Jesse Sowell

Assistant Professor
Department of International Affairs
Bush School of Government and Public Service
Texas A&M University

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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 (2022)**
Program on Emerging Technologies (PoET)
Department of Political Science
Massachusetts Institute of Technology (Cambridge, MA)

Previous Positions

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 (CISAC)
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 (Cambridge, MA)
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

Broadly, my research explores the credibility and legitimacy challenges faced by technical and operational communities, whose work is critical to complex systems upon which we rely for our day-to-day activities, but are often relegated to the "low politics" of technical coordination. My primary research streams focus on the transnational institutional complex responsible for the governance of Internet infrastructures and security, with a special focus on the mutually reinforcing relationship between credible knowledge assessment and authority. Analytically, I draw on institutional economics, political economy, common resource management, global governance and authority, and computer science to evaluate the function, structure, and stability of these institutions, and their engagement with the global governance system. To evaluate these dynamics, I employ a mixed-methods approach, combining exploratory data analysis methods such as clustering and network analysis to characterize structural relationships and systematically identify case studies that contribute to understanding the causal mechanisms at play. Recently, I have expanded my work to comparatively evaluate the governance of online platforms, reputation mechanisms for mitigating disinformation, and investigations into formal and informal institutional constructs in the global financial system.

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*)

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

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

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*
3^{rd} International Conference on Public Policy (ICPP3) (Singapore).

Howard, L. and Sowell, J. 2015. *A Comparison of Public Policy Approaches to the IPv4-IPv6 Transition*
44^{th} Research Conference on Communication, Information and Internet Policy. Telecommunications Policy Research Consortium (Arlington, VA).

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

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

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

Selected Works in Progress

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

Invited Talks, Presentations, and Lectures

March 2022 Invited Lecture, *Reputation and Security Externalities*
Science, Technology, and Public Policy, Institute for Data, Systems, and Society, Massachusetts Institute of Technology (MIT) (Cambridge, MA)

March 2022 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)

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 59^{th} Annual Convention (San Francisco, CA)

Panelist, *Epistemic Infrastructure: Revisiting Knowledge Systems and Practice*
International Studies Association 59^{th} 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^3AAWG) 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*
26^{th} 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^3AAWG) 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^3AAWG) 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^3AAWG)

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^3AAWG) 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)

Teaching

Teaching Philosophy

My teaching practice is committed to the development of distinctly interdisciplinary, sociotechnical curricula that explores the interplay between technology, policy, and society. I have four years of experience teaching courses on Internet technologies and governance that integrate technology and policy, international relations, political economic, and infrastructure economics. I also teach an innovative course on data science that applies exploratory data analysis and visualization for hypothesis generation and policy analysis. My teaching blends theory, case studies, and creative teaching methods to *(1)* develop students' critical thinking skills *(2)* applied to project-based deep dives into substantive domains that *(3)* hones the skills necessary for policy analysts and researchers to bridge the gaps between policy and technical communities. I firmly believe in learning by doing, and have a pedagogical interest in innovative, engaging methods such as flipped classroom, peer review, and guided debates among students. My objective is hone students' critical thinking skills through practices that integrate the diverse sources evidence and analytic methods necessary for sociotechnical policy analysis.

Cyber Policy Concentration (CPC, 2018-2022)

I designed and developed the CPC in the 2017-2018 academic year as a distinctly interdisciplinary, research-led curriculum. The CPC provides students with both a survey of the diverse foundational and contemporary issues shaping modern cyber policy and the opportunity to develop specialist expertise on a particular topic, such as disinformation, cybercrime, or privacy. Starting with the required survey course, *A Nontechnical Introduction to Cyber Policy*, each of my CPC courses is structured around a final policy research project, allowing students to do a deep dive into a policy topic salient to their research and career interests. Students are encouraged to carry this topic through all of the CPC courses (and their broader coursework), applying the skills developed in each to better understand their topic area, build a focused portfolio of work on that topic, and, upon graduation, be able to genuinely demonstrate they are an expert in that area of cyber policy. Successful students have gone on to work in the intelligence community, non-profits and think tanks, and cybersecurity policy and data analysis positions in the private sector.

Cyber Policy Concentration Courses

A Nontechnical Introduction to Cyber Policy
This course offers foundations in policy and governance issues related to Internet infrastructure management, jurisdiction and attribution challenges, privacy and surveillance, encryption, consolidation, disinformation, and cybercrime, among others.

Data Science and Visualization for Policy Analysis
This course provides an introduction to methods such as cluster analysis, social network analysis, mapping, and text mining. These methods are applied to perform exploratory data analysis, combined with visual-

ization, to facilitate hypothesis generation, case selection, and mixed-methods analysis of complex policy issues.

Internet Infrastructure: Platforms and Politics
This advanced course focuses on the governance and politics of online platforms and infrastructures that intermediate our social, political, and economic lives (such as Facebook, Google, and mobile platforms). This is an advanced course for students interested in a deeper dive into topics such as the politics and transnational security challenges facing specific elements of the infrastructure such as submarine cables, Internet routing, and the nuanced intersection of platform economics and security.

Advanced Cyber Policy
This advanced course offers a deep dive into the diverse complex of institutions shaping Internet governance, political authority and legitimacy challenges facing these institutions in the broader global governance system, and co-regulatory approaches to effectively developing cyber policy.

Teaching Experience

In addition to the experience below, I have been invited for guest lectures at a number of universities (listed in the Invited Lectures section earlier), most notably STEaPP at UCL.

Department of International Affairs, Bush School of Government and Public Service, Texas A&M University

At the Bush School I teach two courses each semester (2:2 schedule).

Spring 2022	Advanced Cyber Policy Advanced Data Science (Directed Study)
Fall 2021	A Nontechnical Introduction to Cyber Policy Data Science and Visualization for Policy Analysis
Spring 2021	Advanced Cyber Policy Transnational Cyber Threat Mitigation (Capstone with NCFTA and FBI)
Fall 2021	A Nontechnical Introduction to Cyber Policy Data Science and Visualization for Policy Analysis
Spring 2020	Data Science and Visualization for Policy Analysis Transnational Cyber Threat Mitigation (Group Project with NCFTA and FBI)
Fall 2020	A Nontechnical Introduction to Cyber Policy Data Science and Visualization for Policy Analysis
Spring 2019	Internet Infrastructure: Platforms and Politics Course release to develop Cyber Policy Concentration
Fall 2018	A Nontechnical Introduction to Cyber Policy First Year Course Release

Engineering Systems Division, MIT

While at MIT, I served as a teaching assistant (TA) for two of the core courses in the Technology & Policy Program, and supervised an Undergraduate Research Opportunity Student (UROP) in Computer Science.

Fall 2013	Science Technology and Public Policy
Fall 2011	UROP: Security Implications of Public Key Infrastructures Applied to the DNS and BGP
Fall 2009	Introduction to Technology and Policy
Fall 2008	Introduction to Technology and Policy

Department, School, and University Service

2021-2022 **International Affairs Department Head Search Committee (Department)**

I am currently serving as the junior faculty representative on the International Affairs Department Head Search Committee. In this role I reviewed applicants, contributed to the evaluation criteria, participated in screening and candidate interviews, and will contribute to the candidate evaluations sent to the Dean for final review.

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

In this role I contributed to reviewing grant applications for TAMU's X-Grants initiative, with a special focus on evaluating these for the interdisciplinary collaborations necessary to yield innovative, high impact research.

2020-2022 **International Affairs Admissions Committee (Department)**
Reviewer

In this role I help evaluate incoming applications and contribute to the ranking of these applications for in-person interviews, scholarships, and fellowship awards. In this role I have also written recommendation letters for candidates we as a department recommend for internal university scholarships.

2020 **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.

2018-2019 **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.

2018- *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^{3}AAWG*)

M^{3}AAWG'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^{3}AAWG 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.

Previous Experience

Academic

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.

Department of Science, Technology, Engineering, and Public Policy
University College London

Dear Faculty Search Committee,

I am writing to express my interest in the position of Lecturer in Digital Technologies and Policy with the Department of Science, Technology, Engineering, and Public Policy (STEaPP) at University College London. I am currently an Assistant Professor of International Affairs in the Bush School of Government and Public Service at Texas A&M University. My interdisciplinary PhD in Technology, Management, and Policy from MIT's Engineering Systems Division combines computer science, international political economy, and operations strategy. My research explores the political economy of Internet infrastructure and security. Building on extensive fieldwork, I explain and evaluate how operational epistemic communities managing the Internet's infrastructure create and sustain the knowledge and rules necessary to keep pace with technological change, emerging security threats, and demands for diverse online services. The role these communities play in Internet governance and maintaining a resilient Internet infrastructure has been under-explored in both literature and practice. The insights from my research are essential to systematically and effectively integrating the technical and operational knowledge these communities generate about Internet resilience into evidence-based policy making and the global governance system. Over the past ten years, my engagement with these communities has created regional and global impact, including helping to build cybersecurity communities in developing regions and addressing cybersecurity data governance challenges.

Integrating research, engagement, and teaching is key to understanding contemporary and emerging challenges facing Internet infrastructure governance and security, and for preparing the next generation of sociotechnical policy analysts and researchers to solve global challenges such as cybercrime, platform governance, and improving Internet infrastructure in developing regions. Over the past four years, I have successfully led the Cyber Policy Concentration (CPC) in my department's Masters of International Affairs, single-handedly designing, developing, and delivering this advanced specialization from scratch.

My current and emerging research, ongoing industry and policy engagement, and well-developed cyber policy curriculum are exceptionally well-suited for STEaPP and the Digital Technologies Policy Lab (DTPL). My current work on cybersecurity and Internet infrastructure governance is already a very good fit with ongoing work in the DTPL and the PETRAS National Centre of Excellence. My current projects complement this work, focusing on new dimensions of Internet infrastructure governance not yet explored in the DTPL, such as the politics of submarine cables critical to Internet communications, and the relationships between technology transfers, Internet shutdowns, and autocratic regimes. My ongoing research evaluating Internet infrastructure development in Africa and Latin America complements broader work in STEaPP's infrastructure and development research clusters. I am also developing two new projects on co-regulatory approaches to combating disinformation and data governance that would make a novel contribution to STEaPP's research portfolio. My teaching portfolio is also extremely well-suited for STEaPP, and can be easily adapted for its education programmes. I designed the CPC explicitly for social scientists, from diverse disciplinary backgrounds, interested in developing rigorous technical and policy understandings of digital technology issues.

My intrinsically interdisciplinary portfolio is a rare and valuable complement to STEaPP's mission and programmes, and I believe STEaPP is where I can make the most impact, enhancing my research through collaboration with others, and continuing to innovate in my teaching and external engagement programmes. The next sections describe how I meet the personal specifications for this role in more depth.

Research

My research strategy has always been interdisciplinary. I started my academic life in computer

science as a software engineer, focusing on programming language design and network security, but soon realized technical knowledge alone was insufficient to understand the complex sociotechnical dynamics shaping Internet development and cybersecurity challenges. My doctoral research at MIT combined international political economy, operations strategy, and computer science to conduct extensive fieldwork examining on-the-ground practices and policies in Internet infrastructure management and cybersecurity. I funded the last year of my dissertation work as the primary author of a Google Faculty Research Award ($85,000).

As a Postdoctoral Cybersecurity Fellow at Stanford, I won two grants (totaling $125,000) evaluating the informal collaboration between global cybersecurity communities and law enforcement. I developed and executed the research plan; managed budgets and research assistants; and ran workshops and focus groups bringing together cybersecurity professionals, law enforcement, lawyers, and policymakers in the US, Africa, and Europe. This work concluded with a confidential *Combined Capabilities* report evaluating the credibility and legitimacy challenges facing collaborations between cybersecurity "trust groups" and domestic and international law enforcement. The report continues to be requested by partners in private threat intelligence and law enforcement. In collaboration with colleagues at the Shadowserver Foundation, we are continuing this work in a report for Europol. This report documents and evaluates the technical, legal, and coordination challenges during the Avalanche botnet takedown, one of the largest concerted applications of Mutual Legal Assistance Treaties to date.

My research has three common themes, applied to digital technologies policy and governance challenges: *(1)* the coproduction of expert knowledge, *(2)* how it facilitates the kinds of adaptation necessary to keep pace with changes in technology and emerging security threats, and, importantly, *(3)* how to integrate expert knowledge into policy development, regulatory design, and global governance processes. My chapter on planned adaptation in Decision Making Under Deep Uncertainty presents a generalized model for evaluating ad hoc and systemic planned adaptation in the regulation of complex engineering systems. In collaboration with Dr. I. Brass, our article in *Regulation & Governance* presents a planned adaptive regulatory framework for IoT security regulation and standards. My article in the *Journal of Cyber Policy* (featured in a panel at Chatham House in December 2019) comparatively evaluates consolidation in digital platforms, highlighting how governance and accountability strategies employed by communities in the Internet's infrastructure preclude the predatory practices typically associated with platform consolidation. In an article currently under review with *International Organization* (included as a writing sample in this application), my empirical and theory contributions to the Internet governance and epistemic communities literatures provide novel insights into how to integrate critical knowledge produced by the regional Internet registries and the routing community into the global governance system. I believe my core research interests are exceptionally aligned with STEaPP's mission to mobilise deep expertise in complex engineering systems and policy to solve wicked global policy problems.

To coordinate across recently funded research projects, I set up the Internet Infrastructure and Policy Research Group (IIPRG) where I supervise four masters-level student researchers. My IIPRG projects include *(1)* the politics and governance of submarine cables critical to Internet communication; *(2)* mix-methods modeling of the relationship between types of autocracy and Internet shutdowns, with technology transfers as an intervening variable; *(3)* studies of Internet infrastructure development in developing regions, with a special focus on Africa and Latin America; and *(4)* multilevel network analyses (combining organizational and individual ties) evaluating the globally diverse institutional complex that ensures the stability, safety, and security of the Internet, identifying critical gaps between this dense institutional network and the broader global governance system. The submarine cables work has produced one student-authored publication in the Journal of Policy and International Affairs; I am co-authoring a second article on the regional economics and security of submarine cables, under review by

Contemporary Security Policy. The shutdowns work has produced a co-authored, five-case article on autocracies and Internet shutdowns under review by the Journal of Peace Research; to further refine the model, the sequel (in progress) takes a mixed methods approach, using hierarchical clustering to identify trends and threshold cases in global shutdown data from 2016 to 2021. These research streams would not only enhance the DTPL's portfolio with novel and impactful research, but also create fruitful linkages with STEaPP's infrastructure and development research clusters. Interdisciplinary research environments are my native habitat, and I am excited at the prospect of collaborating with colleagues in the DTPL, PETRAS, and across STEaPP on these kinds of projects.

External Engagement and Impact

My novel, empirically rich research findings would not be possible without continuous and trusted engagement with the epistemic communities managing the Internet's infrastructure and security. In the last ten years I have interviewed over 100 actors across these communities, at over 40 network operations and cybersecurity conferences around the world. Since completing my PhD, my engagement is best categorized as impact-driven science and technology diplomacy. By demonstrating I speak technical, policy, and business vernaculars, I have established a reputation as a trusted honest broker that brings a deep understanding of the complex, sociotechnical governance and management problems endemic in establishing collaborative engagement between these transnational institutions, policy makers, regulators, and law enforcement. I have developed rare (and hard won) access to diverse formal and informal institutions critical not only to combating cybercrime, but that also provide the access and empirical evidence necessary to developing deep understandings of the kinds of collaboration necessary for keeping pace with continuous innovation by cybercriminals.

As a Research Fellow and Advisor to the Anti-Phishing Working Group (APWG), I chaired the 2018 Symposium on the Policy Impediments to e-Crime Data Exchange, bringing together cybersecurity experts, lawyers, and policy-makers to highlight the GDPR as an opportunity to resolve the tensions between operational security groups, advocacy groups, and data protection authorities wrestling with tensions between privacy and security challenges. APWG's Secretary General Peter Cassidy recently shared that a number of participants from the 2018 Symposium indicated it was one of the most impactful meetings they have attended. This year we are continuing this work, planning an annual series of Cybersecurity Data and Governance Symposia to kick off in November 2022. Also, in collaboration with the APWG and Dr. L. Weissinger at Tufts' Fletcher School of Global Affairs, we are evaluating the perverse incentives created by ICANN's ill-conceived GDPR compliance. The research findings will contribute to a collaboration with Senator Ed Markey's (D, MA) staff to develop model legislation to ensure the accessibility of data critical to cybersecurity incident response.

Since 2016, as a Senior Advisor to the Messaging, Malware, and Mobile Anti-Abuse Working Group (M^3AAWG), I worked with the M^3AAWG Board to redesign their Outreach initiatives, creating and leading programs developing anti-abuse capabilities and capacity in Latin America and the Caribbean, Asia Pacific, and Africa, considering each regions' culture, values, and resource endowments, including critical support for engagement with regulators, law enforcement, and international organizations. I am also the co-chair of M^3AAWG's IoT Special Interest Group (SIG), working with Internet Service Providers (ISPs) to understand and evaluate the feasibiliy of IoT reputation models. Supporting letters from APWG and M^3AAWG leadership are included with this application.

Working with global partners in the cybersecurity, law enforcement, and policy communities, I apply my research on collaboration and governance to support the development of impactful organizations and communities that continue to build cybersecurity capabilities and capacities in developed and developing regions. This engagement provides unique insights critical to my work. I am excited at the prospect of collaborating with the Policy Impact Unit and contributing to

their existing cybercrime portfolio. Understanding the real-world challenges of developing these collaborations provides rare, valuable, and pragmatic empirical evidence for both theory- and policy-relevant research contributions. On-the-ground work also provides unique perspectives into the diverse cultural and regional challenges facing Internet infrastructure development and security. These insights facilitate both impactful, responsible engagement and contribute significantly to my research-led teaching.

Research-Led Education

Understanding the social, political, and economic challenges presented by emerging trends in Internet operations, cybercrime and cybersecurity, and online platforms governance requires engaging students in contemporary, real-world problems. I am a third generation teacher—a passion and dedication to teaching is in my nature. My pedagogy uses innovative teaching methods such as flipped classroom, peer review, and intensive dialog structured to encourage respectful, yet rigorous policy debates. In my Fall 2021 course evaluations, one student wrote:

> *This is the first time I had Dr. Sowell and I felt he did a great job of explaining complex topics to a diverse audience. I was nervous to take a class without a STEM background but this class reaffirmed my decision and prepared me for other cyber courses I'm taking in the future. He genuinely cared about students learning the material and fostered critical thinking and discussion.*

Since joining the Bush School, I developed and designed, from scratch, and continue to lead and deliver, my department's Cyber Policy Concentration (CPC). The CPC is part of the Masters of International Affairs,[1] and offers a comprehensive curriculum and development programme for masters students coming from diverse disciplinary backgrounds. As part of this development programme, in addition to my own advisees, I advise students across the CPC on their course plans, and research and career objectives. This interdisciplinary, research-led programme (now in its third year) provides accessible deep dives into digital technologies and the politics and policy shaping these complex systems' design, operations, and security. I singlehandedly developed, lead, and teach four of the five courses in the CPC:

Introduction to Cyber Policy: Internet technologies foundations; longstanding issues such as attribution and encryption; contemporary issues such as privacy/surveillance and disinformation

Data Science and Visualization for Policy Analysis: exploratory data analysis (clustering, social network analysis, text mining) and visualization for mixed methods hypothesis generation

Internet Infrastructure: Platforms and Politics: deep dive into the institutional and infrastructure economics of online platforms and infrastructures

Advanced Cyber Policy: evaluates the diverse complex of institutions shaping Internet governance through the lens of political authority and a systems approach to global governance

I also lead capstones (Masters group projects) engaging with the National Cyber Forensics Training Alliance (NCFTA) and the FBI.

Over the last four years I contributed to STEaPP's teaching portfolio with guest lectures in *Risk Assessment and Governance* and *Digital Technologies and Policy*. I am familiar with STEaPP's curriculum and course structure, and would love to work with STEaPP colleagues to integrate my courses into the MPA in Digital Technologies and Policy as well as identify crossover topics with other routes. My Introduction to Cyber Policy and Data Science courses can easily be tailored as postgraduate or advanced undergraduate courses (syllabi included as supporting documents); the other two courses are appropriate for advanced MPA students and

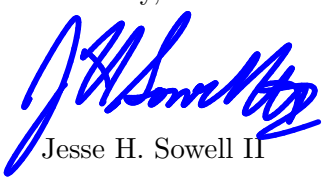
[1] Concentrations are similar to MPA routes in STEAPP. Our two-year masters requires students to complete two (optionally three) concentrations to graduate.

can also be adapted for doctoral researchers. I am also keen to contribute to STEaPP's MPA group projects. In addition to relationships with law enforcement, I have extensive partnerships with organizations such as the Cyber Defense Alliance (CDA) and the Global Cyber Alliance (GCA), both based in London, that would be excellent partners for MPA group projects in digital technologies and policy.

I also have substantive experience with the broader dynamics of technology and policy higher education programmes. I have recently joined the advisory board for the Program on Emerging Technologies (PoET) at MIT's Political Science Department, and I have participated in and helped coordinate the Technology, Management, and Policy Consortium for graduate research into technology and policy. Through these experiences, I have engaged with colleagues and leadership from programmes such as Engineering and Public Policy (EPP) at Carnegie Melon University and the Department of Technology, Policy and Management at TU Delft. I hope to establish closer ties and collaborations with STEaPP's sibling programmes, ensuring the department continues to be competitive and on the cutting edge of technology and policy research and teaching in the years to come. In my broader service portfolio, I have served on my department's admissions committee for three years, our current department head search committee, and university-level scholarships and grant review panels, among others.

I am extremely excited at the prospect of bringing my ongoing research projects, teaching, access to expert networks, and engagement initiatives to UCL STEaPP. Please do not hesitate to contact me at jesse.sowell@gmail.com or +1 517 214 1900 with any questions about this application. Thank you for your time and interest, I am looking forward to hearing from you.

Sincerely,



Jesse H. Sowell II