Industry and Nonprofit

2015-2016   *Infrastructure DevOps and Visualization*
Markley Group

Developed network resource monitoring tools for logging and archiving detailed resource utilization indicators. Developed complementary visualization tools to select appropriate sampling rates to identify resource utilization trends and anomalies.

2015   *Consulting Research Contractor, IXP Toolkit*
Internet Society

Contributed to development of initial IXP Toolkit with case studies and database for tracking IX platform development. IX platform development database later used to refactor what became the IX-F's new consolidated database.

2006-2007   *Consulting Research Contractor, Illicit Supply Chain Analysis*

General Motors Research Center

Developed web application and backend tools for global investigators to translate reports on investigations and raids into representations of social networks of actors involved in illicit and counterfeit part supply chains. Network representations were used to identify high yield interdiction points in ongoing global investigations.

Invited Talks, Presentations, and Lectures

2021 Invited Lecture, *Consolidation and Platform Governance*
Digital Technology and Policy, Department of Science, Technology, Engineering, and Public Policy (STEaPP), University College London (UCL) (London, UK)

Invited Lecture, *Capabilities and Uncertainty in Complex Engineering Systems*
Risk Assessment and Governance, Department of Science, Technology, Engineering, and Public Policy (STEaPP), University College London (UCL) (London, UK)

2020 Invited Lecture, *Innovation and Concentration in the Internet: From Application Layer to Infrastructure*
Department of Finance and Mays Innovation Research Center
Mays Business School, Texas A&M University (College Station, TX)

Invited Lecture, *Capabilities and Uncertainty in Complex Engineering Systems*
Risk Assessment and Governance, Department of Science, Technology, Engineering, and Public Policy (STEaPP), University College London (UCL) (London, UK)

Panelist, *Technical Challenges*
Workshop on Cybernorms, Information Society Project
Yale Law School (New Haven, CT)

2019 Panelist, *Internet Consolidation: What Lies Beneath the Application Layer?*
Internet Society and Chatham House (London, UK)

Invited Lecture, *IoT and Reputation*
Warwick Manufacturing Group, Warwick University (Warwick, UK)

Invited Lecture, *Adapting to Cybersecurity Threats: The Demand for Combined Capabilities*
Information Society Project, Yale Law School (New Haven, CT)

Invited Lecture, *Capabilities and Uncertainty in Complex Engineering Systems*
Risk Assessment and Governance, Department of Science, Technology, Engineering, and Public Policy (STEaPP), University College London (UCL) (London, UK)

2018 Moderator, *International Cybersecurity Panel*
2018 Cybersecurity Symposium, Stanford Law (Stanford, CA)

Panelist, *Risk, Uncertainty, and the Internet of Things: Governance in an Age of Interdependence*
International Studies Association 59th Annual Convention (San Francisco, CA)

Panelist, *Epistemic Infrastructure: Revisiting Knowledge Systems and Practice*
International Studies Association 59th Annual Convention (San Francisco, CA)

2017	Moderator, *Exploring the Range of Possible Cyber Threat Scenarios* Cyber Insurance and Its Evolving Role in Helping Mitigate Cyber Risks National Association of Insurance Commissioners and the Stanford Cyber Initiative (Santa Clara, CA)
	Moderator, *Security and Privacy Session 2* Research Conference on Communication, Information and Internet Policy Telecommunications Policy Research Consortium (Arlington, VA)
	Presenter, *Reputation and the Anti-Abuse Regime* Social Science Seminar, Center for International Security and Cooperation Stanford University (Stanford, CA)
	Discussant, *Cybersecurity Futures 2020* Presented by Betsy Cooper and Steven Weber, Berkeley Center for Long-Term Cybersecurity Social Science Seminar, Stanford Center for International Security and Cooperation (Stanford, CA)
2016	Presenter, *Finding Order in a Contentious Internet* Cyber Reading Group, Center for International Security and Cooperation Stanford University (Stanford, CA)
	Epistemic Constructivism Information Technology Policy Seminar University of Massachusetts at Amherst (Amherst, MA)
2015	Panelist *Localizing IP Interconnection: Experiences from Africa and Latin America* Research Conference on Communication, Information and Internet Policy Telecommunications Policy Research Consortium (Arlington, VA)
	Presenter, *Harnessing Adaptation in Operational Resource Management* Technology, Management, and Policy Graduate Consortium, Carnegie Mellon University, (Pittsburgh, PA)
2012	Presenter, *Field Report on Bottom-up Internet Governance* Network Economics Forum, Department of Management, The London School of Economics and Political Science (London, UK)
	Presenter, *Finding Order in a Contentious Internet: Understanding Structures and Processes* Technology, Management, and Policy Graduate Consortium, co-located with Council of Engineering Systems Universities (CESUN) Annual Meeting, TU Delft (Delft, Netherlands)

Industry Presentations and Contributions

2019	Presenter, *What Can Anti-Abuse Do About IoT Vulnerabilities?* IoT Special Interest Group, Messaging, Malware, and Mobile Anti-Abuse Working Group (M^{3}AAWG) member meeting (Montreal, Canada)
	Q&A Presenter (with Bijal Sanghani), *IXPDB Tool Development* Réseaux IP Européens (RIPE78) member meeting (Reykjavik, Iceland)
2018	Presenter, *IXPDB and Mapping Interconnection Markets* 26th European IX Association (Euro-IX) member meeting (Marseille, France)

Programme Coordinator, *Symposium on eCrime Data Exchange Policies (DE2018)*
European Union Chapter of the Anti-Phishing Working Group (APWG.eu) (Barcelona, Spain)

Panelist, *New Technologies, New Laws: Has the Privacy/Security Balance Tilted Too Close to Privacy?*
Microsoft Digital Crimes Consortium (DCC) (Panama City, Panama)

Designer and Moderator, *IoT Manufacturing, Standards, and Reputation*
IoT Special Interest Group, Messaging, Malware, and Mobile Anti-Abuse Working Group (M^{3}AAWG) member meeting (San Francisco, CA)

2017 Panelist, *Trans-Border Cooperation on Cyber Security*
Cooperation Special Interest Group, Asia Pacific Network Information Center (APNIC) member meeting (Taichung, Taiwan)

Designer and Moderator, *IoT Challenges and Opportunities for the Anti-Abuse Community*
IoT Special Interest Group, Messaging, Malware, and Mobile Anti-Abuse Working Group (M^{3}AAWG) member meeting (Lisbon, Portugal)

Designer and Moderator, *IoT, Reputation, and Anti-Abuse*
Invited Panelist, *Security Track: Embedded Devices (aka IoT) as a Community Problem*
North America Network Operator Group (NANOG) 69 conference (Washington, DC)

2016 Invited Panelist, *What is a 'Neutral Network' Anyway? An Exploration and Rediscovery of the Aims of Net Neutrality in Theory and Practice*
Hackers on the Planet Earth (HOPE) conference (New York City, NY)

Panelist, *NANOG: The Next Generation*
North America Network Operator Group (NANOG) 67 conference (Chicago, IL)

Designer and Moderator, *Security Track: Meeting at the Intersection of Infrastructure and Anti-Abuse*
North America Network Operator Group (NANOG) 66 conference (San Diego, CA)

2015- Designer and Presenter, *Participation Training* at tri-annual member conference as Vice-Chair of Growth and Development
Messaging, Malware, and Mobile Anti-Abuse Working Group (M^{3}AAWG)

2015 Invited Presenter, *Standards, Market Function, and the Value of IX Participation*
Open-IX Association General Meeting (New York, NY)

Invited Presenter, *Standards and Diversity in the Modern Interconnection Market*
Amsterdam Internet Exchange (AMS-IX) More-IP meeting (San Francisco, CA)

Invited Presenter, *Political Economy of Incentives and Reputation in the Anti-Abuse Ecosystem*
Messaging, Malware, and Mobile Anti-Abuse Working Group (M^{3}AAWG) member meeting (San Francisco, CA)

2013 Invited Presenter, *Framing the Value of Internet Exchange Participation*
European IX Association member meeting 23 (Euro-IX 23) (Helsinki, Finland)

Invited Presenter, *World Conference on International Telecommunications (WCIT) Meeting Retrospective*

United Kingdom Network Operator Forum member meeting 24 (UKNOF24) (Newark, UK)

2012   Invited Presenter, *A View of Top-Down Internet Governance: Pre-WCIT Regulatory Stance*
            - Global Peering Forum 7.0 (New Orleans, LA)
            - Amsterdam Internet Exchange (AMS-IX) More-IP Event (Amsterdam, Netherlands)
            - North America Network Operator Group meeting 55 (NANOG 55) (Vancouver, Canada)
            - United Kingdom Network Operator Forum meeting 23 (UKNOF 23) (London, UK)

Department, School, and University Service   Teaching needs to be the next section in an academic CV.

2021   **TAMU X-Grants Review Committee (University)**
            Reviewer

2020   **International Affairs Admissions Committee (Department)**
            Reviewer

            In Spring of 2021 I will help evaluate incoming applications and contribute to the ranking of these applications for in-person interviews, scholarships, and fellowship awards.

            Cybercorps: Scholarship for Service (SFS) Review Committee (University)
            Reviewer

            SFS provides scholarships for students focusing their curriculum on cybersecurity. As a federal scholarship program, it is seeking applicants that demonstrate (necessarily) interdisciplinary cybersecurity skills and that integrate public service as a key component of their career goals. TAMU's SFS program is coordinated by the Cybersecurity Center.

2019   **Dean's Strategic Review (School)**
            Chair, Communications Review Committee

            The Communications Review Committee evaluated the Bush School's current communications strategy and operations in comparison with its peers. This included evaluation of web presence, social media engagement, intranet development,and media development processes. I chaired this committee and produced the outcomes report and executive summary from the Communications Review Committee that was included in the Dean's Strategic Review Report.

            School of Innovation X-Grants Review Committee (University)
            Reviewer

            Reviewed approximately 25 grant applications: this included working with the committee to identify and develop evaluation metrics, reviewing grant applications, scoring these, and ranking these to determine grant recipients.

Professional Service and Leadership Roles

2020-   *Review Editor*
            Frontiers in Political Science: Politics of Technology

2018-   *Associate Editorial Board Member*
            ACM Digital Threats: Research and Practice (DTRAP)

DTRAP is a new peer-reviewed journal that targets the prevention, identification, mitigation, and elimination of digital threats, bridging the gap between academic research and industry practice.

Research Fellow
Anti-Phishing Working Group (APWG)

The APWG is an international coalition unifying the global response to cybercrime across industry, government, law enforcement, and NGOs. I am currently working with the APWG to develop Applied Cybercrime research grants. In 2018, I was the program coordinator and architect of the Symposium on Policy Impediments to Cybercrime Data Exchange for the EU chapter of the APWG (APWG.EU)

2016-   *Senior Advisor, IoT Special Interest Group Co-Chair, and Former Director of Outreach*
Messaging, Malware, and Mobile Anti-Abuse Working Group (M^3AAWG)

M^3AAWG's Outreach Initiative promulgates anti-abuse norms and values to operators, Internet organizations, and governments in the Latin America and the Caribbean, Asia Pacific, and Africa regions. With the support of the M^3AAWG Board, I designed, created, and directed the first four years of these efforts, now serving as advisor to the chairman.

2015-2018   *Program Committee Member*
North America Network Operator Group (NANOG)

Contributed to evaluation of the NANOG program, focused on evaluating presentations from academics and topical areas such as content delivery, Internet exchanges, routing, and network security.

~~Research-Led~~ Teaching

Just teaching!

This needs to be contextualised somehow. Generally the intro to a Teaching section is your teaching philosophy and practice. That's where you can add the research-led stuff and the concentration. The text for the concentration is too long for a CV. You also don't have the years. And it doesn't state you put it together.

Cyber Policy Concentration (CPC)

The Cyber Policy Concentration is a distinctly sociotechnical, research-led, impact-driven curriculum. The coursework integrates theory and contemporary illustrations of technical concepts; infrastructure and platform economics; industry and organizational strategies; and most importantly, the balance of rapid innovation and the uncertainties that give rise to security externalities challenging the integrity and trustworthiness of the Internet's infrastructure. The CPC curriculum was developed to challenge technical *and* non-technical audiences, providing introductory material appropriate for audiences with policy and management backgrounds, as well as materials from engineering, technology, and infrastructure and platform economics for those with technical backgrounds or those that wish to dive deeper into the core functions and incentives that animate the Internet's infrastructure.

Courses

Introduction to Cyber Policy (Fall 2019, Fall 2020)
The implications of cyber-enabled systems cross-cut a diverse set of policy and public administration domains. This course provides students with a survey of contemporary cyber policy issues (innovation, infrastructure and platform economics, privacy, encryption, cybersecurity), a working understanding of cyber-enabled systems, and their impact on policy and public administration tasks and processes. This course will equip students with the skills and analytic frameworks necessary to effectively address the benefits and risks of cyber-enabled systems.

Data Science and Visualization for Policy Analysis (Fall 2019, Spring 2020, Fall 2020)
For many policy issues—in particular those at the intersection of science, technology, and public policy—the analyst is faced with a surfeit of data and the challenge of cleaning and integrating this data into a form that

can be tractibly evaluated, and more importantly, communicated to both technical audiences and leadership. This course equips students with the data science skills necessary to make sense of our increasingly data rich policy environment. Starting with exploratory analysis driven by data visualization, students develop data science skills (mapping, cluster analysis, social network analysis, text mining) and workflows in the context of contemporary domestic and transnational policy issues, with a focus on cyber policy and cybersecurity.

Internet Infrastructure: Platforms and Politics (Spring 2019)
The Internet, and the communication and social media platforms built atop that infrastructure, is a complex of layered architectures, modular technologies, and non-state institutions. This intermediate course dives into the dynamics that shape this complex engineering system in terms of the architecture, infrastructure and platform economics, industry strategy, and the politics that have shaped (or tried to shape) its evolution. At the end of this course, students will have an interdisciplinary understanding of the ongoing evolution of the Internet as an infrastructure that will facilitate more nuanced analysis of contemporary transnational topics and issues for which the Internet is an increasingly important independent variable.

Advanced Cyber Policy (Spring 2021)
As a transnational communications platform, the Internet is reshaping old debates and creating new challenges for both domestic and international politics. This course evaluates "cyber policy" comparatively across domestic, international, and transnational approaches to topics such as network neutrality, privacy, encryption, and cybersecurity. These will be evaluated in terms of conflicting national interests and as international policy experiments. This class will highlight how rule making and authority in the management of Internet resources differs (substantively) from more familiar winner-takes all voting processes and legal-formalistic modes of authority. At the end of this course, students will have a deeper understanding of these issues in their global context, how rule making and decision making processes differ amongst these stakeholders, the factors that confound transnational consensus, and the emerging challenges of modern diplomacy in the Internet Age.

Workshops and Professional Development

2016-2018   Fellows Policy Workshop Participant, Center for International Security and Cooperation, Stanford University

2016-2018   Cyber Reading Group Organizer and Moderator, Center for International Security and Cooperation