

# Computer Science Meets Foreign Policy

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*Nov. 2019*





## *US Dept of State and USAID Executive Branch*



***DOS Mission:*** *To lead America's foreign policy through diplomacy, advocacy, and assistance by advancing the interests of the American people, their safety and economic prosperity.*

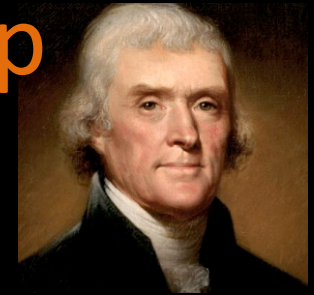
***USAID Mission:*** *To lead the USG's international development and disaster assistance through partnerships and investments ...*



- Cast of characters
  - Political appointees
  - Foreign Service Officers
  - Civil servants
  - Fellows

# Jefferson Science Fellowship

## *National Academies*



- Science and engineering advisors for the State Dept and USAID
  - 1-yr fellowships for tenured professors
  - 2019-2020: State (7) USAID (4)
- Salary/benefits paid by home university
  - Variety of arrangements
  - Living allowance (per diem), small travel budget
- My cohort
  - 3 CS, 1 chemist, 2 earth science, 1 physicist, 1 botanist, 2 engineers, 2 MDs, 1 veterinarian

[sites.nationalacademies.org/pga/jefferson/](https://sites.nationalacademies.org/pga/jefferson/)

# *The Process*

- Applications and institutional MOU due Oct. 31
  - Statement of interest (2 pages)
  - Essay and briefing memo
  - Letters of recommendation
- Interviews in January
  - Ability to communicate succinctly and politely
  - Can you explain your ideas to non-scientists?
- Fellow selections: Late January
- Term: August to August
- Security clearances are an issue



# *Past CS Jefferson Fellows*



- John Savage: Brown University (2009-2010)
- Stephanie Forrest: Univ. New Mexico (2013-2014)
- Ken Nygard: North Dakota State Univ. (2013–2014)
- Kannappan Palaiappan (Pal): Univ. of Missouri (2013-2014)
- Margaret Martonosi: Princeton Univ. (2015-2016)
- K.P Subbalakshmi (Suba): Stevens Inst. of Technology (2016-2017)

# *Why me?*

- Obligation to participate
  - CS issues colliding with society and policy
  - Technical expertise in DC dominated by military and intelligence mind set
- The research case
  - Modeling large-scale cybersecurity interventions

## *Example Placements*

- State:
  - Communication and Information Policy office (CIP)
  - Intelligence and Research Bureau (INR)
  - Coordinator for cyber Issues (S/CCI)
- USAID
  - Cybersecurity capacity building
  - Development

# *Communication and Information Policy*

## *Reports to Economics Bureau*

- Multi-lateral fora: ITU, OECD
  - Spectrum allocation
  - Technical standards (ITU-T)
  - Capacity building
- Bi-lateral relationships
- Internet governance
- Emerging computing technologies
  - Big data, IPV6, 5G, AI, Twitter outages, bockchain
- Safe Harbor, MLAT

## *Example Activities*

- Technical explainer
- Review documents
  - The clearance process
- Attend meetings
- Write position/negotiating documents
- Represent USG in international meetings
- Participate in interagency processes
- Write speeches

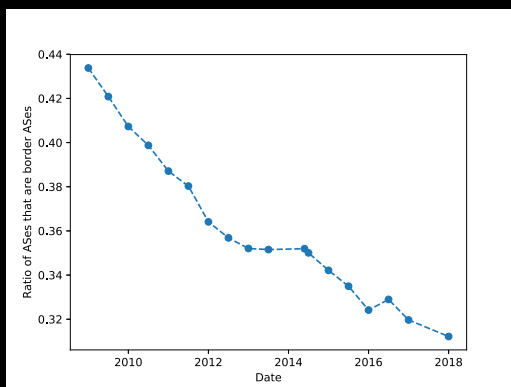
# *My year at State* *2013-2014*



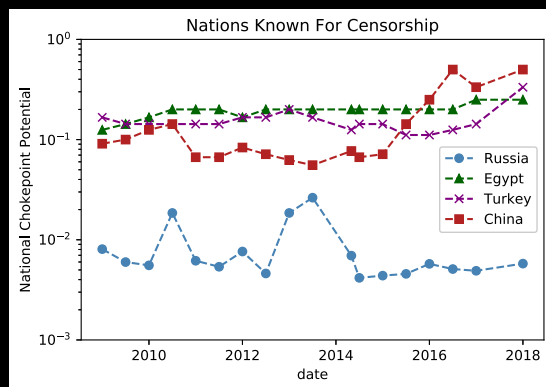
- Who should control the Internet?
  - IANA transition
  - US strategy for intl. negotiations (ITU, OECD, etc.)
- Privacy and surveillance
  - Data localization
  - The Podesta Report
- Cyberwarfare and economic espionage
  - Zero-day exploits
  - Norms in cyberspace, attribution
- Spam and the global south

# Research Outcomes

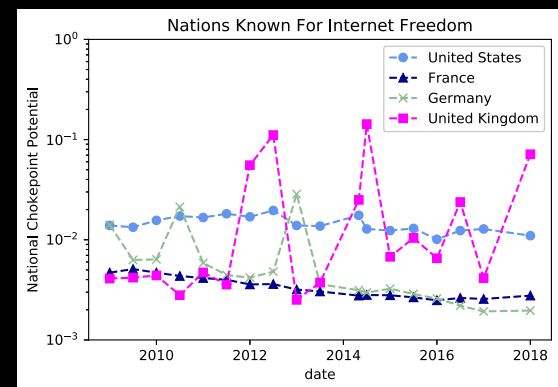
- Spam and botnet takedowns (*ACSAC, 2015*)
- Data breaches (*WEIS, 2015*)
- Attribution of cyber attacks (*PNAS, 2017*)
- Censorship and Internet architecture (*COMPASS, 2019*)



Ratio of border ASes to all ASes over ten years



Nations known for censorship



Nations known for being free

# Observations

- Science advisor not policy maker
  - CIP respected my expertise and time
  - State ‘is not a technical agency’
  - Being on the front lines is both exciting and dull
- The people
  - Think differently, dedicated to public service
  - High turnover---many iterated games
- The Interagency
- Stream-based workflow
  - No version control
  - IT is prehistoric
- The Jefferson Fellowship
  - Orientation programs: AAAS, JSF, FSI
  - Cohort important, visiting NSF
  - Continuity is important: Forrest, Martinosi, Suba

*It has been said that democracy is the worst form of government except all the others that have been tried.”*

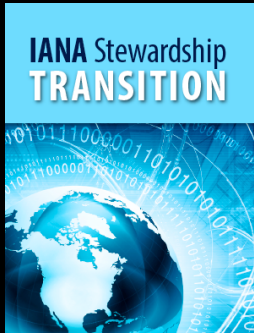
Winston Churchill





# Internet Assigned Numbers Authority

## *Transitioning the IANA Functions*



3/14/2014 "U.S. to cede its oversight of addresses on Internet" *NY Times*

4/2/2014: U.S. House Hearing on Internet Stability and IANA

5/23/2014: DOTCOM ACT passed by House

- U.S. asked ICANN to convene global stakeholders to develop a consensus-based proposal for transition
  - 6 months of preparation leading up to the announcement
- Interagency task force to establish criteria for successful proposal
  - Support and enhance multistakeholder model
  - Maintain security, stability, resiliency of DNS
  - Meet needs of global customers/partners of IANA
  - Maintain the openness of the Internet
  - Accountability