

Information Materialities of Citizen Communication in the U.S. Congress

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In this paper, we use a lens of materiality to explore how information and communication technologies condition interaction between citizens and policymakers of the U.S. Congress. We work with ethnographic data - six months of observation in Congressional offices in Washington D.C. and 48 interviews with staff in the House of Representatives. Customer relation management systems (CRMs) used by Congress are one of numerous information and communication technologies that are expected to enhance responsive communication between citizens and representatives. We find, instead, that these technologies promote the datafication of citizen information that configures and constrains how policymakers engage citizens as legitimate actors within the policymaking process. Communication technologies not only mediate communication between citizens and policymakers, they shape the idea of what communication between citizens and policymakers can be and how citizens are viewed in the eyes of policymakers and their staff. Thus, we extend understanding of the ways in which material configurations of communication technologies influence not only how communication acts unfolds, but also how each partner conceives of and engages with the other. This has dramatic implications for the possibilities of digital communication channels to enhance, or uphold, the ideals of a representative democracy.

CCS Concepts: • **Social and professional topics** → *Governmental regulations*.

Additional Key Words and Phrases: Materialities, Civic Communication, Representation, Policy, HCI, Congress, Government

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1 INTRODUCTION

There has been an increase of attention in the field of CSCW, and HCI more broadly, in regards to the relationships between technology, policy, and democracy. This stream of scholarship recognizes that communication is a central component to democracy, and information and communication technologies (ICTs) are changing practices of civic engagement and governance [5, 49]. Such growth is clearly demonstrated at the most recent CSCW conference where three different paper sessions centered around exploring civic engagement, social movements, and citizen science [1]. The field has become increasingly interested in understanding how technology affects civic life and governance through different means of communication.

Despite this growth, however, minimal attention has been directed towards understanding the role of technology in the daily operations of government offices, particularly those of elected representatives. It is important to understand how ICTs might be changing the nature of communication

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that plays into the relationship between citizen input and policymaker action. This communication is central to the idea that, in order to sustain itself, a representative democracy must foster engaged communication between citizens and those that represent them in governing bodies. Scholars speculate that the nature of representative communication is changing due to the emergence of communication technologies that provide increasing opportunities for citizen-policymaker engagement [9, 19, 38]. Thus, it behooves us to empirically understand technologies that are already central to the communication practices of elected representatives.

The scholarly community of CSCW emerged from a desire to understand how communication technologies affects the nature of communication and information exchange between collaborating individuals [22]. If we recognize that the acts of communication which are central to representative democracy are conditioned by technologies, the stakes of this analysis become clear. In essence, the everyday instantiations of democracy are played out through technologies that mediate the relationships between citizens and their policymakers.

Based on ethnographic fieldwork of the U.S. Congress, we leverage a material lens to explore how the material configurations of communication technologies used by Members of Congress (or Members) and their staff shape engagement with citizens. Building on recent work around information materialities, and the consequential ways in which information is represented in communication platforms [12, 13], we interrogate customer relation management systems (CRMs or 'citizen engagement platforms'). These systems are the primary mediators of all communication between Members of Congress, their staff, and citizens. We investigate these systems as material artifacts that shape, constrain, and enable certain communication practices and representations of citizens in the eyes of policymakers.

We find CRMs promote an anaemic form of engagement between citizens and their representatives. Citizens are reduced to predefined data points to satisfy the informational needs of the CRM. Rather than promoting the engaged communication called for in scholarship on representative democracy, the use of CRMs (within the institutional context of Congressional offices) enables a superficial tracking of citizen input. The ways in which CRMs log and manage information about citizen communication creates discursive expectations that prioritize data-collection over substantive engagement. In so doing, the citizen is rendered into a data point that can be quantified by the offices of Members to obtain the general sentiment of the district. This data is used to measure overall performance of the Member's office, with little influence to Member's policy decisions. CRMs also promote customer-oriented engagement in which staff prioritize assuaging citizens' concerns over seriously considering their input. Taking a material lens on the role of CRMs reveals how particular communication systems participate in reshaping citizens into customers and data points. Therefore, CRMs limit the possibility for citizens to be recognized as legitimate actors within the policymaking process.

2 BACKGROUND AND RELATED WORK

Research at the intersection of technology, policy, and democracy is growing in HCI. Scholars have developed platforms for civic engagement and public deliberation [32], tested systems to encourage involvement in citizen-science [7, 30, 44, 45, 52], and fostered participatory design and decision-making opportunities in local communities [41, 42, 54]. Observations of governmental service workers and service users have been used to explore relationships between bureaucratic organizations and citizens, and to develop frameworks for values and conflicts within e-government [10, 11, 23, 50]. Studies of social movements explore the effects of digital technologies on protest and boycotts [3, 35]. Lastly, broader conversations within the community encourage the field to take part in real policymaking [27, 34, 48] and studying the effects of policy on the field's research [24, 26, 29].

Despite this growth, minimal attention has been directed toward policymakers. Only a handful of studies in HCI have looked to policymakers (e.g., [6, 20, 31, 36]) and nearly all of this work has taken place outside HCI in fields such as political science and e-government. Across disciplines there is a notable lack of attention to how policymakers and their staff engage with digital technology in the course of everyday work. Even in political science research on Congress, scholars have noted how little we know about the everyday practices of policymakers and their communication processes with citizens [2].

Communication between citizens and policymakers is a fundamental component of democratic representation [43]. It is vital for policymakers to engage with the needs and desires of the public in order to create policy that is responsive to their concerns. Citizen-centric theories of representation assume that communication between citizens and representatives is critical to a policymaking process that represents the needs of the populous [38].

Ideally, the array of emerging communication technologies that have taken off in recent decades should provide opportunities for citizens to collaboratively engage with policymakers in policy creation and decision-making. Within the congressional research community, there is a growing belief that this rise in communication channels will offer increasingly inexpensive and unmediated pathways for citizens to communicate policy preferences and express support or grievances with Members [14]. In return, direct access to citizen information and preferences is thought to provide more accountability and responsiveness to representatives [33, 47]. This narrative supports the promise that communication technologies can transform democratic representation by giving power to voices of citizens.

That said, empirical evidence challenges this narrative. Members use social media platforms for self-promotion and stating policy positions [19, 20, 37, 37]. There is evidence that citizen contact is primarily used to formulate proforma response messages and public media for the Members. And there is no clear indication that citizen input mediated through digital platforms is considered in policymaking decisions [2, 16]. However, no study has interrogated the material configurations of these technologies which play a role in mediating communication between citizens and policymakers. This paper asks how the communication technologies used by Members and their staff actually affect the ways in which Members relate to citizens in the policymaking process.

2.1 ICT in Congress

Our work centers on the U.S. Congress, the legislative arm of the federal government of the United States. Congress is a collection of 535 democratically elected representatives of different states and districts. Members provide a number of communication channels for their citizens to contact their offices including meetings, town halls, letters, phone calls, email, fax, and social media. In turn, citizens reach out to their Members in an attempt to influence their policy decisions, seek assistance with government issues, and express their personal opinions.

With the rise of digital communication channels, citizen communication to Members' offices has reportedly increased 200-1000% over the past decade [21], with anecdotal evidence saying those numbers are even larger over the past few years. Thus, the breadth of digital communication between citizens and Members' offices continues to grow. CRMs, which are the focus of this analysis, emerged out this growing use of digital communication by citizens. In 1911, nearly all citizens contacted their Members through in-person meetings, postal mail, and telephone [40]. In 1993, Congress experimented with email, and by 1995, publicly available emails were provided to each Member [25]. This new mode of communication changed the means by which Members' offices communicated with citizens. 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 [25].

In the mid- 2000s, a new industry of technology vendors emerged to help coordinate these digital advocacy campaigns that inundated the Member's emails and websites. Congress responded by deploying new technology systems such as captcha, IP blocking, and CRMs. Thus, CRMs emerged out of a need to manage an influx of information and communication with citizens. Today, as communication by citizens to Members continue to increase, CRMs remain the primary medium for all communication that comes into the offices of Members.

2.1.1 Customer Relations Management Software. CRMs are used to manage constituent communication. Accessed through an internet browser, CRMs are a platform that function as both a channel for communicating with citizens and a database to log, track, and categorize incoming contact. When a person calls a Member's office, attends a meeting with a Member, sends an email, postal mail, fax, or social media post, that information can be logged into the CRM. The CRM also allows Members to respond to citizens through the system via email or printed letters. CRM vendors are approved separately in the House and Senate Chambers of Congress. In the House, the Chief Administration Officer (CAO), Office of Acquisition approves all software procurement. In the Senate, it is the Office of Senate Sergeant at Arms [51]. Currently there are two vendors in the House that control more than 70% of all CRM use by Members.

Processing citizen contact is done by the Members' communication staff who are expected to answer, listen, respond, and organize all incoming citizen contact. Members staff use CRMs to collect, store, analyze, and share citizen information with the rest of their staff. Staff can also use CRMs to send reply letters to citizens, develop communications reports, deploy surveys to gain feedback from citizens, and maintain a record of citizen information.

2.2 Materialities of Information

Using a lens of materialities to interrogate how CRMs affect citizen-policymaker communication allows us to take into account the ways in which the systems layout, design, and use play an agentic role in configuring the relationship between Member and citizen. The lens encourages us to examine how the properties of digital systems constrain and condition the forms of social action taken around. This occurs without losing site of the fact that ICTs are brought into being and become meaningful only in the context of everyday work. An exploration of digital materiality recognizes that there are material components of any digital system that make themselves known through interaction with that system. However, it also recognizes a recursive relationship between material conditions and social arrangements, highlighting constitutive entanglement between work practice, organizational form, and technological systems [39].

From this perspective, citizen-policymaker communication mediated via a CRM can be understood as digital information shaped by the materialities of the system. These information materialities are the "properties of representation and formats that constrain, enable, limit, and shape the ways in which those representations can be created, transmitted, stored, manipulated, and put [13:6]. In this analysis we identify how the design and representational properties of CRMs shape not only what information is captured during communication episodes between citizens and Member offices, but also how the information is categorized, understood, and put into practice by Members and their staff. This frame recognizes that CRMs not only collect, log, and store communication, they shape the idea of what communication between citizens and policymakers can and should be.

In this analysis we draw on two concepts in particular: the materialities of information representation and the material conditions of information technology production [13]. Materialities of information representation call attention to how material forms of information are represented as digital data. We show how the material forms of the CRMs and their representational strategies

affect how citizen information is captured and used by Members. Secondly, we identify the material conditions of information technology production. We discuss the customer-driven design of CRMs and the labor infrastructures that surround the information production through which CRMs are made to work. Staff labor and institutional expectations around citizen-Member communication are part of the maintaining infrastructure that enable CRMs to function in particular ways. These material insights emerged through our interviews and observations of staff communication practices vis-à-vis CRMs.

3 METHODOLOGY

Our investigation of CRMs is based on ethnographic fieldwork in the U.S. Congress House of Representatives. The first author performed this fieldwork in Washington D.C. during two three-month intervals in the summers of 2017 and 2018 and intermittent engagement with Congress over the course of a year. To establish rapport and create connections in Congress, she worked for a congressional non-profit that works directly with Members and their staff. In this role she observed, interacted and interviewed staff; performed data analysis for different Members; and took part in meetings with staff. She also observed presentations on CRMs; met with CRM developers; attended multiple congressional technology conferences; and collected artifacts and materials describing congressional use and procurement of CRMs.

Our research was primarily focused on Members' staff. Staff are tasked with listening to citizens, logging citizen input, and creating aggregate measures of citizen concerns. They are the primary users of the CRMs, with Members rarely engaging in the process of managing citizen communication. Staff are also essential influencers to the Member's views and policy decisions.

Our interviews with staff were conducted in three stages. The first stage of interviews used a convenience sample of 13 staff and interns close to the non-profit where the lead researcher worked. Interns were included because they are often the front lines of all incoming communication to the Member's office. They work with Legislative Correspondents (LCs) staff, the primary correspondence staffers, to manage all contact. During the academic year, we recruited four interns through self-selection from a university-run program to send college students to D.C. Once the lead researcher returned to D.C. the following summer, she conducted thirty interviews with staff and interns. We also include a publicly recorded interview with current and previous staff discussing citizen communication at a public media festival. The final data set includes nine interns, twenty-seven legislative correspondents/staff aides (LCs/SAs), four Legislative Assistants (LAs), five Chiefs of Staff and Deputy Chiefs of Staff, and two Communications Directors (CDs). The data set provides an emphasize on correspondence staff (LC and interns) while accounting for other staff perspectives within the Members' offices.

Due to security concerns and sensitive citizen data, many staffers did not feel comfortable being observed while using CRMs. They were, however, willing to describe the system and their processes in detail. In order to gain a robust account of the CRM design, we contacted two CRM vendors that distributed more than 70% of all CRMs used by the House of Representatives. One of the CRM vendors provided a full demo of the software. Both vendors offered detailed information about their systems and their experiences with staff that use them.

The data were analyzed iteratively over the course of a year using qualitative coding [46]. In the first full round of data analysis, we focused on open-coding salient discussions about the technology and its relationship to their correspondence process. In the second round of data analysis, we focused on drawing out themes related to these connections between the CRMs and correspondence practices, highlighting connections between how information is captured and stored and how it is processed. Subsequent rounds of analysis helped organize themes into

corresponding ideas around the materialities of information representation and material conditions of ICT production.

4 FINDINGS

We locate our findings in the context of three moments during Member-citizen communication where the materiality of the CRMs and its relation to representation of citizen information come into relief. These moments are during the input of citizen information, the transformation of that information into data for analysis, and the production of written responses to citizens. We begin to see how the CRMs shapes the discursive expectations of how staff communicate with citizens, how citizen input should be understood, and staffs' accepted response to citizen contact.

4.1 Inputting Citizen Information

We begin by identifying the relationship between the forms of input expected by CRMs and the main concerns of staff while interacting with citizens. During interviews, staff describe how the CRMs inform the information collected from citizens. Staff are focused on eliciting three primary pieces of information from every citizen who contacts their Member's office: name, address, and reason for contact. A name is required for identification of the citizen and to create a profile in the database. Home address is used for authentication purposes. Staffers are expected to clarify whether citizens are part of the Member's constituency before logging additional information about the contact,

P21: "If you don't put your address and your email address, we can't identify you...that's zero. It's not worth anything because unless it goes in [the CRM] it doesn't get counted...It does not count because we don't know who these people are and we don't know if they're from Kansas or they're from California and we [only] listen to the people that elected our Member of Congress..."

P10: "We got their information in, and if [citizens] were like 'Oh I'm from [out of state]', whatever notes we'd take, we'd just scrap them and say 'Thank you for calling, I'll try to get the message to the Congressmen' and hang up and not do anything else..."

The third piece of information collected is the reason for the contact. The staffer is expected to document, with minimal elaboration, the reason for contact. Reasons given by citizens might include the desire to discuss casework, announce position on a bill, speak on behalf of an advocacy campaign, or complain about an event or policy.

The focus on gathering name, home address, and reason for contact is directly linked to the CRM design. The information prioritized by staff are also, not surprisingly, the field requirements for the CRMs database record. Although the system does provide an open field for notes, our data suggest that staffers are not populating this field with substantive information. In sum, staffers are neither seeking or logging information that does not satisfy the three principal fields. One could postulate that other information such as the citizen's professional or civic associations and experiences could provide evidence of expertise and knowledge about a topic. However, this sort of information is not asked for by the system and thus not seen as necessary by staffers.

Staff collect name, address, and reason for contact from citizens as quickly and efficiently as possible. Efficiency is necessary to keep up with the constant flow of contact coming from citizens, especially during high salience issues. Staffers report receiving 1,000 campaign letters a week, 400 faxes a day, and 200 phone calls a day during 'hot topic' issues like healthcare or gun control policy. Staffers are deterred from collecting more information or having lengthy discussions with citizens because such conversations take time and distract them from completing the citizen's contact record in the CRM.

The rigidity of collecting only the pieces of information deemed necessary by the system becomes clear when staff describe the process of communicating with citizens. Staff dichotomize citizens into those who "know the drill" and those who don't. And, not surprisingly, they appreciate interacting with people who understand what they need to log during the call.

P8: "Yeah most people know the drill. Most people are very straight forward. And they say exactly what they want to say and then they go."

P2: "There are two categories of constituents: People who call a lot. They know the drill, they know to give their name, address, and what they are calling about. They keep it pretty straightforward. People who call for the first time who really want to talk a lot. Sometimes I have to get the name/ address out of them mid- conversation."

Given the information requirements of the CRMs, conversations between staff and citizens center around the information needs of the system. By asking the citizen to state their name and address mid-conversation, the staffer is demonstrating how CRMs creates discursive expectations, moulding conversations between citizens and policymakers into a procedural task of data input. CRMs reconfigure the ways in which staffers think they should treat citizens while communicating with them. The value of those conversations for the Member is constrained by informational needs of the technology.

Normative conceptions of democratic deliberation assume that citizens should provide reasons for their opinions in order to persuade policymakers to take certain action. Further, policymakers should take citizen reasoning into account when making decisions. Given these ideals, one might imagine that the third piece of information prioritized by staff - the reason for the call- would be the most critical field. This field could be used to create a record of reasons given by citizens to persuade their Member to take certain action. However, we find that this is not the case. Rather, the reason for the contact is more pertinent to the staffer than the logics, expertise, or opinions underlying that reason. In the language of staffers:

P2: "The most effective communication is clear and concise... I don't need to hear why [a person cares about an issue]."

P26: "...seeing what's on people's mind is more valuable than the content [of citizen opinion]."

P10: "Because we always had to do a brief summary of whatever the content was, usually it was just pro/con this bill or this thing. So, you know there is 'Bill X' coming. Read [the letter] and be like, 'Pro Bill X' comma [sic], and brief description like 'pro-gun control'. We would just give a super brief message. Especially if it's something that we're getting a lot of mail about."

Staff are only documenting the coarsest of information about why a citizen is calling (e.g., which issue, pro/con). They are not interested in collecting information as to why the citizen cares about an issue or whether they are well informed.

4.1.1 Batching. The categorizing function of CRMs also encourage a surface understanding of the impetus underlying citizen contact. Information on the reason for the call is used for a process within the CRM referred to by staff as "batching". Batching is the process of organizing each profile in the data base is given one subject heading, or batch label, that is expected to summarize the reason for contact. Using this information, staffers can organize contact from citizens into different buckets of information, allowing them to associate different types of citizen contact with different labels. Batching can be automated by the CRM, but staff do not trust the automatic categorization function of the system.

The selection of batching labels varies greatly for each Member's office and what information each office wishes to identify. Sometimes staffers create detailed categories or "batches" for every bill, creating labels along the lines of, 'Pro Bill H.R.1' or 'Con Bill HR.1.' Other times staffers create general batches for information such as 'Supreme Court Hearings', 'Rants', or 'Contact about the President'. Interestingly, staffers associate the level of detail an office or staffer uses to categorize incoming contact with their overall level of engagement with citizen opinion. For example,

P9: "So I would attend other meetings with other [Members' staff] and I got to learn how they batch. And it ranges. They do large batches because they don't really care."

For this participant, the level of detail placed in batching demonstrated the office's willingness to listen to their constituency. If a Member's office labelled citizen input under broad general categories, then those buckets of information would be too large to capture a salience around a topic. If a Member's office created detailed batches, for example delineating differing opinions about a single bill, then that office appeared to care more about the differences in citizen perspective.

Another wrinkle in the efforts to categorize citizen contact come directly from the design of the CRMs themselves. The system limits the degree to staff are encouraged to listen to multiple topics discussed by citizens. As a singular record input, the CRMs require that each record is assigned only one batch label. Thus, if citizens contact Members about more than one topic staff must create additional records or selectively choose which part of the conversation to document. One staffer emphasized,

P2: "They want their voices to be heard, and it's me entering their info into a database."

4.2 Analyzing Citizen Contact

Once information from citizen contact is logged in the CRM, the citizen and their opinions become quantifiable data points that can be manipulated and aggregated in specific ways. Staff use these records of citizen communication to track general sentiment, create general measures of citizen interest in a topic, and develop and deploy standardized response. We see minimal evidence of citizen input affecting Members' decision making with regards to policy. As discussed earlier, batching requires assigning one label that is expected to summarize the reason for contact record. Such singular batch labels limit how citizen communication can be analyzed, around questions of general frequency as the primary method of analysis. Such aggregate quantification of citizen contact shapes how citizen communication is used in practice- and how citizens are conceived of as part of the democratic process.

Mail reports are one example of how quantified communication is used in practice. Mail reports are produced by correspondence staff to provide visualizations of information about citizen contact to the Member and their policy staff. These reports can be automatically produced by the CRMs, but many staff produce reports by hand in order to craft reports according to specific information needs ¹. Surprisingly, these reports often provide minimal information about the reasons citizens contact their Member. Reports pre-dominantly contain information about the efficiency of the correspondence process- detailing the number of total contacts from citizens about an issue per week and/or the letter-writing rates of staff responding to citizens thanking them for their contact. Staff offered mixed opinions about the value of these reports for influencing policymaking. Some staffers believe the number of contacts for a policy topic that is reported in the mail report creates a threshold for potentially taking responsive actions.

P4: "It's a numbers game...The numbers is [sic] the most influential."

P1: "If there's enough people calling, there will be a red light."

¹Previous research offers substantial empirical descriptions of these mail reports [2]

These staffers indicate that the Member's office will take notice and act if they are receiving "a lot" of contact about a particular issue. However, staff have difficulty articulating what "a lot" is and what type of action that might be. When pushed, responses are vague, noting that the type of action would depend on the issue and capabilities of the Member.

These anaemic reports are often the only information about citizen opinion that the Member and their policy staff will be exposed to, and they provide only the coarsest insight into citizen concerns. For example, 100 callers communicate to staff their reasons and views on a gun policy, the Member will only see the number of calls for and against the policy. Mail reports do not include information such as why the citizen cares about the policy or what actions the citizen believes the Member should take.

The CRMs render citizens into aggregate data, reducing the value of dialogue and reason-giving by citizens to near zero. Staffers are aware of this tension between being heard and being recorded. Knowing what they do about what the process does to citizen input, they are wary about the value of contacting a representative.

P7: "(I) probably wouldn't call my Representative... I would just be another number in the yes column."

P9: "...honestly I was a little surprised. Because (Congress) get so many calls right? It's more like just data collection. I understand data 'speaks for itself', but still I don't know. I just felt like there was something missing."

The numbers collected in and produced by the CRMs might be perceived as meaningful in aggregate, but staffers are aware that current communication processes de-values the expertise, opinions, and sentiment of citizens. This provides a clear example of the ways in which datafied citizen information renders communication into a process that is less about an exchange of ideas than an exercise in tracking. This is the exact term to describe CRMs- a tool for "sentiment tracking." We suggest that tracking is semantically divergent to listening. Tracking enables surveillance at a surface level, while listening enables the identification of reasons and meaning as a form of insight. Staff support this claim in their use of medicalized phrases when discussing the role of citizen sentiment tracking, such as "taking the temperature" or "measuring the pulse" of citizen opinion.

P43: "Every now and again we overlook a bill that a citizen points out but generally it's for taking temperature."

P38: "(We) use it just to get feedback...It's not necessarily used to make a policy decision, just to check the pulse of the constituency. You can answer a phone for a day and pretty much know what citizens think."

This language indicates that staffers operate under a logic of recording a metabolic process of citizen sentiment rather than engaging with citizens. The CRMs offers systemic processes for staffers to quantify citizen contact and opinion. But these systems limit the representational capacities of data collected during communication with citizens, shaping what actions the staff can take to engage citizen data.

In addition, staff tend to minimize the importance of direct citizen contact based on assumptions of how representative such contact may or may not be. Even if the office receives 500 forms of communication with citizens, staff note there are an average of 700,000 people in the district. Staff find it hard to justify that 500 citizen views might encapsulate the views of the full district. Yet, we find that this perspective is at odds with the complaint that staffers are unable to keep up with the explosion of contact coming into Members' offices. For example, when given a scenario of getting communication from 100,000 citizens, in order to reach a number that the staffer would associate with valuable input, one staffer said their office didn't have the capacity to listen to that many

contacts. Thus, we find that the threshold number of citizen calls that might inspire responsive policymaking is not only unspecified but seemingly infeasible based on the capacities of the office to manage citizen communication.

4.2.1 Office Labor. The system of inputting, batching, and analysing citizen data into CRMs is integrally connected to institutional pressures and deployment of labor within Member offices. Here we see how the material conditions of information technology relate to staff labor as it is used to maintain the infrastructure of digitized citizen information. These conditions play a role in the use of CRMs and even the role of the staff in the office.

Batching is a redundant and time-consuming process for correspondence staff. Legislative Correspondents (LCs) are people who read all incoming messages and take all phone calls. They are the front lines of communication as well as the front-end users of the CRM. Staff report spending two to four hours a day manually batching citizen contact into different topics. During high salience issues or after weekends, some staff report spending the entire day batching correspondence by different topic labels.

Much of this low-skilled work is passed down to interns who assist LCs in answering the phone, reading emails, and batching content. Despite being the front lines of citizen communication, these correspondence staff frequently describe their job as having low-value within a Member's office. The culture of congressional staffers assumes that such correspondence jobs are akin to paying one's dues for one to two years before promotion to a higher value job within the office. As one current LC describes,

P48: "The job of the LC is a stepping stone; this job is boring. No one wants this job."

The perceived value of LCs is also reflected in staff responses to questions about how to improve to the correspondence process. During interviews, we asked staff to describe potential improvements to the correspondence technology and process. One correspondence staffer worked on correspondence for over four years, longer than any other staffer interviewed. Despite their expertise, the staffer did not wish to respond to the question, saying that discussing changes to the process was "above my paygrade", and those decisions were done by higher-level staff that do not engage with the CRMs. Clearly such "front line" work is not an arena where staffers are granted autonomy or the ability to engage substantively with citizens. One staffer reflected on their time as an LC on the "front lines" of citizen contact with a mixture of pride and ambivalence.

P9: "I was the front lines, right? So, I kind of appreciated doing that work. But I'm not sure if how I felt... I don't feel like the rest of the office, the permanent staff, have the same perception to citizen concerns. They are very detached. And I didn't appreciate that."

This culture assumes a particular relationship between LCs and CRMs. Correspondence staff are expected to work in order to fulfil the needs the CRM by filling out the expected fields when citizens reach out. They are also expected to craft mail reports that are simultaneously conditioned by the constraints of what the CRM is able to do with these data and shaped by Member requests- or what the Member is able to conceive of as useful from these data. Instead of becoming the valued gatekeepers and amplifiers of citizens voices within the office, correspondence staff are rendered data administrators; batching and quantifying citizen opinions with little incentive to engage with citizens, minimal agency in how they present data to higher ups, and no say into how the information they log is used in policymaking.

4.3 Responding to Citizen Contact

After citizens communicate with staffers and their record of communication is logged into the database, the LC uses the CRM to craft and send a formal response letter (sent either by email or postal mail). These responses acknowledge that a Members received the citizen's input and appreciates their contact. Response letters generally include information such as the Member's stance on a bill or news about topics the citizen expressed interest in. We find that the processes of producing these responses creates a discursive push towards thinking of citizen relations as a problem of customer service. Such customer service logic reveals itself in the process of responding to citizens. CRMs are, by definition, customer-relations management software. The original CRMs for Congress modified from platforms designed to enhance a business-driven and customer-service experience - one that focuses on "satisfying" and managing customer information over fostering substantive "customer" engagement.

One of the benefits of CRMs for any business is the ability to manage information efficiently. In Congress, Member's offices focus on responding to citizens as quickly as possible in order to assure citizens their correspondence was received. For example, one of the logics of customer-service that is reinforced by the CRM is timeliness. Staff assume that approval and trust in the Member is dependent on speed of reply. Staffers share the widely held opinion that in order to keep citizens happy, they must provide formal responses to citizens in a timely manner.

P1: "You want (responses) at a consistent pace... you do not want to keep (the citizens) hanging."

The speed at which the office responds to citizen contact, also called "turn-around time", is also used as a metric for assessing communication practices and individual staffers.

P21: "We're a two-week turnover. We take it very seriously. At the end of every month we do what's called zero mail day where no mail is allowed to still be in the system. That is rare, but we take it very seriously."

The importance of the turn-around time of responses is also reflected in the CRM's tracking tools. In the two CRMs we analyzed, the dashboard displays on the front page provides staff an overview of how other staff are managing correspondence. The visualizations of the staff's turnaround time lets other staff know who is keeping up with the mail and what mail is backlogged in the office. The display of this information operationalizes the efficiency and effectiveness of the correspondence staff, creating a tool to consistently track performance through response rates. If correspondence staff are behind in responding to letters, other staff can see their progress in the CRM.

Focus on turn-around time has increased with the rise in correspondence from citizens. The limited time capacity of staff means they listen to more contact from citizens and write more responses letters, but they must do so at a faster pace. Despite the larger capacities the CRMs employ to capture, track, and send responses, the system is still limited by the capabilities of the staff to listen, read, batch, and write responses to citizens. We hear the strain in the voices of staffers:

P2: "When the house is in session sometimes it's hard to leave the phones. You feel chained to your chair. It's hard to take lunch breaks."

P21: "Send as many things as you want but we have a limit of how many things we reply to it's just like it's our capacity issue."

P4: "It's all me, I find myself stressed a little thin...I'm the only one doing the [response] letters."

To increase efficiency, staff keep a repository of letters in the CRM to use the same content for every letter of similar topic. The letters are also shared with fellow correspondence staff of

other Members of the same party. The CRMs gives staffers the ability to create stock responses for mass-messaging. The CRMs provide a platform for the letters to be edited, tracked, and approved by different staff in the correspondence process.

P21: "... if you wrote in a letter on an issue that we don't know anything about and we don't have a letter we've written before than we will then write a new letter. And that letter gets approved first by the letters written by the legislative correspondent, maybe an intern, and then it goes up the system of approval. (The) legislate director approves it, the Chief of Staff approves, and the Member sees it. The Member sees the response letter and does signoff on it. Now they might only see the Net Neutrality letter once, but it's the same content for everyone."

These formal responses act more like thank-you notes than evidence of engaged communication. Often the letters will provide updates on the state of bills or general information about what the Member is already doing to address the issue the citizen discussed. Responses are phrased as the final reply from the Member to the citizen and do not invite further exchange. Two-way communication is a static process where citizens offer their opinion and staff develop letters to thank them for their comments.

In interviews, some staff directly identify correspondence as a customer-oriented process. Such customer-service rhetoric describes a superficial level of engagement which is assumed to make citizens feel like they are listened to without creating the kind of communication exchange that might influence a Member's perspective or actions.

P8: "They always asked different questions, and I always had to kind of put my customer service persona on. Which isn't a big deal, it's not that hard. Like you can't sit their on the phone bored, you have to be engaging and make them feel like they are being listened to."

P10: "We still had to pretend that we cared. As terrible as that sounds, you can't just hang up or say sorry. But you still listen and then you ask them at the end usually ok, can I get your address so we can send some response. Because we always sent, when people called in or mailed in or sent an email or fax, we always responded. You know a thank you letter addressing their concerns, usually an email. That's how they preferred to do it."

Customer service is an essential component to Congress. Members must appear to satisfy citizens desires, or they will not be re-elected. However, as we will discuss further in the discussion, when taken too far, the rhetorical push for satisfaction can deter more participatory forms of engagement that treat citizens as collaborators rather than customers. The CRMs enables staff to respond to citizens at great scales and efficiency. However, such practices deter staff from taking citizen input seriously as a form of policy input. The combination of increased communication from citizens, the capacities of CRMs to monitor and track staff performance, and the CRMs promotion of a customer rhetoric place excessive pressure on the correspondence staff to prioritize efficiency of communication over substantive democratic engagement.

5 DISCUSSION

This investigation suggests that the materialities of information representation and the material conditions of information technology production around CRMs play a distinct role in how communication between citizens and Members of Congress is realized in practice. The material properties that are most relevant to this investigation are that of granularity and associativity of information [12].

Granularity describes the size of the elements of information recorded in a database. In this case, the granularity of data in the CRMs is the level of detail logged about citizen input. The standard fields of the database ask for three primary pieces of information about the citizen contact (i.e. name, address, reason). The single-issue labels required by CRMs limit the level of detail, thus how granular, a record of citizen communication can be. Granularity is also salient when staffers create their own batching structures within the CRMs and assess each other by the granularity of these structures. When staff batch, they create detailed structure that are seen as "more engaged" by their peers. These insights suggest that the CRM conditions how citizen input is transformed into data by individual staffers and used as aggregate metrics in Member offices. By attending to the materialities of information representation and the conditions of technology use in and through CRMs, we are able to see how the granularity (or lack of granularity) of a data record comes to matter. Granularity ties both to how the communication act unfolds in practice and how the information garnered via communication is used in service of governing.

The material property of associativity is also key in any database. In the CRM, associativity is determined by the batching process. The batch label given to each record of citizen contact allows staff to associate certain records with other records. This labelling process allows staff to aggregate and quantify citizen opinion. CRMs make it easy to run reports on the number of phone calls per day, the number of contacts about a specific bill, or the number of response letters that have been sent to citizens. This configures how staffers associate citizen communication with specific topics or actions. We argue that this process renders each point of contact with a citizen into a quantifiable datapoint rather than an opportunity for engaged communication. Currently, citizen contact is not considered valued input to be listened to. Rather, it is a burden to be logged and responded to with a proforma response. Thus, the numbers control the behaviours [15]. We cannot say when this logic arose. Regardless, the granular and associative capacities of CRMs align with and solidify this logic into material form.

These customer service database systems also demonstrate the materialities of information technology production. These systems were designed to be customer-driven software to be used by for-profit enterprises, thus prioritizing values of information management and customer satisfaction. Scholarly work has discussed the paradox between treating citizens as customers versus participants in political structures [4, 17]. Such customer service orientations emphasize a "managerial" mode of citizens that prioritizes efficient movement of information, while neglecting participatory modes of engagement [8]. We see this in Congress, where the rhetoric of "customer satisfaction" prevails when staff focus too much on assuaging citizen concerns and satisfying their desire for communication.

It is important to note that, even though the material properties of the CRMs play a large role in configuring the ways Members and citizens communicate, the practices of tracking citizen opinion through summarized information is not new to Congress. Staffers have historically documented summaries of volume, position, and tone of contact for particular issues [40]. However, the CRMs institutionalize this norm of data collection [15] by reinforcing its functionality through a built-in technology feature [53]. Now that tracking of citizen opinion is a functional tool in the technology, it is legitimized as the primary form of documentation of contact between citizens and policymakers. Thus, we see how the social and the material recursively shape and reinforce ideas about the goal of communication with citizens and the value of citizen input.

5.1 Implications for CSCW

This study makes clear that the datafication of citizen input can affect the nature and experience of communication: how different parties understand the value of communication; what is communicated; and how communication is 'dealt with' organizationally. The perceived legitimacy and value of citizen input is shaped by the communication technologies that datify citizens and their

opinions. The way Members of Congress and their staff make sense of and act upon communication from citizens is configured by the CRMs. From this, we see a tension between idealized narratives of responsive representation and the ways in which CRMs configure communication as a data-driven form of information exchange. The narrative that the rise of communication channels will enable greater dialogue between citizens and their Members is undermined by the fact that citizen communication has become, in effect, an exercise in quantification and data collection.

Previous CSCW research has pointed to data-driven technologies as tools that elicit participation and collaboration to support communities and institutions working together and to empower citizens in the policy decision-making process [28]. But in this case, data plays a different role. We find that the tracking of citizen data is used to signal productivity and efficient response practices, rather than providing value for policy decision-making. A pressing question for the CSCW community is, thus, what design solutions could be deployed to enhance communication with representatives? Moving towards what other scholars have suggested [28], there needs to be more work to integrate meaningful forms of engagement where policymakers can trust and act upon citizen engagement, instead of centering their efforts on using technologies that promote passive recognition of citizen input.

Unlike most studies of citizen engagement in governance we see in HCI, our context is not within municipalities of local decision-making. Congress is a massive representative body working within an elaborate network of pressures, demands, and obligations from citizens, advocacy groups, lobbyists, and legislatures. Each Member represents an average of 700,000 citizens. Thus, research findings for participatory modes of citizen engagement for a local context may not scale to larger representative bodies like those in federal legislatures. Finding ways to balance meaningful impact and scalability will be essential for any communications technologies to offer more substantial engagement for citizens.

This study also demonstrates how the materiality lens can be used to gain insight into how data-driven technologies affect the practices of participation and collaboration in governance. Using a lens of materiality to interrogate democratic communication allows us to take into account the ways in which a system's layout, design, and context of use configure the nature of civic engagement. Our research suggests that this frame can provide understanding around how values of civic engagement and democratic representation are operationalized and embodied within the design and use of technological systems.

5.2 Implications for Democracy

The implications of this work speak to the fundamental ideals of democratic representation. Through our analysis of the CRM, we highlight the competing logics between normative conceptions of political representation and the realities of the everyday work of representation within a representative democracy. The assumption that representatives should be responsive to citizen opinion and collaboratively engage with citizens (ideally via the capacities of new communication technologies) is not demonstrated in the practices of Members' offices. Information and communication technologies have created the expectation that more direct citizen engagement and influence over the policy-making process is possible. But, we find the opposite.

Such findings contribute to the growing evidence that citizens have little to no input into Member's policy decisions [18]. During a time of declining trust in Congress, such investigations need to be taken seriously in order to understand how the organizational, technological and infrastructural systems in Congress play a role in their how Members incorporate citizen input and make policy decisions. In their current state, CRMs do not promote a pathway for citizen opinion to influence policymaking. Thus we find that these tools reduce opportunities for responsive engagement. The stakes for the outcomes of this investigation are high; placing the practices

of representative democracy at the hands of the communications technologies which mediate relationships between citizens and their policymakers.

6 CONCLUSION

We engage a material lens to evaluate three moments during Member-citizen communication where the materiality of the CRMs relates to the representation of citizen information. These moments are (1) during the input of citizen information, (2) the transformation of that information into data for analysis, and (3) the production of written responses to citizens. We find that the ways in which CRMs log and manage information about citizen communication creates discursive expectations that prioritize data-collection and customer satisfaction over substantive engagement. In so doing, CRMs limit the possibility for citizens to be recognized as legitimate actors within the policymaking process. Thus, we offer insight into a case where data-driven technologies elicit pathways for perceived communication and citizen engagement, without inspiring true influence to policy decisions. We find that citizens are losing their ability to civically engage their policymakers as a result of technological intervention.

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