Samantha A. McDonald

Comprehensive Exam – Written Submission

Department of Informatics

University of California, Irvine

Submitted May 22, 2018

For Committee:

Bonnie Nardi

Melissa Mazmanian

Matthew Beckmann

1. Introduction

I investigate information and communications technology (ICT) used for representative-constituent communication in the U.S. Congress. Constituents contact congressional offices through digital mediums such as phone calls, emails, faxes, and social media. Congressional offices use digital systems to effectively and efficiently capture constituent input. Thus, ICT heavily mediates communication between representatives and their constituency. ICT influences how contact occurs, what is discussed, how communication translates into actions, and how representatives and constituents reflect on the other's engagement. Investigating information technology uses can reflect critically on democratic values assumed within that flow of communication.

This review's goal is to situate my research of representative-constituent communication within the broader literature on congressional representation, digital democracy, and Human-Computer Interaction (HCI).

These are the questions I seek to answer:

1. What are potential political values reflected in the design and use of ICT in Congress?
2. What potential theories of legislator action and decision-making are reflected in the way a representative decides to use technology?
3. What are the historical details of digital constituent communication in Congress?
4. What are the theories of digital democracy?
5. What is the literature on digital democracy, public policy, and HCI?

I begin with political science literature on representation. I focus on theories asking what it means to be representative and responsive to constituencies. This literature frames how and why particular constituent communication practices may be valued based on how Members' discern their duties as a representative. After exploring theories of representation, I describe the literature on how representatives understand their constituency and obtain information about them. I also describe recent information technology developments that make the practice of collecting information and communicating with constituents heavily digital. After that, I explore theories of digital democracy to explain how this digitization affects the roles and actions of representatives

and their constituencies. In the literature on digital democracy, I find very little research within the realm of HCI. I provide explanations for this lack of literature that is highlighted by other scholars, and I offer my evaluation for what is called 'HCI and policy.'

2. What is Representation?

A Member[1] of the United States Congress is chosen to perform one duty, to represent. As defined by political theorist Pitkin, representatives are "acting in the interest of the represented, in a manner responsive to them" (1967, p. 209-10). Such a definition requires representatives to be uniformly bound to their citizens, embodying their beliefs and values, and justifiably acting on their behalf. But as Pitkin demonstrates, this definition leaves room for interpretation. This definition only provides the outer limits of a spectrum. Representatives 'act in the interest of the represented' but the way representatives capture and interpret the interest of their constituency vary. Members may act in a way they believe is 'in the interest' of a constituency, but those actions may not appear in constituent preferences. This variance in role interpretations offers flexibility in actions.

Given the flexibility, there is more than one way to be represented legitimately in a democracy (Mansbridge, 2003). Mansbridge outlines four general types of representation which vary depending on their normative criteria, temporal voting features, and system for accountability. I outline these four types of representation below to demonstrate variance.

1. Promissory Representation is a traditional form of representation in which representatives promise to actively consider the will of the citizens. The representative's normative duty is to keep their promise, looking at past promises to determine present actions.

2. Anticipatory Representation requires representatives to acquire information to rationally anticipate future wants of voters. They assume that future voters can be educated before voting. This type of representation undermines traditional understandings of accountability and looks towards the future to determine present actions.

3. Gyroscopic Representation focuses on internal choices. Voters choose representatives who are expected to act in ways that the voters approve of without external incentives. The representatives act only for internal reasons and are chosen by citizens through indicators

---

[1] For this review, I use the term Member capitalized to describe a Member of the U.S. Congress.

of character and perceived predictability of that representative's choices. Traditional representation is irrelevant, and representatives are not expected to continuously take constituency opinion into account once in office. In this form of representation, the expectation is that a vote for this type of representative will affect the outcomes of the future political system.

4. Surrogate Representation is the act of representing someone whom one has no electoral relationship with. This is a non-institutional and informal engagement that provides representation for voters who lose in their own district. Surrogate representatives may *feel* responsible to their surrogate constituent. There is no temporal correlation in this form of representation because there is no formal accountability, unless voters decide to contribute through some action such as monetary contributions.

These different types of representation demonstrate variability in how representation is defined and how representatives act on behalf of a constituency. What type of representation a Member chooses to embody at any given time affects their engagement with constituents. This engagement then affects what information a representative desires from the constituents. There is no one form of representation, and therefore we should not expect the information demands of representatives to be the same. Thus, representation type affects what information is valued from communication with constituents, impacting the use of ICT to obtain that information.

Different types of representation tie to discussions of information technology. For example, surrogate representation may increase with the affordances of social media (Straus & Glassman, 2016), and gyroscopic representation may increase when there is a lack of platforms for deliberative citizens participation. Technology designs could prioritize certain types of representation over others.

2.1 Measuring Representation

Accepting a variety of representation creates complexities in quantitative work measuring representation. Historically, researchers have used correlations between representatives and constituency opinion to measure representativeness. Achen argues that correlations between the opinions and representative's views "are virtually uninterpretable within the framework of democratic theory" (1978, p. 475). Instead, Achen puts forth a measure of representativeness

measured by mean constituent opinion against three measures: proximity (mean distance from a citizen's opinion to the representative opinion), centrism (difference between the representatives' proximity and the constituency opinion variance), and responsiveness (the expected change in the representative's opinion as constituency opinion changes). Achen assumes representation derives from popular sovereignty and citizen opinion: "what the people decide must influence the outcome" (Achen, 1978, p. 490). But as described by Mansbridge and Pitkin, what the people decide does not, and sometimes should not, influence the representative's choices. These choices depend on the type of representation embodied by the representative at a given time.

Identifying representation as a singular model rather than a spectrum also changes measures of ICT and the flow of communication with constituencies. Previous investigations into ICT use measure representation by the content of communication occurring within ICT (Golbeck et al., 2010; Abernathy, 2015; Gulati & Williams, 2013). But by measuring the flow of communication between representatives and constituencies, these studies measure only one aspect of representation: responsiveness. I discuss theories of responsiveness in the next section.

3. What is Responsiveness?

The second part of Pitkin's definition emphasizes that representatives act in a manner that is 'responsive' to the constituency. Responsiveness is an essential component of any investigation of representative-constituent communication because it affects how and when representatives will communicate with and act upon constituent demands. But what does responsiveness mean? In this section, I outline components of responsiveness described by scholars.

Easaiasson et al. split responsiveness into three actions: listening, explaining, and adapting to constituent opinion (2017). Listening is described in terms of constituent opinion. Representatives must also explain their actions and opinions to the constituency. Lastly, representatives must adapt their actions to constituent desires. The authors do not provide an in-depth description of how these parameters measure responsiveness. What does the process of listening entail? If representatives were listening and explaining their actions, would it necessarily correlate to adaption of policy actions?

If responsiveness requires listening, then there is a flow of communication. Fenno says

responsiveness "assumes the existence of two-way communication" (1978, p. 238). Unlike Easaiasson et al., Fenno's definition of responsiveness does not necessarily include the act of adapting to constituents' opinion (1978). Responsiveness relies heavily on the flow of communication, rather than the proceeding legislative adaptations of the representative.

For Burstein, responsiveness is to act in favor of public opinion (2003). In 2003, Burstein conducted a meta-analysis of publications related to responsiveness to determine if public opinion impacts policy. Unlike other papers which find responsiveness to be decreasing over time, he determines that responsiveness increases with issue salience by stating, "public opinion matters even in the face of activities by interest organizations, political parties, and political and economic elites" (Burstein, 2003, p. 29). His analysis narrows the definition of responsiveness to the representative's immediate legislative actions .

Coleman and Price emphasize responsiveness as an institutional action, in addition to the actions of individual representatives stating that, "developing institutional responsiveness can forge a space for a more discursive and consultative democracy" (2011, p. 239). An institutional emphasis is highlighted in their five conditions to narrow 'political distance' between representatives and citizens. They argue one of the conditions is for *government* to be sensitive and responsive to citizen input (Coleman & Price, 2011), and not just a singular representative. The emphasis on the institution shifts the focus of representation to broader institutional responsiveness to public opinion.

Given these scholars' definitions of responsiveness, I define responsiveness to be listening and acting upon constituent desires and demands. Both actions must occur to define a responsive representative. A representative cannot always be responsive to all desires, but they can still be a legitimate representative.

Like representation, levels of responsiveness determine how representatives obtain information about their constituency. If ideas of responsiveness tie to actions of listening, explaining, and adapting, then we should see ICT embody those actions in their use. Understanding the nature of a representative and their goals will improve analysis of any technical systems engrained within the representative process.

In my research, I see tensions between ideas of responsiveness and the practicalities of constituent communication. As technologies accelerate the rate of information exchange, there are increasing expectations from constituencies for their representatives to be responsive to their demands. There are similar claims for transparency. E-government systems that allow citizens access to real-time information creates increased expectations for more transparency in government, which may hamper representative's operations and reputation (Bannister & Connolly, 2011). Technology can also increase representative access to information about constituency opinion, demanding increased attentiveness and responsiveness to constituent opinion. However, as I will discuss later, this acceleration is also bad for deliberation. It limits the time to reflect on information critically (Coleman, 2018). The implications of this accelerated process could be good or bad, and it is likely that the accelerating characteristics of ICT will impact responsiveness and representation in some form.

4. *Understanding Representative Legislative Behaviors*

Voting is one the most significant duties of representatives. I touch on voting in this section to describe the primary reason why constituents contact representatives. Other than casework, legislative decisions are the primary catalyst for constituent communication with their representatives[2]. It is one of the primary channels which citizens use to demand responsiveness. Any digital system inside a congressional office which captures constituent contact accounts for legislative opinions of the district. Thus, understanding when representatives value constituent input into legislative decisions may affect the design of ICT meant to capture their information.

> "The modern representative acts within an elaborate network of pressures, demands, and obligations; and there is considerable disagreement among legislators about the proper way to perform their role" (Pitkin, 1967, p. 219).

Understanding how and why policymakers make policy decisions is extremely complex and almost impossible to capture thoroughly. There is an infinite number of possible influences, internally and externally, that may cause a representative to vote a certain way. Clearly

---

[2] Although I have found in my interviews that more recent contact is in response to presidential tweets.

understanding how and why representatives make decisions can never be clear.

Despite the complexity of legislative decision-making, scholars investigate possible reasons for how and why policymakers make certain policy decisions. There is empirical evidence that shows policymakers generally vote in-line with constituent opinions. Arnold argues this is because policymakers seek reelection and need to understand constituent behavior to know how and when citizens will incorporate policy decisions into their election decisions (1990).

In an experiment of the New Mexico legislature and a spending surplus bill, there were significant and direct correlations between the constituent opinions and representative votes for the bill (Butler & Nickerson, 2011). The impressive level of control the authors had over the knowledge given to each state representative about their district provided an optimal space to support their conclusions. However, the authors make it explicit that it is impossible to generalize to other decisions. The vote was low stakes for legislatures; it was the last vote before election season, and was in response to a financial surplus. So, in a perfect scenario during an election season with extra money and no personal agendas, there is evidence that representatives will take constituent opinion into account.

A meta-analysis of quantitative studies to measure issue salience of policy decisions also supports Butler & Nickerson's claims that policymakers vote in line with constituent opinion. Burstein found that public opinion affects policy three-quarters of the times impact is gauged. Issue salience impacts the effect of public opinion on policy. And, the impact of opinions on policy remains substantial even when the activities of interest organizations, political parties, and elites are taken into account (2003). Burstein cautions the ability to generalize the impact. Only thirty studies were analyzed, and the majority of the studies took place in the United States. Yet, from these results it safe to say that responsiveness to salient issues is high.

Despite empirical evidence that there is general responsiveness of representatives, there are tactics that can be used to limit citizen input into a representative's policy decisions. In Fenno's work (1978), he found that representatives establish a sense of trust to mitigate the influence of citizen preferences on their policymaking decisions. Fenno is one of the most influential and highly regarded ethnographers of Member behavior. His book *Homestyle* provides one of the most in-depth observations of 18 Members of Congress to understand how representatives behave with their constituency.

For Fenno, a representative has three goals: re-election, power in Congress, and good public policy. To be re-elected, Members must demonstrate to their district that they should maintain their position, which they perform through what Fenno calls their "homestyle". The goal of homestyle is to establish trust within the constituency which, Fenno argues, requires emitting a sense of qualification, identification ("I am one of you"), and empathy. Other than re-election, Fenno argues that one of the central benefits of establishing trust with the district is voter leeway (1978), signifying that the more a Member feels their district has trust in them, the more flexibility they have in their policy decisions which leads them to forgo responsiveness.

The idea that trust can supplement or replace responsiveness is also shown in Esaiasson's work in which trust in the process increases policy satisfaction, even when the outcome is not as the citizen wanted (2017). Establishing a sense of trust can mitigate the influence of citizen preferences on their policymaking decisions. However, I would also argue that trust does not always replace constituent input but is rather a natural outcome when citizens see representatives being more responsive to their demands. If representatives can explain how they are responsive to constituency opinion, constituents will trust that future decisions will be in-line with previous ones. Either way, we may predict that representatives use ICT to evoke a sense of trust to constituents when they want to establish voter leeway.

Empirical research has also indicated that representatives may have asymmetric understandings of their constituency. A survey of 2,000 state legislators and candidates and their understandings of district opinion found that most participants were systematically off by at least ten percentage points. Both liberals and conservatives tend to overestimate how conservative their constituents are (Broockman & Skovron, 2013). Candidates within the same district were off from each other by twenty percent, showing representatives can look at the same district very differently. The authors hypothesize that their "findings raise the possibility that politicians have limited desire to accurately ascertain public opinion on political issues of the very highest salience, maintaining a rational ignorance" (Broockman & Skovron, 2013, p. 31). A rational ignorance implies that representatives may not be motivated to make policy decisions on constituency demands alone, limiting their desire for citizen input on high salience issues.

4.1 Section Summary

I discussed representation, because the type of representation will impact the type of relationship representatives want to have with constituents. I discussed responsiveness because the level of responsiveness of a representative will affect how they control the flow of communication to and from constituencies. And lastly, I discussed voting to demonstrate if and when representatives have empirically chosen to be responsive to concerns of their constituency. Given the form of representation and level of responsiveness representatives choose, will the flow of constituent communication through digital channels reflect these choices? Possibly. In the next section, I dive deeper into the historical and empirical analysis of the actual constituent communication process in Congress. As I will demonstrate, these processes are heavily mediated by ICT, influencing how constituent contact is processed.

5. *Constituency Contact to Congress*

No matter the form of representation or level of responsiveness, all representatives are bound to those who determine their position in power: the constituency. In the U.S., citizens have open channels to make a complaint to or seek the assistance of their government[3]. Thus, contacting representatives is a part of the democratic system. Contacting representatives is one of the most common acts of political participation after voting, and it is performed by one quarter to one third of adults in the United States each year. (Bimber, 1999). This contact allows representatives to communicate with and understand the grievances of the district.

To begin the discussion of technology, I provide a brief historical timeline of email usage for constituent communication. Email remains one of the dominant forms of digital contact from constituents. Faxes, phone calls, and social media are also used, but none compare to email in the scale of contact. I hope to see the use of ICT reflecting forms of representation and responsiveness. As I will demonstrate, email is overused by constituents and advocacy campaigns. This overuse puts strains on the constituent communication process and potentially inhibits a Member's incentive to use technology for responsive purposes.

---

[3] 1st Amendment of the Constitution: "Congress shall make no law … prohibiting the free exercise thereof…to petition the Government for a redress of grievances."

5.1 A Brief History of Email to Congress

In 1911, constituents' contacted their Members through in-person meetings, postal mail, and telephone (Owen et al., 1999). In 1993, Congress began to experiment with email (Owen et al., 1999), and in 1995, publicly available emails were provided to each Member (Hysom, 2008). This new mode of digital communication forever changed the means in which Members and their offices received contact from constituents[4].

The first paper to investigate the congressional use of email technology was published in 1999. This paper highlights preliminary problems that arose from both email and Member websites in their first two years of use (Owen et al. 1999). The authors surveyed 82 congressional offices and performed a website content analysis. The paper lacked a clear description of research methods (e.g., there was no description of the survey questions answered by staffers). The study was conducted in 1996, just a year after the House began using websites and three years after some Members started to experiment with email. The main findings from their email investigation were (1) e-mail from constituents was steadily increasing, (2) e-mail from constituents contained quick reactions to messages from the news and advocacy campaigns, (3) Members were placing barriers between them and email from constituents by using their staff, and (4) most Members wanted only summaries of the volume, position, and tone of email on particular issues. Their findings are remarkable because they mimic the congressional offices' reaction to modern technologies today.

The Congressional Management Foundation replicated these findings in 2005 with additional analysis of constituent communication practices. To no surprise, the scale of email increased and the problems surrounding email worsened. As citizens began to take part in large-scale coordinated advocacy campaigns, the volume of email increased beyond the capacities of Member offices to manage. (Hysom, 2008) "Realizing that electronic mail was on its way to becoming mainstream, in 2000, Member offices began to develop techniques to reduce the commercial spam and non-constituent messages" (Hysom, 2008, p. 5). Zip code matching software on congressional websites

---

[4] 1995 is also the year the Office of Technology Assessment, the non-partisan technology research leg of Congress, was disbanded (Bimber, 1996). Ironically, Congress received the first large-scale digital communication technology at the same time it disbanded the one office which provided insight into the implications for the technology's introduction.

attempted to block and filter any incoming non-constituent mail. According to Owen et al., half of all incoming mail in the beginning years of email was from non-constituents (Owen et al., 1999), so this process should have significantly cut the influx. However, this is not the case. In the mid-2000s, a new industry of technology vendors emerged to help coordinate digital advocacy campaigns. These campaigns automatically populate email forms on representative websites. Hysom, who is now a Chief of Staff notes, "To citizens, the tools provided capabilities to help them feel better informed about why and how to contact Congress" (2005, p. 5). It allows citizens to have low-cost direct communication channels with their Member, even allowing citizens to send messages to more than one Member in a single action. The result was a four-fold increase in all contact from citizens from 1995 to 2004 (Fitch & Goldschmidt, 2005). Congress responded with aggressive email filters, email management systems, and new organizational tactics to manage incoming mail. Some offices also use CAPTCHAs and IP blocking. The result was a technological arms race between citizens, advocacy campaigns, and Congress (Hysom, 2005).

The arms race continues to this day. Recent anecdotal evidence from offices shows that Member offices have been battling contact directed from newly developed advocacy systems. Two of these primary systems are Countable[5], which allows citizens to contact their representative about policy preferences will a simple 'Yay' or 'Nay' button, and Resistbot[6] which claims to allow citizens to "contact their congressmen in under two minutes" using a text message.

5.2 The Price of Contact

Digital messages have flattened the cost to communicate to near zero. Scholars argue that the flattened cost of emails has negatively affected citizen communication, especially from advocacy campaigns. "When costs flatten, legislators gain less information from the amount of email they receive from constituents because that amount no longer conveys anything about how hard the group worked or how salient the issue might be" (Cluverius, 2015, p. 2). The 'clicktivism' culture of sending low-cost digital messages to representatives lowers the cost of engagement, weakening a social movement's power to change government (Tufecki, 2017). Shulman finds that it does little

---

[5] See http://countable.us

[6] See https://resist.bot/

to influence government personnel while crowding out substantive citizen comments, weakening citizen engagement as a whole (2009).

Despite the scholarly skepticism of its effectiveness, the proliferation of emails continue. But why? Karpf argues that advocacy groups continue to advocate for these forms of communication, as a way of campaign recruitment. This recruitment is not associated with a demand for responsive to policy. It is a social movement tactic used to mobilize and motivate citizens to patriciate in higher stakes actions later on (Karpf, 2010). However, this tactic is not always the reason why advocacy groups use email. My phone conversation with the Resistbot creator, who does not support a specific advocacy campaign but overall citizen engagement with government, indicates that these systems were made with little understanding of its implications for Congress. Resistbot was designed to motivate citizen engagement without understanding the internal process and repercussions for choosing certain modes of contact.

Karpf argues that these messages are not new. "…email action alerts represent an incremental modification of the form letters, postcards, and petitions that have dominated citizen issue campaigning for decades (2010, p. 9). Yet there is no denying that the volume is not the same. Congressional offices have received between 200 to 1,000 percent more constituent communication in emails over the past decade[7] (Fitch & Goldschmidt, 2011). The scale of communication makes it hard to filter for valuable contact, making all contact from constituents through these mediums perceptually less valuable to each the Member.

ICT not only affects the flow of communication but the office structure. "Many (offices) have reallocated staff resources away from other tasks like casework and legislative activities to manage the growing volumes of communication" (Hysom, 2008, p. 5) In 2005, some Congressional offices reported allocating up to 50% of their staff to constituent correspondence (Fitch & Goldschmidt, 2005). But the number of staff in each office has only increased 4% since 1982 (Strauss & Glassman, 2016). All constituent communication is consistently performed by lower level staffers whose high turnover, low capacity, and limited experience limit the ability to innovate processes to handle this communication (Open Gov Foundation, 2018). Staffers are also allocating more

---

[7] Percentages are dependent upon the office personal report.

resources to social media. In the 113th Congress (2013-2014), 16% of Senators had staff members with "social media" or "new media" in their job titles (Strauss & Glassman, 2016). But the integration of social media communication into typical constituent software's is still limited. Most Member offices are unable to gauge constituent input from social media, nor are they able to integrate social media comments into their constituent database system. In my interviews, I find that most staffers that manage constituent communication do not work with social media staffers. Offices allocate resources to social media management for press purposes without the ability to use social media comments in their constituent communication process.

5.3 Section Summary

Email demonstrates major problems with the rise of digital messages to representatives. Summarized succinctly by Bimber,

> "…this trend confronts limits on the value of raw public sentiment. The deliberative value of communication may be undermined if talk through the Internet is increasingly cheap and divorced from other forms of political engagement. Floods of e-mail from citizens acting without lasting convictions about public problems or lasting interest do not add to democratic discourse or provide much of a guide to elected officials." (1999, p. 425)

Despite the in-depth research of email in Congress, much is still unknown. The majority of investigations into the flow of communication have focused on email and not the entire communications process. These studies also do not investigate the internal systems adopted to capture and aggregate all incoming contact in Member offices. Arguably, these systems turn digital communication from constituents into actionable information for the representatives to use in the policymaking process. The design and use of these systems should determine a representative's ability to listen to constituents and act in a way that is responsive. Such ideas are explored further in the next section.

6. *Internal Constituent Communication Process of Congress*

Given the influx of contact that is being received by congressional offices, how is contact handled internally? As of now, I find only two investigations which explore the internal processes of

constituent communication in Congress[8]. The first is a dissertation by political scientist C. Abernathy (2015). This dissertation explored how the dynamics of Member-constituent relationships relate to policy responsiveness, specifically through constituent contact to the office. The second is a report by The Open Gov Foundation (OGF). Their report investigated the internal process for Member-constituent communication and focused on evaluating the technology systems and the general communication process (2018). I will discuss these reports and the general constituent communication process outlined by both investigations. I will also discuss what is missing in these reports, arguing that a communication system that is heavily mediated by ICT must include a more rigorous exploration of how such digital systems are integrated into the diverse organization of each office. These investigations also do not critically discuss the implications beyond traditional political science and into ideas of digital democracy.

The first section of Abernathy's dissertation sought to answer one question: *How does the connection between representatives and their constituents actually function*? (Abernathy, 2015, 7). To explore the process of constituent communication in congressional offices, Abernathy conducted surveys and interviews with 107 House offices. The first part of her dissertation outlines the organizational structure for constituent communication practices. OGF also provided a general description of all staff involved in the constituent communication process. OGF observed 14 congressional offices (ten offices in D.C. and four in the district) and interviewed various staffers (58 in total) from each office. Using both their findings and my understandings of Member offices, I provide a general overview of the communication process in offices.

6.1 The General Process

Congressional offices are "small personal empires of the Members" (Mayhew, 1974). They have a maximum of 22 staffers (18 full time, and 4 part-time) in each office. Members are free to choose how their office functions, and they have considerable flexibility in how they organize their staff. Generally speaking, six types of staffers work on constituent communication: Interns, Legislative Assistants, Staff Assistants, Legislative Correspondents, Legislative Directors, and the Chief of Staff. Abernathy and OGF have some discrepancies in how they divide the role of each staffer, but

---

[8] The Congressional Management Foundation had some insight on internal processes, but their reports did not specifically focus on them as the primary source of investigation.

given the high variability in how each office labels each staffer, this is to be expected.

Interns are the front-line of constituent communication. They are in charge of answering phones, opening mail, reading faxes, and logging constituent contact into databases. Interns work closely with Staff Assistants and Legislative Correspondents who may also be answering phones, reading mail, and logging constituent input. Legislative Correspondents also develop responses to constituent contact in collaboration with Legislative Assistants. The responses are highly formalized letters which are sent to constituents after they contact the office. A Legislative Director oversees all other staffers in this process and is typically involved in the process of creating responses and approving all responses before sending them to constituents. The Chief of Staff is the ultimate decision maker to the correspondence process. If they are involved at all, Chief of Staff's typically sign off on outgoing mail and obtain constituent information for their policy advisement to the Member.

The process of organizing constituent communication is a highly regulated and routinized task. The process leaves little room for staffers to deviate from office expectations and procedures (Abernathy, 2015). OGF adds to this claim by highlighting that the process is also highly manual and time-consuming. Constituent communication is often delegated to junior staff with limited experience and high turnover, leaving little room for innovation (2018).

OGF's final report offered an extensive process diagram that highlights general steps in the constituent communication process from citizen contact to office response. The workflow process was separated into the following general steps:

1. Contact is received through a medium such as a phone call, fax, snail mail, or email.
2. The staffer then tries to verify the contact of a constituent using their address and zip code.
3. The contact is recorded and logged, often with a description of the reason for contact. In person meetings and protest visits are also logged.
4. The staffers develop a formal response to each contact. These responses are typically general and edited to address specific issues or reasons for contact.
5. A higher-ranked staffer approves the response content and sends the response.

To log and aggregate contact from constituents, all offices use a constituent database (also called

a correspondent management system). There are five approved systems in the House. So far there has been no investigation of the actual systems. However, the systems delegates how every contact can be recorded, logged, and aggregated.

Although OGF's report was titled "*Voicemail to Votes*" (2018) the process diagram they created did not identify what information from constituents was used for policymaking decisions. No details were given past the point when staffers send a formal response to constituents to thank them for their contact. This gap is where Abernathy offers an additional layer of information. Through her survey, Abernathy was able to capture the next step: mail reports (2015). Mail reports are memos compiled after constituent contact is captured and aggregated. The memos circulate the office to inform staffers of constituent opinion. Not all offices use mail reports, but those that do tend to generate a specific type of content for other staffers to read. Abernathy asked staffers through an open-ended survey question to detail the content of mail reports. She found that most staffers described the content of mail reports as an aggregate volume of incoming/outgoing mail and the length of time for pending responses. The mail reports highlight office efficiency rather than actual communication from constituents. Half of the 84 offices surveyed in Abernathy's open-ended question indicated that the mail report also included 'top' incoming issues. Only nine offices indicated they also reported a pro/con status for each issue. "Hence, in many cases, only lower-level staffers like the Legislative Correspondent, Staff Assistant and Interns are actually likely to read what constituents are writing" (Abernathy, 2015, p. 58). Mail reports are one of the only ways staffers who are not listening to contact from constituents are made aware of the issues driving constituents to reach out. But the content of those reports provides little information that is valuable for responsiveness in policymaking.

6.2 Critical Reflection

Is contact by constituents through these mediums actually used for policymaking purposes? Does contact to congressional offices play a role in representation and responsiveness? If we return to the beginning of this review, we see that a representative can choose if and when to be responsive. However, the current process to capture constituent information is overly formalized and focused on efficiency of output rather than engagement. From the research conducted, it appears that representatives are not using these particular mediums of contact in their policymaking process.

But given the substantial amount of time and staff resources that go into the process, there should be some value in using these communication modes at all. Possibly, timely responses to contact could be a method used to produce a mark of responsiveness to constituents. It is a sign that they are listening, but not necessarily reacting or adapting policy decisions.

6.2.1 Critiques to the Investigation - Abernathy

There are theoretical drawbacks to Abernathy and Open Gov's investigations. Abernathy's dissertation work provides the most extensive overview of general communication practices within congressional offices. However, given her focus in political science, Abernathy does not reflect on critical technology implications. For example, in her investigation she used survey data to analyze relations between office correspondent practices and various independent variables describing Members and their district. In one hypothesis of constituency relations, she argues that "Representatives who emphasize two-way, interactive communication with their districts are expected to establish inclusive correspondence systems, with comprehensive contact databases and practices that enable widespread staff awareness of the content of correspondence from the district" (2015, p. 72). However, her independent variables for measuring two-way communication are inappropriate. Her variables are "percent of staff located in district offices" and "extent of interaction on Twitter". Abernathy defends using percent of staff located in district offices because by "allocating more staff to the district, the office improves the chances for two-way interactions with constituents". However, considering that most staff decisions are restricted by financial capacity of the office and the size of the district, this is not the case. A district with 200,000 constituents would theoretically have more staff than a district with 5000 constituents. Interaction on Twitter is "measured as the total number of replies, retweets and user mentions from each Representative's official Twitter account". Abernathy defends using this variable by stating "Twitter interaction may reflect an underlying willingness to engage in two-way communications with the district". Studies in the field of information technologies negates this assumption, showing that most congressional tweets are used for non-communicative practices such as sharing events or talking about personal accomplishments (Golbeck et al., 2010). Twitter is not used as a form of two-way communication and Abernathy's measures overly assume a 'democratizing' nature of technology, which will be discussed in a later section.

Abernathy ends her analysis with a question: "*What alternative explanations may account for the ways that offices decide to handle constituent contacts*?" (2015, p. 90). She lists other potential factors such as previous positions, professional experience, and staff expertise. These factors focus on Members and their offices as individual entities rather than participants in a larger organizational process and culture. But as we can see from the descriptions, the broader organization of Congress places limitations on staff and technology.

This lack of organizational exploration is not specific to Abernathy's work but is also a critique of the field of political science. Political science of the mid-1980s brought a wave of studies focused on individualism and rational choice theory. These theories tend to ignore rhetoric and symbols within the culture of institutional arrangements (Wedeen, 2002). I found this to be the case in my list of literature, in which many scholars seemed to focus on the individual representatives instead of Congress as an organizational unit. Fenno concentrated on representatives individually through the district, which did not account for their behavior inside Congress (Fenno, 1978). Yet, the semiotic practices of Members and their office can be affected by the institutional arrangement of Congress. For example, the relationships between experts and policymakers in Congress have been shown to be shaped more from institutional arrangements than the choices or styles of individual policymakers and experts (Bimber, 1996).

Technology studies have also hinted at this importance in technology adoption. For example, Republicans have been shown to be earlier adopters of Twitter more than Democrats (Golbeck et al., 2010). Republicans tend to behave more as a collective unit while Democrats tend to be pluralistic, so the organization of their party could affect their behavior. Esterling et al. find that state delegation heavily influences the diffusion of Member website designs (2013). Due to these institutional effects, Wedeen calls for ethnographic work to help interpret, ground, and refute the theories and empirical work in political science (2010).

There are few investigations of the internal cultures and their relation to technology in Congress, but the work is needed. For example, a field experiment of legislative homestyles compared Members' responses to service requests from citizens (request for government-related assistance) and policy requests from citizens (request to take a stance on policy) (Butler et al., 2012). The authors assumed that there is a choice without a clear understanding that the staffer in offices that

work on policy requests are not the same staffers that work on service requests. Often they don't even work in the same location, as most casework staff are in district offices and policy staff are in the D.C. offices. The authors spend a substantial time attempting to explain why the representative would *choose* to respond to service rather than policy requests, while only minorly mentioning in passing that "it might simply be that the results were driven by a resource calculation and not a political one" (Butler et al., 2012, p.482). A more in-depth understanding of office functionality is especially important to understanding the technology systems that are in the institution of Congress.

6.2.2 Critiques to the Investigation – Open Gov

OGF's investigation adds a new perspective to Abernathy's investigation. By observing internal processes within congressional offices, OGF provides insight into the technology used in the constituent communication processes. This method is what OGF called a 'human-centered systems design' approach (2018). However, there are some limitations to their study. First, observations were very brief, only lasting a few hours for each office. Short-term observations limit opportunities to identify unspoken subtleties within the process.

Second, their study only scratched the surface of a very diverse process in each office. Most offices run like small enterprises with important details which differentiate how every office manages communication. For example, in my interviews, I find that many offices will use additional technologies to process constituent input. One congressional office requires interns to enter all constituent contact into both the constituent database and an Excel spreadsheet. Another office requires staffers to input constituent contact into an online survey form. The supplementation of additional technologies demonstrates the affordances (i.e., qualities that define what an object can and cannot do) of currently available technologies. It also highlights how each office can uniquely aggregate and quantify constituent contact.

Third, OGF is a non-profit working directly with Congress to develop new technologies to assist in pre-existing communication practices. They do not reflect on broader theories of technology for constituent communication and democracy. Their end goal is to develop new technologies for Congress, rather than critically discussing their implications for democracy.

6.3 Section Summary

Congressional offices have highly routinized and rigid processes to receive, answer, log, and respond to constituent contact. The details of each process vary by office but tend to use the similar routines and rely on the same technology. From current evidence, it is unlikely that citizen contact through these mediums allow them to partake in Member's policymaking decisions. If ICT is creating a burdening process for offices, they may reflect an attempt to thwart rather than engage in constituent communication. ICT may not be reflecting deeper ideas of engagement, but rather institutional practicalities and realities of the current system. As warned by Coleman "A political system that encourages public input into the policy process but ignores such input when it comes to producing outputs lacks democratic legitimacy" (2018, p. 21). This process is hindering rather than supporting democracy.

The two investigations I described provided a general overview of the constituent communication process. Abernathy's investigation provided extensive insight into the processes for constituent communication, but it neglected to analyze the role of technology in the system critically. Open Gov was able to introduce a technological perspective on constituent communication, but their limited observations, generalized findings, and practical goals of developing new tools limit OGF's frame in the broader discussion of technology and democracy. Such a frame can help situate Congress into the rise of digital democracy. To establish that frame, I use the next section to take a break from Congress and explore literature on technology and democracy.

7. What is Digital Democracy?

Scholars have been theoretically and empirically studying what ICT, especially the internet, means for democracy. In early discussions, scholars and the public alike had a fervent sense that ICT was 'democratizing' the public. Hindman identifies two senses in which the word democratize is often defined. The first sense of the word is normative with a positive connotation. "To say that the internet is a democratic technology is to imply that the Internet is a good thing" (Hindman, 2009, p. 5). The second sense is more descriptive and focuses on the redistribution of political influence. Those who claim the internet is "democratizing" focus on the political changes it promotes. To democratize is to create opportunities for citizens of a pluralist public to have a more equal voice. That isn't to say that all voices will be considered equal, but that democratization will avoid swaths

of the public being systematically unheard, creating a more even playing field for participation (Hindman, 2009). After the initial fervor, a wave of skepticism from scholars followed. They emphasized the subjective nature of participation that adheres to traditional norms within digital mediums. As scholars have begun to see both the negative and positive effects of ICT, critical discussions have arisen to establish a framework for if and when ICT can have a democratizing effect. In this section, I outline those arguments made by scholars for both the positive and negative effects of ICT on democracy. This leads to the next section which describes the recent attempts to establish characteristics required for ICT to support democracy.

The claims about the democratizing nature of ICT come from deeper ideas of the value of information. "…information technology is relevant to politics because information *itself* is relevant" (Bimber, 2003, p. 8). As Bimber notes, those who make claims about the democratizing effect of ICT assume that information is relevant to how democracy functions. Information molds citizen preferences, determines the behaviors of citizen and the elites, creates formal procedures in government, influences decision making, in laws and regulations, in accountability, and so much more. Information is a central influence on how democracy functions. The technology that affects the flow of that information also becomes crucial to those functions. The arguments outlined below typically argue about the Internet, but their claims can span to many other forms of ICT. The focus should be on the exchange of information and communication, rather than a particular technology.

7.1 The Positives

There are a handful of prominent rationales for why ICT will have a democratizing effect. In this section, I highlight four: more opportunities for communication, more spaces for deliberation, more diversity of information, and the ability to monitor powerful actors.

ICT provides opportunities for large-scale interpersonal networks to establish and grow outside traditional forms of activities within political institutions (Bennett & Segerberg, 2013; Coleman, 2018). To put simply, ICT allows citizens to communicate more directly with one another (Bimber, 2003). The pluralistic nature of these new technologies is "perhaps the largest break functionally from all previous forms of media" (Bimber, 2003, p. 90), making the effect much more significant than historical forms of political communication such as newspaper and traditional mail.

Second, an increased number of citizens communicating through digital mediums creates more opportunities for deliberation. To many scholars, this idea reflects grander ideas related to Habermas' public sphere in which individuals could debate public matters before the state but separate from state actors (1962). As I will discuss in an upcoming section, many political scholars argue that spaces for deliberation are critical to democracy, and the affordances of new technology offer more spaces for deliberation to take place (Neblo et al. 2018). Bimber also argues that increased number of citizens partaking in digital spaces serves as a means for overcoming problems of scale in democracies (2003). Bimber uses the example of a town hall meeting which has a limited physical space but can expand participation through ICT. The benefit of such digital towns halls is demonstrated empirically in Neblo et al.'s work on digital town halls for congressional representatives (2018). In these digital spaces, citizens have more space to deliberate.

The third democratizing effect of ICT is increasing opportunities to collect diverse opinions. The low cost of communication provides opportunities for richer amounts of content from a wide variety of sources (2003). Arnold's theory of potential information suggests that this increase in publicly available information will also force policymakers to bow to the pressure of citizen awareness (1990).

Despite critical voices of the Internet issues related to the digital divide, there are substantial claims that the Internet has done more good for diversity than harm. Digital technologies may provide important remedies for political inequality by making information more accessible (Bimber, 2003), and some empirical evidence by Bimber identified increasing participation through digital mediums compared to traditional mediums across demographics (1999). As Coleman summarizes:

> "Even the most pessimistic critic of the Internet as a political resource would find
> it hard to deny that, while problems of democratic coordination have not been
> eradicated, digital networks have expanded the range of voices to be heard within
> the public sphere; made it easier for solidarities to emerge, often of global
> proportions; and made it much harder for entrenched interest to ignore dissenting
> actors as if they did not exist" (2018, p. 19-20).

As Coleman points out at the end of his statement, tracking and making the public aware of

dissenting actors is another democratizing effect of the Internet. What has been called a 'monitorial citizen' (Keane, 2009; Schudson 1999), ICT provides transparency and spaces for citizens to monitor governments and other powerful actors, and to publicly disclose any dissenting actors at a rapid rate.

Some scholars have gone so far as to say that the creation of the monitorial citizen is part of a new paradigm in digital engagement that shifts away from traditional forms of civic participation. For Zuckerman, the introduction of the monitorial citizen is happening at a time where citizens feel they are less effective at getting their voices heard through traditional means of participation (2014). However, monitorial citizenship has also been viewed by other scholars to mean that citizens only intervene in politics when things go obviously wrong (Hindman, 2009; Schudson 1999). This form of citizenship removes citizens from partaking in the political sphere until problems arise. This concept also overlaps with the ideas of a *Stealth Democracy* (Hibbing & Theiss-Morse, 1991) that claims most Americans have a distaste for politics and actively prefer to leave governance to authoritarian populists and technocrats (members of a technically skilled elite). Citizens only reluctantly involve themselves to guard against corruption. The Internet's ability to provide more opportunities for monitorial engagement may lessen other democratic forms of engagement from citizens.

The claims of the stealth democracy are negated by Neblo et al. empirically in their research on digital town halls.

> "The stealth democracy thesis holds that if citizens believe their representatives can be trusted then the citizens would prefer to withdraw from public life; conversely, if they believe their representatives are corrupt then they will become more involved to hold them to account (if reluctantly). In contrast, we argue that citizens will become more inclined to participate in public life if the system itself were perceived to be more rational and responsive; and conversely, they will become demobilized the more they see the system as rigged." (2018, p. 86)

In this lens, digital spaces for engagement outside of monitoring, if designed and used correctly, will encourage more rather than less participation.

7.2 The Negatives

As ICT increasingly became a primary source for political information, the fervor of optimism subsided. Scholars, thusly, have criticized ICTs' democratizing abilities, calling developments of democracy online overly romanticized (Chadwick, 2011). In this section, I highlight some of those claims. I focus on the ramifications of filtering, echo-chambers, information overload, and transparency.

In 2007, Sustein argued that there is a conflict between consumer sovereignty and political sovereignty. The freedom of unlimited choice that technology offers does not support democracy—it limits democracy. ICT allow citizens to freely filter what information they consume, cutting themselves off from diverse opinions and unfamiliar topics. Thus, Sustein argues that, in the interests of citizenship and self-government, this freedom of choice should be limited (2007).

When citizens have equal exposure to information, they gain shared experiences that are essential to establishing trust (Bianco, 1994), and are more open to fair deliberation and discussion (Sustein, 2007). Yet, ICT allows citizens to build echo chambers bordered with their preferences. For example, when citizens protest in a public park, those nearby hear and may learn about cause. But on the internet, citizens may ignore protests through filters. This deliberate ignorance designed in many social media technologies limits the public-forum doctrine, a component of free-speech laws that allow citizens and institutions general access to other citizens broadly to hear their claims (Sustein, 2007). Thus, the number of free-speech forums are limited when citizens choose the information to which they are exposed.

Hindman, in his *The Myth of Digital Democracy*, mounts one of the biggest critiques of the current optimism surrounding the democratization of the Internet. In 2009, he argued that normative debates about the Internet democratizing the public have gotten ahead of the evidence. To combat these assumptions of democratizing technology, Hindman conducts two case studies and a quantitative study of hyperlink and website visits. He concludes the Internet has failed to democratize the public in numerous ways. Using empirical evidence on citizens' website visits, Hindman and his collaborators create a theory, "Googlearchy," that states: (1) the number of links to a site determines site visibility, (2) niche dominance is a general rule of online life, with a

winner-take-all pattern, and (3) dependence on links makes niche dominance of web-sites self-perpetuating. The websites with the most links tend to be the most dominant, but a substantial magnitude and increasing number of links to those sites self-perpetuates their dominance.

Hindman agrees with Sustein that the internet is limiting the potential for democratization. Unlike Sustein, however, Hindman argues that media concentrates into the most frequently used 10 to 20 outlets, not that the internet is full of echo chambers.

But recent changes to the designs of ICT make Hindman's findings ripe for criticism. Hindman claims that there are only a handful of echo chambers, given the number of websites visited. Since the publication of Hindman's book in 2009, niche websites have come to dominate Internet traffic and are increasingly customized to micro-target individual views. These websites cater to individuals and create internal echo chambers within a single website. Also, Bennett and Segerberd argue that collective action in digitally mediated spaces has become increasingly personalized by each participant, allowing for more flexible associations with ideas and organizations (2013). This has resulted in what Bennett & Segerberd coin *connective action*, which uses personal action frames to intensify networking within various organizationally enabled or crowd-enabled organizations (2013). The customization and personalization of the Internet—by both website developers and users—allow for smaller echo chambers within a single website. This existence is especially apparent on social media, such as Facebook, that allows citizens to organize in diverse and often loosely tied groups. These developments strengthen Sustein's theoretical claims of fragmentation with the rise of micro-targeted digital designs.

Another criticism focuses on the increasing complexity and diversity of information. The creators of the modern U.S. democracy imagined a highly informed and educated citizenship able to debate and make rational decisions among legislators[9]. The immense information available today is highly complex, making it hard for the average citizen to make informed decisions without expertise (Llya, 1999; Bimber, 1996). Faced with such abundant information, can citizens make informed decisions? Lupia and McCubbins argue that citizens can make reasoned choices with limited

---

[9] "*I know no safe depository of the ultimate powers of the society, but the people themselves: and if we think them not enlightened enough to exercise their controul with a wholsome discretion, the remedy is, not to take it from them, but to inform their discretion by education. this is the true corrective of abuses of constitutional power.*" (Jefferson, 1820)

information, especially if trusted mediators provide citizens with the information that is in their best interest (1998). However, critiques of Lupia and McCubbin argue that there are greater information burdens on citizens than the authors imply.

> "While the ability to use information from knowledgeable and trustworthy sources may cut down on information costs for voters and others, it by no means eliminates the substantial cost of identifying the needed sources-which itself may require considerable knowledge. Nor does it eliminate the collective action problems and strategic maneuvering by political leaders that further complicate the voters' task." (Somin, 1999)

With so much information on the Internet, it is hard for citizens to identify the legitimate and valuable information, while also not being coerced by collective action campaigns and political preferences.

There are also arguments that the increased transparency for which ICT provides may not be good for democracy. Social media has created more spaces for citizens to demand explanations for decisions. They want transparent processes. Full transparency, however, may not be a good thing. Increased transparency can contribute to information overload. This overload creates "wasted transparency" where reasonably accessible information remains untapped by most citizens (Schacter, 2009). Members also do not think of explanations as a form of persuasion and trust. Any attempt to explain themselves could open up the floodgates to anger (Bianco, 1994; Fenno, 1978). As highlighted by Bannister and Connolly,

> "For society a real risk is that in a world of instant, real-time information, citizens come to expect a type of e-transparency from their government and their public servants that is not in the interests of best government. For governments, a real risk is that transparency will not only hamper their operations, it may possibly damage their reputation." (2011)

7.3 Democracy Anew?

Skepticism towards ICT's democratizing effects reflects broader critiques of the current meaning of democracy. Mair views the revival in ideas of democracy and democratization as related to deeper discussions of how to govern in a large, complex society (2006). As this scale and complexity has led to the fading of democracy, it is fighting to stay relevant. But the revival of democracy hasn't revived mass participation—traditionally central to democracy. It is possible that revived interest in democracy is an attempt to redefine it in a way that "copes more easily with a decline in popular involvement" (Mair, 2006, p. 29). It is a redefinition of democracy in the absence of demos.

The repercussions for a change in the definition of democracy may not be large, but they pose stark problems for representative legitimacy (Mair, 2006). The need for increased trust and legitimacy may have inspired Mansbridge and others to offer less traditional views of representation. Adding to the types of representation discussed at the beginning of this review, Mansbridge recently proposed the idea of recursive representation, in which recursive communication between citizens and representatives becomes the standard to maintain legitimacy (2017).

Chadwick's critical discussion of e-democracy and Web 2.0 also notes this change. Traditional views of democracy assume constituents should always be highly informed and highly motivated. In reality, however, citizens lie on a continuum and their level of engagement with legislators (and any form of activism) is in constant flux. In my interviews, many staffers note that the number of phone calls to offices increase when salient and controversial issues appear on the news. This could be why "[e]lected officials and public-sector bureaucrats have been reluctant to enshrine deliberative online consultation into their routine modes of operation" (Chadwick, 2011, p. 49). If citizens only wish to be involved when salient issues arise, then there is little incentive for officials to continuously engage citizens in their policy decisions.

Given these critiques, skepticism of democracy may have contributed to the rising popularity of technology interventions. Schulte's critical discourse analysis of the word 'startup' and the U.S. Digital Services (also coined 'Obama's Startup') finds that the rise of the idea of government technology start-ups is rooted in dissatisfaction with the current state. The phrase 'technology start-up' is associated with quick, productive, and disruptive change. It is one of the only spaces where the word 'disruption' seems to take on a positive connotation. But the government is not a start-

up. "When a company has a buggy release, the company is experimenting and learning. When the government has a buggy release, it is a sign of incompetence" (Schulte, 2018, p. 14). In a time of increasingly uncertain and complex domestic and global economic conditions, framing government innovations through the lens of a technology startup allows more wiggle room for radical innovations and potential failures. And when the ideas of democracy are in question, technology creates a space for innovations away from traditional norms.

7.4 Section Summary

> "If the Internet could entice even a few citizens who otherwise remain on the political sidelines into expressing themselves, then the goal of increasing the universality and perhaps equality of participation would be served" (Bimber, 1999, p. 425).

ICT has the power to democratize, but it can only succeed if designed and used to expand citizen engagement in political spaces through more equal participation and impact. This is no easy feat, but scholars and the public alike are trying. This next section will outline established characteristics required for information technology to support our democracy, as well as outline some of the theoretical and empirical ideas to make a more digital democracy possible.

8. *Components for a Better Digital Democracy*

Given the positive and negative critiques of the democratization of information technologies, what characteristics should a digital democracy include, especially where democratic representation persist?

Coleman argues that a key advantage of ICT is the ability to enable ongoing communication with constituents (2018). This communication can bolster representatives' legitimacy. But how do we ensure that communication occurs in a valuable way? Coleman outlines four areas where ICT can increase democratic capacity. First, citizens must be aware of what is happening in the political sphere. Because ICT allow news and media to rapidly circulate, governing institutions have lost temporal control over citizens' exposure to political information. Coleman argues that ICT must begin to decelerate exposure to information so that people have time to think about the meaning of political events. We need a slow-down of democracy. Second, as Sustein argues, citizens must

be thrown together with diverse strangers and embrace a culture wherein they listen to other opinions. Third, representatives and citizens must mutually and respectfully recognize each other as legitimate players in democracy. The problem with current big-data approaches to constituent communication, like the systems in Congress, is that they are essentially surveillant. They do not recognize constituents as contributors. My interviews with staffers have told me that constituent communication is merely 'taking the temperature' of the district. For Coleman, digital democracies must recognize each participant more equally. Lastly, citizens must be able to make a difference. Citizen impact is arguably the hardest and most contested component to theories of deliberative democracy. Coleman only vaguely described what that participation might look like, offering that such a system must provide channels for active impact from citizens.

8.1 Citizen Participation

As Coleman claims, technology must encourage participation and impact for it to democratize. But what should citizen participation look like? Just as there is no one way for elected officials to represent constituents (Mansbridge, 2003), there is most certainly more than one way for citizens to participate. Large-scale complex governance requires a variety of forms of participation. Fung's *Democracy Cube* outlines these types of participation based on participation-selection method, the modes of communication and decision-making, and the extent of authority and power (2006). Although there are many forms of participation, opportunities to engage in certain forms are lacking. Depending on the context of the problem, a government may treat the public as consumers, clients, or citizens (Fung, 2006). There are avenues for citizens to participate as consumers, but still very little opportunities for citizens to deliberatively engage with representatives (Neblo et al., 2018). As ICT allows citizens greater access to more *direct* engagement with policymakers, there are more efforts to find inclusive forms of deliberative participation.

In political science, work in direct engagement has stemmed from ideas of deliberative democracy (Gutmann & Thompson, 2004) and collaborative governance (Emerson et al., 2012). Deliberative democracy is "*A form of government in which free and equal citizens (and their reps), justify decisions in a process in which they give one another reasons that are mutually acceptable and generally accessible, with the aim of reaching conclusions that are binding in the present on all citizens but open to challenge in the future.*" (Gutmann & Thompson, 2004, 7) The argument for

deliberative democracy is that creating spaces for deliberation among citizens and their representative can establish trust and confidence in the democratic system, while also providing increased forms of transparency. Although not all forms of transparency are good for democracy, some forms increase trust and comprehension in the political system (Bannister & Connolly, 2011).

Work on citizen deliberation has also emphasized another form of participation as citizen consultation. Consultation allows citizens to be invited to give input into specific policy processes based on their levels of expertise or familiarity with a subject. Noveck, a previous Chief Technology Officer to the Obama White House, wrote a 'manifesto' called *Smart Citizens, Smarter State* in which she calls for expert-management systems to be created to provide expertise to the federal government (2015). For Noveck, the general public offers an abundance of smart experts which the federal government lacks. ICT should be designed to document, find, and contact expertise in citizen bodies.

Noveck argues that there is increasingly little access to experts, but her conclusions conflict with expertise in Congress. In Bimber's observational study of the Office of Technology Assessment (OTA), he argues the opposite is the case. Instead, Congress has been building an extensive system of experts for over two decades and is "…immersed in a tide of expertise that is visible at every step of the legislative process" (Bimber, 1996, 3). Fenno argued that Members are becoming experts and specializing interest to increase power and professional status (Fenno, 1978). Both Noveck and Bimber worked in D.C. observing the functions of the White House and Congress. But their investigations came to two different conclusions of the level of expertise and information offered to the government. A possible explanation is the documented discrepancies between the White House and Congress and their abilities to collect information. As separate branches of the federal government, the information resources are typically not shared, accounting for this conflict. The time gap in explorations could also account for the changing perceptions, as Bimber and Fenno's work was before the information revolution of the mid-2000s and before the shift to more citizen-centered participation and consultation.

Empirical investigations of digital forms of citizen engagement find promising but not yet conclusive results. Åström and Gronlund's conducted a meta-analysis of 58 European and U.S.

case studies to determine success in online consultation and to test three normative claims about citizen participation in policymaking (Åström and Gronlund, 2012). Unfortunately, the most significant finding of their analysis was an overall high failure rate (~40%) across all conditions and criteria for deliberation and online consultation. However, they found online consultations succeed at increasing participation when (1) there are strategic or random selection of participants rather than open self-selection, (2) consultation occurred at the decision-making stage when issues and stakes are made clear, (3) there was a deliberative mode of communication rather than simply expression of preferences, and (4) online and offline processes were used together. Under these circumstances, the failure rate was below 22%. Most interestingly, "Modes of communication turn out to be the most important variable, increasing by nine times the chances for deliberation to work in moving from consultations that are expressing preferences to those adopting deliberative mechanisms" (Åström and Gronlund, 2012, 89). If modes of communication are the most important factor to make deliberation work at affecting policy, then it is crucial ICT be evaluated and designed in such a way to promote this deliberation.

8.2 Reaching Out

How should contact between congressional representatives and citizens be initiated by citizens in the first place? Should citizens be expected to reach out when they are upset, or should there be more effort for offices to reach out in advance of concerns? Chadwick argues that it is unnecessary to assume that citizens should be highly informed and highly motivated all the time. Instead, citizens lie on a continuum, and their level of engagement will continuously change (Chadwick, 2006). As an alternative, Chadwick offers a system of degree centrality to critically reflect on the direction of engagement. Degree centrality is the number of links to a node. Indegree is the number of incoming nodes, and outdegree is the number of outgoing nodes. Chadwick uses this idea to explain the increasing number of indegree nodes from citizens. Representatives should focus more on outgoing nodes which signal pluralistic, inclusive, and active outreach to citizens.

8.3 Trust

ICT for democracy should also provoke a sense of trust. It is a necessary assumption in a well-functioning democracy that citizens trust their government (Bianco, 1994). Members, in particular, build on a particular form of trust that is central to their ability to perform their duties. Without

trust, representatives cannot be re-elected. Representatives must evoke a higher sense of trustworthiness to their constituencies. Bianco assumes that trust in representatives is based on two factors: how uncertain constituents are about a proposals effects, and their belief about common interest with the representative (1994). All trust exists due to a level of uncertainty, and citizens ability to find trust in their representative tends to come from their common interest and ability to identify with representatives. Åström et al.'s survey found those who trust the digital process had a higher chance of trusting the representative and system (2017). Designing systems that make the process of engagement transparent and reliable can reinforce perceptions of trust in government.

8.4 Section Summary

In this section, I outlined some of the primary characteristics necessary for ICT to provide opportunities for democratic engagement. Tying this section back to the section on representation, I hypothesize that there are tensions when systems built for democratic participation integrate into systems for policymakers. For local and smaller governments, integrating many of these features into their communication systems seems more feasible than in federal government. However, for a government body as large as Congress, where each Member represents hundreds of thousands of diverse communities, it can be hard to scale deliberative platforms to provide opportunities for engagement equally for all citizens. Increased input from constituents can also conflict with traditional types of representation which may not value citizens as often or as much in policymaking. Navigating the tides of if and when citizens should be involved in deliberation *with* policymakers is difficult, but necessary to ensure Congress represents legitimately in our democracy.

9. HCI and Political Systems

This final section discusses the field of HCI. Broadly speaking, the field of HCI designs, observes, and evaluates how humans interact with technology, and more traditionally, computing systems. The study of technology and democracy mostly takes place outside of HCI, although it heavily overlaps with the field of work. "…modern ICT is absolutely essential for helping democracies transform themselves toward a strong democracy or a more participatory stage of democratic evolution" (Becker, 2001, p. 39). In this section, I explore what literature has been written within HCI, noting that there is still a breadth of opportunities for exploration. I explain why other

scholars believe there is a lack of studies in technology and democracy in this field.

The HCI community uses a variety of terms to define research on technology and political systems. The most notable is 'HCI and e-government' and 'HCI and policy'. To separate the terms, I first define the study of government and policy to provide context for the confusions I experience when defining these areas of research.

Studies of *government* explore the function of governing bodies as institutions within a society or community. It is the institution that is the focus. Studies of *policy* explore a "set of interrelated decisions taken by a political actor or group of actors concerning the selection of goals and the means of achieving them within a specified situation" (Jenkins, 1985, p. 15). Here, policy defines not just a physical law, but a broad set of decisions and outcomes. The study of policy focuses on the policies themselves and their proceeding implications. Temporally, this suggests that the study of government includes everything that happens before the creation of policy, and the study of policy includes everything that happens after the creation of policy. I acknowledge that this differentiation is unrealistic when studying the complexities of actual policymaking. But it is helpful to differentiate these terms to compare how they are used in the HCI community.

9.1 HCI E-Government and Policy

Work exploring government and HCI has focused on the study of e-government. Although scholars argue that there is no general definition of e-government (Cordella & Bonina, 2009), it has been loosely defined as the adoption ICT as a tool to facilitate the daily administration of government, improve efficiency, cut costs, and change the way government interacts with citizens (Chadwick & May, 2003; Johnson & Lazar, 2010; Cordella & Bonina, 2009). The research in HCI and e-government has predominantly focused on digital processes embedded in public-facing government services. In the past, studies in HCI have looked at e-government systems such as food and medical systems to explore how technologies and their use reflect value systems (Voida et al., 2014), immigration systems for effective citizens services (Amukugo & Peters, 2016), accessible government websites (Conway, 2011), and social service outlets to explore scale in complex cooperative systems (Le Dantec & Edwards, 2010).

Work studying internal government systems as well as externally owned public-facing government

services is not generally explored in e-government. For example, there are a handful of papers studying political communication on social media, especially the congressional use of Twitter (Golbeck et al., 2010; Hemphill et al., 2013; Roback & Hemphill, 2013; Million et al., 2016), but Twitter is not defined as an e-government system[10]. Despite the lack of connection, Twitter has played a significant role in the distribution of government information.

HCI and policy is harder to define because there is no clear definition given by scholars. In all the papers discussed in this section, none define HCI and policy. Only one paper studied a specific policy (a non-government policy in a social media institution) and its implications (Centivany & Gulshko, 2016). The rest of the papers were calls-to-action to have more research on HCI and policy (Jackson et al., 2014), or examples of HCI influencing policy (Lazar et al., 2016; Thomas et al., 2017). As I will demonstrate, the term HCI and policy crosses work in HCI and e-government.

To understand how these authors might define HCI policy, I look at how they frame the term policy. Like the previous definitions given, the authors define policy broadly. Policy includes more than just government policy; and it embodies "not only laws, regulations, enforcement actions, lawsuits, and court actions, but also human rights treaties, international technical standards, non-governmental organizations, and multinational organizations" (Lazar et al., 2016). It involves interacting with a complex range of social actors that are involved in a decision-making process (Thomas et al., 2017) and exploring rules and regulatory mechanisms surrounding the use of ICT (Centivany & Glushko, 2016). By these descriptions, policy can comprise anyone and anything that interacts within a decision-making process through a governing body[11].

In the papers on HCI and public policy specifically, the intersections of these two spaces are not defined as a field of research. Rather, the field HCI is framed as both influenced by and influencing public policy, and not a field of study (Lazar et al., 2016) (Thomas et al., 2017), making it difficult

---

[10] In the future, I plan to write a piece to discuss whether or not Twitter should be considered an e-government system and what the implications are.

[11] Some scholars have argued that policy in HCI also includes the investigation of norms and expectations as a form of policy (Nathan & Friedman, 2010). I find it more productive to maintain a distinction that does not include norms and expectations as a form of policy, but as more informal influencers.

to define what the study of HCI and policy should be in comparison to studies of e-government.

From this brief explanation of HCI and e-government and policy, it is hard to pinpoint exactly where my work lies. The study of constituent communication technologies is 'HCI and e-government' because it explore a digital a citizen service. However, this communication system is also important in the public policymaking process. The terms public policy and e-government may not be the best terms to use to differentiate this type of research. Alternatively, the terms can be nested for HCI and public policy to be a sub-sector of studies of e-government. As I think through these different definitions, I define my work under the term 'HCI and public policy' but provide my own definition. I define 'HCI and policy' as the study of technology within the decision-making process and outcomes of governing institutions. Keeping the definition broad allows me to maintain breadth and complexity of the governing and policy processes.

I used the rest of this section to describe research in HCI and policy, why there is a lack of exploration in HCI and policy in HCI, and where the field is growing.

9.3 HCI and Policy - Lack of exploration

With few exceptions, studies of policy are traditionally not a priority to HCI, often falling to the wayside of other research (Lazar et al., 2016; Centivany & Glushko, 2016) (Jackson et al., 2014). There have been multiple plausible explanations provided by scholars for this lack of research engagement. First, many HCI researchers lack the expertise or experience in policymaking to even participate in such forms of engagement (Centivany & Glushko, 2016; Lazar et al., 2016). Also, education in the fields of information and computer sciences do not include legal or institutional training (Jackson et al., 2014). Those that have engaged with HCI and policy tend to be those with a background in the policymaking process. For example, Thomas points out that her successful engagement with policymakers in her work was due to her background in public policy and the ability to reach outside the realm of the HCI literature. Thomas et al. explain that "HCI researchers without a similar background might need to spend considerable time learning the relevant terms, methods, and debates (outside the HCI literature)." Thus, there is a knowledge and skills barrier for HCI researchers to be engaged in this form of research.

The second plausible reason for lack of research is the process in design and HCI. Jackson et al.

argues that policy, practice, and design are complexly interdependent, and practically inseparable in real-world social computing problems (2014). The interdependency is depicted in Jackson et al.'s metaphor for the Policy Knot. Yet the design, practice, and policies for technology are often held in separate spaces, with policymaking coming after the design process (Jackson et al., 2014). The authors postulate that scholars have widespread misconceptions that policy is static and reactive, rather than a consistently influential component of socio-technical system use. The authors also claim that the separation of policy from the design process has hindered HCI researchers to embody the complex interdependencies of sociotechnical systems. Dourish supports this claim, stating traditional HCI discourse often obscures political and cultural context that are important to understanding technology in society (2010).

Third, a lack of policy exploration could be a consequence of HCI's earlier disciplinary division (Centivany & Glushko, 2016). According to Jackson et al., early work in areas such as CSCW (computer-supported cooperative work and social computing), a subset of HCI, moved beyond moments of design and adoption to large-scale systems of computing. The authors use the work in activity theory and information ecologies (Nardi, 1999) and the ecology of infrastructure (Star and Ruhleder, 1994) to exemplify this claim. However, "the explicit attention to scale…attenuated as the field moved on to new concerns in the late 1990s and 2000s." (Jackson et al., 2014, p. 2). As scales shrunk to the focus on the user, attention to broader interdependencies of sociotechnical systems was not emphasized. Presently, there is a return to scale. Contemporary HCI theories reflect deeper societal needs, rather than the needs of individual users and cognition (Rogers, 2012). For example, research in emergency technology, ICT4S, and ICT4D explore technology from a 'societal good' perspective. It could be that the field is naturally transitioning to a time where the need to address policy in the realm of HCI has arrived.

Researchers in HCI are now emphasizing and embracing the complexities of sociotechnical systems. According to Jackson et al., policy is typically regarded as trailing after computing design or practice. "Such positions we believe misstate the nature of change and innovation in social computing today, which come to us in forms inextricably bound and tangled, with no universal sequencing or priority among them." (Jackson et al., 2014, p. 6) Policy is not, and should not be, an afterthought of computing. Policy is a part of the continuously complex nature of ICT and their functions.

9.4 Explorations in HCI and Public Policy

Despite the reasons for less historical engagement in policy, the field is growing. This growth has been directed towards privacy and policy, and exploring how to change political deliberation with diverse viewpoints (Munson et al., 2013; Semaan et al., 2014). An even smaller growth focuses on influencing public policy. At the core of this research is a paper written by 31 scholars entitled *Human–Computer Interaction and International Public Policymaking: A Framework for Understanding and Taking Future Action.* This paper provides an extensive overview of how HCI and public policymaking have intersected over the years. The paper also provides a framework for how HCI should continue to expand their efforts to engage with policymaking.

Public policy is a core component of social systems and, "understanding the relationships between public policy and HCI research and practice is important to societal development outcomes, evidence-based approaches to governance, and setting the priorities of policy goals" (Lazar et al., 2015). The authors argue that HCI community has not made significant efforts to engage with public policymaking. This lack of engagement has resulted in policymakers knowing little about the HCI community. But policymaking has a significant influence over how the HCI community conducts research.

Lazar et al., separate HCI into two dimensions: Public policy influencing HCI and HCI influencing policy[12]. Public policy influencing HCI involves the policy and procedures which control how HCI researchers can perform. This influence involves policies like human subject's research (IRB) and standards for research assessment (e.g., Common Industry Format for software). Government also influences how HCI researchers can design, especially regarding web accessibility standards for the public. Policy also affects how public funding is allocated to the HCI research community, especially regarding NSF Grants. Thus, public policy has a considerable influence over how HCI researchers perform their work.

The HCI community can inform public policy by providing expertise, taking part in the development of policy, and researching the impact of various policies related to HCI." (Lazar et al., 2015). For example, the most substantial influence HCI has had on public policy is in web

---

[12] I provide only a few examples for each. For a larger list, please refer to Lazar et al.'s paper.

accessibility standards such as the World Wide Web Consortium (W3C), including the Web Content Accessibility Guidelines (WCAG). HCI researchers have also been a part of government digital agendas to digitize e-government systems. For example, the EU digital agenda appoints 'digital champions' from each country.

Given that HCI's public policy presence is heavily dominated in offering expertise to policymakers, the authors focus on HCI as influencers. However, HCI and policy can be more than an influencer of policies, but a researcher of the policy process. Much like the work in HCI and e-government, the field of HCI and public policy is ripe for investigations into the technology in policymaking. As Centivany and Glushko argue in their paper on policymaking in Reddit, "Finding ways to include technology policy, generative policymaking, and studies of participatory policymaking processes more centrally into our research will improve scholarship and foster responsible and ethical practices at the complex intersections of technology and society" (2016). By emphasizing the *studies of the process*, this additional dimension adds to Lazar et al.'s framework. Rather than narrowing HCI to influencing policy and policy influencing HCI, we should include research which seeks to understand the intersections of technology and government processes that inherently affect public policy. In the Lazar et al.'s framework, the authors provide a brief section which talks about e-government systems which are a part of the policymaking process. However, this content is situated within their discussion of public policy influencing HCI, indicating that the authors are limiting their view of how HCI researchers can evaluate and participate in e-government and policy studies. The authors did not address how HCI can be used to evaluate and influence government systems used for policymaking and to explore how internal technologies within the policymaking process have equally important effects on the process of public policymaking.

Given the relatively small number of researchers in HCI working in this space, there is predictably even less attention to ICT for policymakers. What has been researched focuses on external communication, especially on social media platforms like Twitter (Golbeck et al., 2010; Roback & Hemphill, 2013; Hemphill et al., 2013). Other than these papers, I have not identified papers that study policymakers use of ICT within the HCI community.

9.5 Section Summary

A few years after the presentation of Lazar et al.'s and Jackson et al.'s policy emphasis, their grander claims calling attention to the influence of HCI and public policy no longer seem so grand. Stories of voting manipulation, election hacking, and social media's political influence inundate the news. In 2009 during the early investigations of Congressional use of Twitter, Golbeck et al. postulated "*The intimacy of Twitter may provide a solution for citizens to feel more personally connected with their representative.*" (Golbeck et al., 2010, p. 1969) This quote does not appear to match discussion in the current political climate. For example, the current President is battling a legal dispute that questions the constitutional right of Presidents to ban citizens from their Twitter page. Studies a few years prior did not foresee ICT's ramifications for extremely recent government practices. The present echoes the principle ideas of *Whig History* (Butterfield, 1931), in which the massive implications for the influence of technology on policymaking now seem inevitable.

We are living in a crucial moment, which requires deep reflection and critical observation about how technology and policy interactions are, and continuing to, affect society. The timing has predictably inspired more attention to technologies influence on democracy and governments. In that last few years, the number of workshops and panels at HCI conferences have grown to discuss the implications of recent presidential influence on policy that affects the community. The field is becoming more active in policy and activism efforts (Hecht et al., 2017; Kaye et al., 2017; McDonald et al., 2017).

As we see in this section, this field of HCI and policy has not clearly defined. Action in policy is detached from research in policy. While this area grows, there should be more effort made to organize the field and define itself. HCI and policy can and should be a field of study beyond direct policy change. The field should explore both the decision-making process and outcomes of decisions within governing institutions.

10. Conclusion

I return to the questions establish at the beginning of this literature review to summarize what I have written:

1. What are potential political values reflected in the design and use of ICT in Congress?

2. What potential theories of legislator action and decision-making are reflected in the way a representative decides to use technology?

3. What are the historical details of digital constituent communication in Congress?

4. What are the theories of digital democracy?

5. What is the literature on digital democracy, public policy, and HCI?

I first discussed what political values might be reflected in technology by outlining the different forms of representation and how each form embodies different political values of policymakers (1). I then outlined the decision-making process of policymakers and their use of citizen information, to help determine if, when, and what kind of information policymakers will use from citizens. This affects how policymakers use ICT to capture certain information from citizens (2). Third, I outlined specific details from the constituent communication process in Congress, highlighting how the digital systems mediate the constituent communication process. I did this by providing a historical outline of email and exploring two primary papers that have research the internal constituent communication process in Congress (3). I then outlined theories of digital democracy to explain how the digital mediation of constituent communication in Congress relates to broader claims of the democratizing nature of technology (4). I then discussed the work in HCI, e-government, and policy to outline if and when the field has been involved in this realm of research, and what opportunities exist for future research (5).

Given the breadth of literature described in this review, what are the main takeaways for me as I further my studies?

My work is inherently situated within the cultural and historical practices of a deeply political policymaking institution. Congress has been studied, critique, and evaluated privately and publicly since its creation. To understand a technology system within Congress, I had to understand the pre-existing literature on Congress. My critical review of theories of representation and democracy provided a deeper understanding of how ICTs are used and how they are embedded in broader theories within political science. I learned to pay careful attention to if and when Members may choose to use constituent communication technologies. I also learned to critique these systems for their ability to promote democratic principles to support the overall function of the institution.

My review also presented some tensions in need of consideration in my work. Framing Members

and their offices as individual actors and entities can conflict with frames that view Congress as an organization. Members may wish to act differently and follow their own form of representation, but they are constrained by the cultural practices and resources of the institution. This constraint is especially so for technology which is limited to but a few options for constituent communication. I am questioning whether I should study congressional offices as individual offices or part of a larger organization. Optimally, the answer is both, but practically I am unsure of the answer yet. I am currently in the process of analyzing a large survey from Congress in which we are trying to identify if congressional attitudes towards technology are universal or diverse across offices. So far we see indicators for both, but their attitudes are predominantly the same. So, it may be that ICT creates universal practices and perceptions in Congress rather than different uses in each office.

My exploration of theories of digital democracy provided much information on if and when technology can support ideas of democracy. It is clear that Congress's current communication system does little to promote many of the characteristics of deliberative democracy or citizen engagement, but the implications for such limiting engagement may not be bad. Over the past few years, Congress has been overwhelmed with constituent contact that has done little to establish trust in citizen's ability to provide substantial input into complex policymaking. An overly political and hyper-personalized media has limited citizens ability to reflect deeply on a diversity of opinions and issues. However, Congress is also at fault for not providing more resources and better spaces for citizens to engage, apart from the media landscape. Efforts will have to be made on multiple ends to establish more deliberative forms of engagement where citizens are well-informed and able to participate in an impactful way.

Lastly, there are many opportunities to explore technology and its implications for policy systems. I have found a large body of research that tangentially relates to the work that I am doing, but there has yet to be a full connection between the bodies of research. I believe the field of HCI is naturally transitioning to a state where political and policy-related issues are coming to the forefront of research. It will be up to the field to provide a better understanding of how to continue this engagement.

References:

Abernathy, C. E. (2015). Legislative Correspondence Management Practices: Congressional Offices and the Treatment of Constituent Opinion (Doctoral dissertation, Vanderbilt University). Retrieved from https://www.vanderbilt.edu/csdi/AbernathyDissertation_Formatted.pdf

Achen, C. (1978). Measuring Representation. *American Journal of Political Science, 22*(3), 475-510. doi:10.2307/2110458

Amukugo K. & Peters A. (2016). Citizen-Centric E-Government Services in Namibia: Myth or Reality?. *In Proceedings of the First African Conference on Human Computer Interaction* (*AfriCHI'16*), Awori K. and Bidwell N. J. (Eds.). ACM, New York, NY, USA, 193-197. doi: https://doi.org/10.1145/2998581.2998610

Arnold, R. (1990). *The Logic of Congressional Action*. Yale University Press.

Åström, J., & Grönlund, Å. (2012). Online consultations in local government: What works, when, and why In S. Coleman & P. M. Shane, P (Ed.). *Connecting democracy: Online consultation and the flow of political communication*, 75. MIT Press.

Åström J., Jonsson M.E., & Karlsson M. (2016) Democratic Innovations: Reinforcing or Changing Perceptions of Trust?, *International Journal of Public Administration*, 40:7, 575-587, DOI: 10.1080/01900692.2016.1162801

Bannister, F. and Connolly, R. (2011), The Trouble with Transparency: A Critical Review of Openness in e-Government. *Policy & Internet*, 3: 1-30. doi:10.2202/1944-2866.1076

Becker, T. (2001). Rating the impact of new technologies on democracy. *Communications of the ACM*, 44(1), 39-39.

Bennett L. W. & Segerberg A. (2012) The Logic of Connective Action, *Information, Communication & Society*, 15:5, 739 768, doi: 10.1080/1369118X.2012.670661

Bianco, W. T. (1994). *Trust: Representatives and constituents*. University of Michigan Press.

Bimber, B. A. (1996). The politics of expertise in Congress: The rise and fall of the Office of Technology Assessment. SUNY Press.

Bimber, B. (1999). The Internet and citizen communication with government: Does the medium matter?. *Political communication*, 16(4), 409-428.

Bimber, B. (2003). Information and American democracy: Technology in the evolution of political power. Cambridge University Press.

Broockman, D. E., & Skovron, C. (2013). What politicians believe about their constituents: Asymmetric misperceptions and prospects for constituency control. University of California,

Berkeley. Retrieved from
https://www.vanderbilt.edu/csdi/millerstokes/08_MillerStokes_BroockmanSkovron.pdf

Burstein, P. (2003). The impact of public opinion on public policy: A review and an agenda. Political research quarterly, 56(1), 29-40. doi: 10.1177/106591290305600103

Butler, D. M., & Nickerson, D. W. (2011). Can learning constituency opinion affect how legislators vote? Results from a field experiment. Quarterly Journal of Political Science, 6(1), 55-83. doi: 10.1561/100.00011019

Butler, D. M., Karpowitz, C. F., & Pope, J. C. (2012). A field experiment on legislators' home styles: Service versus policy. The Journal of Politics, 74(2), 474-486. doi:10.1017/S0022381611001708

Butterfield, H. (1931). *The Whig interpretation of history*. London: Bell.

Centivany A. & Glushko B. (2016). "Popcorn Tastes Good": Participatory Policymaking and Reddit's. *In Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems (CHI '16)*. ACM, New York, NY, USA, 1126-1137. doi: 10.1145/2858036.2858516

Chadwick, A., & May, C. (2003). Interaction between States and Citizens in the Age of the Internet:"e-Government" in the United States, Britain, and the European Union. Governance, 16(2), 271-300. doi:10.1111/1468-0491.00216

Chadwick, A. (2006). *Internet Politics: States, Citizens, and New Communication Technologies.* New York: Oxford Unviersity Press.

Chadwick A. (2011). Web 2.0: New challenges for the study of e-democracy in an era of informational exuberance In S. Coleman & P. M. Shane, P (Ed.). *Connecting democracy: Online consultation and the flow of political communication*. 45-74. MIT Press.

Coleman, S., & Shane, P. M. (2011). Connecting democracy: Online consultation and the flow of political communication. MIT Press.

Congressional Management Foundation. (2011) "Communicating with Congress: How Citizen Advocacy Is Changing Mail Operations on Capitol Hill". CMF Report.

Bonina, C. M., & Cordella, A. (2009). Public sector reforms and the notion of 'public value': implications for e-government deployment. In *15th Americas Conference on Information Systems*, 6 - 9 August 2009, San Francisco CA, USA. Unpublished.

Cluverius, J. (2015). Grassroots lobbying and the economics of political information in the digital age (Doctoral dissertation, The University of North Carolina at Chapel Hill). Retrieved from: https://search.proquest.com/docview/1689691286?pq-origsite=gscholar

Coleman, S., & Price, V. (2012). Democracy, distance, and reach: The new media landscape. Connecting democracy In S. Coleman & P. M. Shane, P (Ed.). *Online consultation and the flow of political communication*, 23-43. MIT Press.

Coleman, S. (2017). *Can the Internet Strengthen Democracy?*. John Wiley & Sons.

Conway V. L. (2011). Website accessibility in Australia and the Australian Government's National Transition Strategy. *In Proceedings of the International Cross-Disciplinary Conference on Web Accessibility (W4A '11)*. ACM, New York, NY, USA, 15-2. doi:10.1145/1969289.1969310

Emerson, K., Nabatchi, T., & Balogh, S. (2012). An integrative framework for collaborative governance. Journal of public administration research and theory, 22(1), 1-29. doi:10.1093/jopart/mur011

Esaiasson, P., Gilljam, M., & Persson, M. (2017). Responsiveness beyond policy satisfaction: Does it matter to citizens?. Comparative Political Studies, 50(6), 739-765. doi:10.1177/0010414015626445

Neblo M., Esterling K., & Lazer D. (2018). *Politics with the People Building a Directly Representative Democracy.* Manuscript submitted for publication.

Fenno, R.F., Jr. (1978). *Home Style*. Boston: Little, Br.

Fitch, B., & Goldschmidt K. (2005). "Communicating with Congress: How Capitol Hill is Coping with the Surge in Citizen Advocacy". *Congressional Management Foundation*. CMF Report.

Fung, A. (2006), Varieties of Participation in Complex Governance. Public Administration Review, 66: 66-75. doi:10.1111/j.1540-6210.2006.00667.x

Golbeck, J., Grimes, J. M. and Rogers, A. (2010), Twitter use by the U.S. Congress. *Journal of the Association for Information Science and Technology,* 61(8), 1612-1621. doi:10.1002/asi.21344

Williams, C. B., & Gulati, G. J. J. (2013). Social networks in political campaigns: Facebook and the congressional elections of 2006 and 2008. New Media & Society, 15(1), 52-71. doi: 10.1177/1461444812457332

Gutmann, A., & Thompson, D. (2009). *Why deliberative democracy?*. Princeton University Press.

Habermas, J., Lennox, S., & Lennox, F. (1974). The public sphere: An encyclopedia article (1964). New German Critique, (3), 49-55.

Hecht B., Terveen L., Starbird K., Shneiderman B., & Golbeck J. (2017). The 2016 US Election and HCI: Towards a Research Agenda. *In Proceedings of the 2017 CHI Conference Extended Abstracts on Human Factors in Computing Systems (CHI EA '17).* ACM, New York, NY, USA, 1307-1311. doi: 10.1145/3027063.3051140

Hemphill L., Otterbacher J., and Shapiro M. (2013). What's congress doing on twitter?. *In Proceedings of the 2013 conference on Computer supported cooperative work (CSCW '13).* ACM, New York, NY, USA, 877-886. doi: 10.1145/2441776.2441876

Hibbing, J. R., & Theiss-Morse, E. (2002). *Stealth democracy: Americans' beliefs about how government should work.* Cambridge University Press.

Hindman, M. (2008). The myth of digital democracy. Princeton University Press.

Hysom, T. (2008) Communicating with Congress: Recommendations for Improving the Democratic Dialogue. *Congressional Management Foundation.* CMF Report.

Jackson, S. J., Gillespie, T., & Payette, S. (2014). The policy knot: Re-integrating policy, practice and design in CSCW studies of social computing. *In Proceedings of the 17th ACM conference on Computer supported cooperative work & social computing.* ACM, New York, NY, USA, 588-602. doi: https://doi.org/10.1145/2531602.2531674

Jefferson T. (1820). Thomas Jefferson to William Charles Jarvis. -09-28. [Manuscript/Mixed Material] Retrieved from the Library of Congress, https://www.loc.gov/item/mtjbib023901/.

Kaye J., Fiesler C., Kumar N., & Semaan B. (2017). Policy Impacts on the HCI Research Community. *In Proceedings of the 2017 CHI Conference Extended Abstracts on Human Factors in Computing Systems (CHI EA '17).* ACM, New York, NY, USA, 1300-1302. doi:10.1145/3027063.3051706

Jenkins, W. I. (1978). *Policy analysis: A political and organisational perspective.* London: M. Robertson.

Johnson J. & Lazar J. (2010). E-government: services for everyone, everywhere, eventually. *In CHI '10 Extended Abstracts on Human Factors in Computing Systems (CHI EA '10).* ACM, New York, NY, USA, 3139-3142. doi:10.1145/1753846.1753936

Karpf, D. (2010), Online Political Mobilization from the Advocacy Group's Perspective: Looking Beyond Clicktivism. Policy & Internet, 2: 7-41. doi:10.2202/1944-2866.1098

Keane, J. (2009). Monitory democracy and media-saturated societies. Griffith Review, (24), 47.

Lazar, J., Abascal, J., Barbosa, S., Barksdale, J., Friedman, B., Grossklags, J., ... & Michalk, W. (2016). Human–computer interaction and international public policymaking: a framework for

understanding and taking future actions. Foundations and Trends® in Human–Computer Interaction, 9(2), 69-149.

Le Dantec, C. A., & Edwards, W. K. (2010). Across boundaries of influence and accountability: The multiple scales of public sector information systems. *In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (*CHI '10*). ACM. New York, NY, USA. 113-122. doi: 10.1145/1753326.1753345

Somin I. (1999). Resolving the Democratic Dilemma? *Yale Journal on Regulation* 16: 401-16.

Lupia, A., & McCubbins, M. D. (1998). *The democratic dilemma: Can citizens learn what they need to know?*. Cambridge University Press.

Mair, P. (2006). Ruling the void: The hollowing of western democracy. *New Left Review*, 42, 25-51.

Mansbridge, J. (2003). Rethinking representation. *American political science review*, 97(4), 515-528.

Mansbridge, J (2017) Recursive Representation in the Representative System. *HKS Working Paper No. RWP17-045*. Retrieved From https://ssrn.com/abstract=3049294 or http://dx.doi.org/10.2139/ssrn.3049294

Mayhew, D. R. (1974). *Congress: The electoral connection*. Yale University Press.

McDonald, S., Nardi, B., & Tomlinson, B. (2017). Political Realities of Digital Communication: The Limits of Value from Digital Messages to Members of the US Congress. In *Proceedings of the 2017 Workshop on Computing Within Limits* ACM, New York, NY, USA, 129-138. doi:10.1145/3080556.3080565

Million A. J., Bishop B. W., & Goggins S. P. (2016). An exploration of "localness" on twitter during the 2012 U.S. elections. *In Proceedings of the 79th ASIS&T Annual Meeting: Creating Knowledge, Enhancing Lives through Information & Technology (ASIST '16)*. American Society for Information Science, Silver Springs, MD, USA, 85-4.

Munson S., Lee S., & Resnick P., (2013) Encouraging Reading of Diverse Political Viewpoints

with a Browser Widget. *In Proceedings of the Seventh International AAAI Conference on Weblogs and Social Media.* AAAI Publications. Retrieved From: https://www.aaai.org/ocs/index.php/ICWSM/ICWSM13/paper/viewFile/6119/6381

Nardi, B. A., & O'Day, V. (1999). *Information ecologies: Using technology with heart*. MIT Press.

Nathan, L. P., & Friedman, B. (2010). Interacting with policy in a political world: Reflections from the voices from the Rwanda Tribunal project. *Interactions*, 17(5), 56-59. doi:10.1145/1836216.1836231

Noveck, B. S. (2015). *Smart citizens, smarter state: The technologies of expertise and the future of governing.* Harvard University Press.

The Open Gov Foundation. *From Voicemail to Votes: human-centered investigation by The OpenGov Foundation into the systems, tools, constraints, and people who drive constituent engagement in Congress.* (2018). Retrieved from: https://v2v.opengovfoundation.org/

Owen, D., Davis, R., & Strickler, V. J. (1999). Congress and the Internet. *Harvard International Journal of Press/Politics*, 4(2), 10-29. doi:10.1177/1081180X99004002003

Pitkin, H. F. (1967). *The concept of representation*. University of California Press.

Roback A., Hemphill L., (2013). "*I'd have to vote against you": Issue Campaigning Via Twitter. In Proceedings of the 2013 Conference on Computer Supported Cooperative Work* (CSCW '13). ACM, New York, NY, USA, 259-262. doi:10.1145/2441955.2442016

Rogers, Y. (2012). *HCI theory: classical, modern, and contemporary*. Synthesis Lectures on Human-Centered Informatics, 5(2), 1-129.

Schulte, S. R. (2018). United States Digital Service: How "Obama's Startup" Harnesses Disruption and Productive Failure to Reboot Government. International Journal of Communication, 12, 21.

Semaan B. C., Robertson S. P., Douglas S., and Maruyama M., (2014). Social media supporting political deliberation across multiple public spheres: towards depolarization. *In Proceedings of the 17th ACM conference on Computer supported cooperative work & social computing (CSCW '14)*. ACM, New York, NY, USA, 1409-1421. doi:10.1145/2531602.2531605

Schudson, M. (1998). *The good citizen: A history of American civic life*. Free Press.

Schacter, J. S. (2009). Digitally Democratizing Congress-Technology and Political Accountability. BUL Rev., 89, 641.

Star, S. L., & Ruhleder, K. (1994). Steps towards an ecology of infrastructure: complex problems in design and access for large-scale collaborative systems. *In Proceedings of the 1994 ACM conference on Computer supported cooperative work (CSCW '94)* ACM, New York, NY, USA, 253-264. doi:10.1145/192844.193021

Straus J. R. & Glassman M. E. (2016). *Social Media in Congress: The Impact of Electronic Media on Member Communications* (CRS Report No. R44509). Retrieved From Congressional Research Service.

Sustein, C. (2009). *Republic. com 2.0.* Nova Jersey: Princeton University Press.

Thomas, V., Remy, C., Hazas, M., & Bates, O. (2017). HCI and environmental public policy: Opportunities for engagement. *In Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems (CHI '17)*. ACM, New York, NY, USA, 6986-6992. doi:10.1145/3025453.3025579

Tufekci, Z. (2017). *Twitter and tear gas: The power and fragility of networked protest*. Yale University Press.

Voida A., Dombrowski L., Hayes G. R., & Mazmanian M. (2014). Shared values/conflicting logics: working around e-government systems. *In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (CHI '14)*. ACM, New York, NY, USA, 3583-3592. doi:10.1145/2556288.2556971

Wedeen, L. (2010). Reflections on ethnographic work in political science. *Annual Review of Political Science*, 13, 255-272. doi: 10.1146/11.052706.123951

Wedeen, L. (2002). Conceptualizing Culture: Possibilities for Political Science. *American Political Science Review*, 96(4), 713-728. doi:10.1017/S0003055402000400

Zuckerman, E. (2014), New Media, New Civics?. *Policy & Internet*, 6: 151-168. doi:10.1002/1944-2866.POI360