Proposed Dissertation Summary Memo:
An Organizational Analysis of Publishing the People's Code

Joseph Castle - 5/15/18

Research Question

The U.S. government spends $6B on software each year, frequently resulting in duplicative and wasteful spending because the software is not publicly shared. In August 2016, the White House published the Federal Source Code Policy (FSCP) mandating major federal agencies to inventory new custom source code and publish at least 20% as Open Source Software (OSS). Data show that after the FSCP was released in August 2016 only eight of 24 CFO Act agencies have published open source code[*]. Why do some federal agencies publish OSS and others do not?

Organizational Components Affecting OSS Publication

Culture. Two dimensions of organizational culture that may affect OSS publication are the prevailing beliefs about computing within a unit and the unit's commitment to public engagement. I hypothesize that such beliefs are an integral aspect of OSS as a distinctive technology. They may be critical to OSS publication, reflecting the Hacker's Ethos, a "silently agreed upon" notion of access to computers and information that create art and are used to change one's life for the better (Levy, 2010). Beliefs support organizational norms. Among scholars of organization culture, Schein (2010) views values as norms, highlighting the unwritten rules used in certain situations; for Martin (1992) shared beliefs give members of an organization meaning, because they provide rules for behavior.

[*] Based on my results in November 2017 as an update to Feld's (2016) work.

I expect organizational commitment to involving the public in its activities may influence the organization's likelihood to publish OSS. OSS draws on and facilitates public engagement in sharing and improving code. Rowe and Frewer (2005) view public engagement as involving a two-way flow of information between an organization and members of the public; this two-way flow of information is vital to development and publication of OSS code. Similarly, Feldman et al.'s (2006) approach to public engagement calls for bringing together people across organizational boundaries with "different perspectives in ways that allow[s] them to appreciate one another's perspectives [to] enhance the design and implementation of policies [and code]."

Structure. Two aspects of organizational structure that may influence OSS publication include structural dimensions of the focal unit and how that unit is situated in the larger organization. I expect that units publishing OSS will have similar structural dimensions to government/academic laboratories. Organizational structures vary based on dimensions such as degree of centralization, formalization, and hierarchy (Hatch, 2018). Government organizations tend to exhibit higher degrees of hierarchy, formalization, and centralization, while government/academic laboratories have tended to be less formal, more decentralized, and less hierarchical. The more collegial structuring of such organizations encouraged and reflected the practices of highly skilled professionals (e.g., scientists, technologists) to share information within and outside the organization.

Another aspect of structure affecting the publication of OSS is how the unit is positioned within a larger organization. Units embedded in larger organizations may be encouraged, permitted, discouraged, or prohibited from publishing OSS. For example, the GSA Chief Technology Officer (CTO) recently created a technology vision statement that specifically called for an "open first" approach that includes publicly publishing data, APIs, and code; yet this has

received limited participation from units lower in the hierarchy ("A Technology Vision for the GSA", 2018). In other settings, units that wish to publish code have been discouraged by their parent organization.

Research Design

To examine why some organizations publish OSS and others do not, I will focus on information technology (IT) software development units located within the 24 CFO Act agencies. I would first construct the population by gathering GitHub metadata on CFO Act agency units publishing OSS (e.g., organization name, code updates) and cross-reference those with agency websites (e.g., organization charts) and the OMB IT Dashboard[†] to identify units creating code but not publishing it. A description of this group of units arguably by itself is useful because it identifies units in CFO Act agencies that are complying with the FSCP as well as the agencies in which OSS publishing units cluster or appear less frequently.

My next step is to explore why variation exists among units and includes developing a sample. This includes units that publish OSS and units that do not publish OSS, and gathering data via interviews, observations, and artifacts. For the "hacker's ethos" individuals could be interviewed on whether their unit facilitates code sharing and believe it is good for code maturity. For unit positioning, document collection could provide where the unit is located in the organization as represented in the agency organization chart and whether higher units promote or prohibit publication as written in policy.

[†] The Office of Management and Budget (OMB) manages the Federal IT Dashboard. It includes a listing of all CFO Act agencies, their major IT programs, and organizational units. The units are often to the division level, led by a director (GS-15).

References

A Technology Vision for the GSA. Retrieved May 8, 2018, from https://tech.gsa.gov/vision/#be-open

Feld, E. (2016). The Government GitHub Ecosystem. Retrieved November 7, 2017, from https://emanuelfeld.github.io/blog/2016/04/27/government-github-ecosystem.html

Feldman, M., Khademian, A., Ingram, H., & Schneider, A. (2006). Ways of Knowing and Inclusive Management Practices. *Public Administration Review, 66*(s), 89-99.

Hatch, M. J. (2018). *Organization Theory: Modern, Symbolic, and Postmodern Perspectives* (4th edition). Oxford: Oxford University Press.

King, G., Keohane, R., & Verba, S. (1994). *Designing Social Inquiry: Scientific Inference in Qualitative Research.* New Jersey: Princeton University Press.

Levy, S. (2010). *Hackers: Heroes of the Computer Revolution*. O'Reilly Media.

Martin, J. (1992). *Cultures in Organizations: Three Perspectives.* Oxford: Oxford University Press.

Rainey, H. G. (2009). *Understanding and Managing Public Organizations*. San Francisco, CA: Jossey-Bass.

Rowe, G., & Frewer, L. (2005). A Typology of Public Engagement Mechanisms. *Science, Technology, & Human Values, 30*(2), 251-290.

Schein, E. H. (2010). *Organizational Culture and Leadership.* San Francisco: Jossey-Bass.