

Participatory Privacy: How Privacy Governs Openness and Inclusion in Online Social Movements

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Social and political movements increasingly depend on online platforms for coordination, publicity, communication, and development of knowledge resources. The March for Science, Day Without Immigrants, and Women’s March present a unique opportunity to compare participation governance in online social movements. This paper employs large social media data sets, contextualized by organizer interviews and participant surveys, to study how commons governance of privacy shaped membership,

participation and group boundaries in both satellite groups and overall movements, as well as interaction and exchange of knowledge between groups. We also discuss participants as a unique “resource” governed in knowledge commons.

Keywords: privacy, social media, governance, participation, social movements

Social media applications, including Facebook, provide platforms for ideological and social organizing (Castells, 2012; Harlow, 2012). Diverse movements, including Black Lives Matter, the Arab Spring, and Occupy Wall Street, coordinate and promote their causes outside of traditional media channels, despite numerous challenges associated with using social media for these purposes. Because social media activism couples personal information to political views, privacy and safety concerns arise.

This paper employs the Governing Knowledge Commons (GKC) framework to explore how the interplay between participation, personal information governance, and organizational structure creates community boundaries and influences organization structure for diverse forms of political movement participation. We compare participation

in three cases: the Day Without Immigrants (DWI), March for Science, and Women's March. Through a combination of Facebook data about participant networks, interviews, and surveys, we provide a rich description of how participation, community boundaries, and inclusion are shaped by privacy as governance. These case studies displayed an interesting spectrum of participation, inclusion, and organization patterns corresponding to different concerns about privacy. While three case studies cannot support sweeping generalizations, they demonstrate that these effects can be significant, highlight the need for further study, and allow us to generate specific hypotheses to be tested.

LITERATURE REVIEW

Social Media and Political Participation

Critics argue that social media can make it easier for individuals to insulate themselves in likeminded "filter bubbles," undermine social interaction and dialogue (e.g. Bakshy et al., 2015; Flaxman et al., 2016), and minimize true engagement (e.g. Kwak et al., 2018). Nonetheless, online social movements have unique strengths (Castels, 2015; Gerbaudo, 2018) for connecting diverse ideological groups and reducing coordination costs (e.g. Castels, 2015; Obar et al., 2012; Gerbaudo, 2018). Social media can also be a democratizing force for political activism (e.g. Breuer et al., 2015), since online political actions can gain large-scale visibility and recognition without status quo support (Gerbaudo, 2018). Unconventional candidates, such as Alexandria Ocasio-Cortez (Nahmias, 2018), and grassroots movements can effectively leverage social media (Entman & Usher, 2018).

Pro-democratic effects counter widespread and very real concerns about how online environments heighten the effectiveness of propaganda and astroturfing (e.g. Gunitsky, 2015) associated with homophily and filtering effects (Aral & Walker, 2012). In response to exogenous events, social media can mobilize political movements based on weak ephemeral or indirect ties (Diani, 2015). Social media can also allow movements to coordinate and cooperate across dispersed and marginalized populations and to emerge under repressive regimes, as with the Arab Spring (Breuer et al., 2015; Eltantawy & Weiss, 2011).

Social media platforms' effectiveness and availability as communication and organizing tools are coupled with these platforms' power to govern personal information flow through their design. These new institutional realities prompt concerns about targeted and personalized political manipulation (Forelle, et al., 2015; Lyon, 2003; Papacharissi, 2015). Social media platform design is similarly important in constructing the privacy governance of online social movements.

Facebook supports various group configurations, synchronous and asynchronous interactions, and degrees of visibility (Park et al., 2009). Group configurations range from fan pages, by which a large membership can follow a person, group, or event without meaningful participation, to groups designed to support open or limited participation (Harlow, 2012). Groups can be public or private. Closed subgroups may be embedded within public groups to support decision-making or facilitate sensitive discussions. Individual participants also have choices about visibility and engagement levels: joining, liking, or publicly following groups or events, versus privately following (Harlow, 2012; Park et al., 2009).

Privacy and Online Social Movements

Over and above its impact on activism efficacy, social media use raises novel questions about the interplay between privacy and political activity. Political activism has always reflected tensions between the need to bring public attention to issues affecting minority groups and fears that such efforts will invite retaliation or be discounted. Such tensions are evident in longstanding discourse about First Amendment protections for anonymous speech and association (Strandburg, 2008; Strandburg, 2014), freedom of thought (Rose, 1999; Solove, 2006), tensions between secrecy and transparency for elected officials (Daniels, 2014), the personal nature of political beliefs (Goldstein & Keohane, 1993), secret ballots (Chaum, 2004) and the spectrum of safety based on (in)visibility of participants in political demonstrations (Brighenti, 2007). Women's activism, notably, has faced many of these challenges as women sought to assert themselves politically and to make progress in battling infringements of their civil rights; research documents how actions to connect public and private spaces and spheres have justified and provided credibility to women's political movements (Stachel, 1996).

When online dimensions are added to political organizing and activism, relationships between privacy and politics become even more complex (Uldam, 2016). Offline demonstrations are ephemeral and, when large enough, allow for participants' privacy through obscurity. Expectations about the practical limitations of information flow regarding political activism are complicated by the use of social media, which can make participation in social movements both more observable and more permanent. For example, Facebook's real name policy can make it easy to connect individuals' participation in political movements on Facebook with their offline identities, diminishing the protections of ephemerality and obscurity (Child & Starcher, 2016). This issue is mitigated somewhat by the option to privately follow, or lurk, particularly for large groups. Movements may also replace or supplement Facebook by using encrypted channels for communication between organizers in vulnerable groups or political dissidents (Latonero & Kift, 2018), or employing synchronous channels, such as Snapchat or Twitter (Clark, 2016).

Twitter, YouTube, and other pervasive social and collaborative platforms, such as Google Groups and Drive, also facilitate social movement interaction and coordination (Castells, 2012; Harlow, 2012). For offline demonstrations, tools such as Eventbrite are commonly employed to anticipate attendance more accurately (Diani, 2015). Eventbrite is distinctive because of its focused purpose and support of anonymous or pseudonymous participation.

To understand how social media affects privacy concerns related to social activism, it is helpful to conceptualize privacy in terms of "appropriate flows of personal information" via the contextual integrity (CI) framework (Nissenbaum, 2009). This approach illuminates how and why governance of documentation and personal information flows might vary, especially as to re-purposing of personal information and flows beyond the movement or over time.

Collaborative Governance and Political Organizing

Grass-roots political organizing aligns naturally with a commons perspective. Numerous studies have applied Ostrom's Institutional Analysis and Development (IAD) framework to community organizing aimed at issues such as environmental justice (e.g. Adager, et al., 2003), indigenous rights (e.g. Joransen, 2008), and community safety (e.g.

Boettke et al., 2012). These studies have not focused on knowledge commons, though community and social organizing, even offline, is often as much about pooling and constructing knowledge resources as it is about protests, campaigns, or other projects (Gittell & Vidal, 1998; Pilisuk et al., 1996). Indeed, community organizing is fundamentally amenable to knowledge commons analysis. The importance of knowledge pooling and creation for online social and political activism is apparent. Nonetheless, the growing empirical literature (e.g. Hara & Huang, 2011) devoted to online social movements (Kelly Garrett, 2006) has not addressed commons issues, while knowledge commons studies of social media (e.g. Fuster Morell, 2014) have not focused on online political activism.

One thread of scholarship emphasizes how social media heightens visibility, scale of participation, and inclusion (Bennett, 2012; Gil de Zuniga, Jung, & Valenzuela, 2012). These studies demonstrate that broad opportunities online allow individuals to sort more precisely by interests, with like finding like (Bennett, 2012) and that the visibility and connectivity of online social networks allows diverse people with common interests to find each other and interact in ways that would otherwise be impossible (Gil de Zuniga et al., 2012; Juris, 2012). All of these effects of social media are intertwined with the sharing of knowledge.

Another thread focuses on the fact that online processes and interactions are embedded not only within historical and sociopolitical contexts, but also within constructs developed by platforms (Gillespie, 2010). This growing body of literature, often emphasizing affordances or limitations of platforms, characterizes ICTs as resources, support for collective identity, framing devices, mobilization tools, and platforms or spaces for social movements (Hara & Huang, 2011). For example, theoretical explanations of how social movements cross online and offline social boundaries (e.g. Harlow, 2012) define boundary-crossing in terms of the use of multiple ICTs for community and social purposes, without considering the unique challenges posed by online social spaces to governance and to appropriate knowledge flow.

Knowledge commons governance provides a useful, and we believe under-utilized, perspective for studying political activism, both generally and to understand the implications of privacy for online political movements. Knowledge commons governance,

defined as community governance or management of intellectual or cultural resources, may be systematically studied through the governing knowledge commons (GKC) framework (Frischmann et al., 2014). While the term “commons” is imbued by some scholars and activists with normative implications, the GKC framework takes no normative stance. Rather, it is a theoretically rich structure for empirical analysis. The GKC framework, which builds on Ostrom’s IAD framework, emphasizes governance of knowledge flow and other resources, based on the analysis of rules-in-use within action arenas (McGinnis, 2011; Ostrom, 2011). A growing literature applies the GKC framework to explore community arrangements for knowledge sharing and production in contexts varying from biomedical research (e.g. Boggio, 2017; Strandburg et al., 2017) to historical communities (Meyer, 2014) to online peer-production (Fuster Morell, 2014). A systematic, consistent framework facilitates cross-case comparison and pattern observation (Frischmann et al., 2014).

The GKC framework is an appropriate tool to further our understanding of community boundaries and participation in social movements. Though it was based on Ostrom’s IAD framework for studying natural resource management, the GKC framework was adapted to account for the unique characteristics of knowledge resources, including the fact that knowledge is socially constructed. Thus, while the IAD framework treats “resource characteristics” as exogenous to the analysis, the GKC framework anticipates that characteristics of a community’s knowledge resources are directly dependent on the decisions and actions of community participants. Similarly, the IAD framework treats “attributes of the community” as exogenous, presumably because community membership is determined by factors such as access or proximity to the resource. By contrast, the GKC framework recognizes that participation is endogenously governed by social processes that both depend upon and determine the properties of knowledge resources. The GKC framework is thus designed to elicit rich description of community participation, boundaries, and openness. The GKC framework specifically poses questions concerning community participation, such as: Who are the community members? What are their roles? Who are the decision-makers? and How are they selected?

The GKC framework thus structures data collection and analysis to draw out similarities and differences in community participation among our three case study

movements and is well suited to investigating the interplay between participation and personal information flow.

METHODS

Data Collection

To investigate the three cases—the DWI movement, the March for Science, and the Women’s March—empirical data on knowledge commons governance and participation was gathered from public Facebook pages, interviews and surveys, as well as extensive background documents, including previous studies, news reports, other public webpages, and internal documents obtained from organizers. The research design was approved by IRB.

Each case study involved a march in Washington DC (“national group”) and a number of other groups focused on locally-organized marches in other cities (“satellite groups”). Each group (national and satellite) maintained a public Facebook group page. We collected social data from groups that agreed to participate in qualitative data collection. Data was collected from 6 March for Science groups (Austin, TX; New Jersey; New York, NY; Princeton, NJ; Seattle, WA; and Washington, D.C.), 7 Women’s March groups (Ann Arbor, MI; Atlanta, GA; Global; Madison, WI; New York, NY; Princeton NJ; Washington, D.C.), and 8 DWI groups (Baltimore, MD; Elkhart, IN; Greenville, NC; Nashville, TN; Students; VA; WA; Washington, D.C.).

We used Capture for NVivo to collect textual data from each group’s public Facebook group pages. In addition to group level pages, we collected 494,911 posts, in total, including 4,352 from DWI groups, 294,201 from March for Science groups, and 196,358 from Women’s March groups. We acknowledge that heavy reliance on Facebook data is a limiting lens. Once the data was downloaded, as tables rather than static pdfs, columns including personally identifiable information, such as names and profile pictures were removed from the set.

Data was also collected via Skype, Facetime, and phone interviews of decision-makers and representatives, lasting between 30 and 75 minutes; informants included individuals, over 18 years of age, who held defined decision-making roles in one of the target Facebook groups, including those who served as event Hosts and public Facebook

group Creators. Interviews were supplemented by surveys; respondents included any other active participants within public Facebook groups who identified with or were representative of: the Women’s March, March for Science, and Day Without Immigrants movement.

Coding and Analysis

De-identified data and survey responses were coded against: the Governing Knowledge Commons Framework (Table 1), the Solove Privacy Taxonomy (Table 2), and Crawford and Ostrom’s Institutional Grammar (Table 3).

Table 1
Governing Knowledge Commons Framework

Background Environment	
	<ul style="list-style-type: none"> • What is the background context (legal, cultural, etc.) of this particular commons? • What normative values are relevant for this community? • What is the “default” status of the resources involved in the commons (patented, copyrighted, open, or other)? • How does this community fit into a larger context? What relevant domains overlap in this context?
Attributes	
Resources	<ul style="list-style-type: none"> • What resources are pooled and how are they created or obtained? • What are the characteristics of the resources? Are they rival or nonrival, tangible or intangible? Is there shared infrastructure? • What is personal information relative to resources in this action arena? • What technologies and skills are needed to create, obtain, maintain, and use the resources? • What are considered to be appropriate resource flows? How is appropriateness of resource use structured or protected?
Community Members	<ul style="list-style-type: none"> • Who are the community members and what are their roles? • What are the degree and nature of openness with respect to each type of community member and the general public? • What non-community members are impacted?
Goals and Objectives	<ul style="list-style-type: none"> • What are the goals and objectives of the commons and its members, including obstacles or dilemmas to be overcome?

	<ul style="list-style-type: none"> • Who determines goals and objectives? • What values are reflected in goals and objectives? • What are the history and narrative of the commons? • What is the value of knowledge production in this context?
Governance	
Context	<ul style="list-style-type: none"> • What are the relevant action arenas and how do they relate to the goals and objectives of the commons and the relationships among various types of participants and with the general public? • Are action arenas perceived to be legitimate?
Institutions	<ul style="list-style-type: none"> • What legal structures (e.g. intellectual property, subsidies, contract, licensing, tax, antitrust) apply? • What are the governance mechanisms (e.g. membership rules, resource contribution or extraction standards and requirements, conflict resolution mechanisms, sanctions for rule violation)? • What are the institutions and technological infrastructures that structure and govern decision making? • What informal norms govern the commons? • What institutions are perceived to be legitimate? Illegitimate? How are institutional illegitimacies addressed?
Actors	<ul style="list-style-type: none"> • Who are the decision-makers and how are they selected? Are decision-makers perceived to be legitimate? • How do nonmembers interact with the commons? What institutions govern those interactions? • Are there impacted groups that have no say in governance?
Patterns and Outcomes	
	<ul style="list-style-type: none"> • What benefits are delivered to members and to others (e.g. innovations and creative output, production, sharing, and dissemination to a broader audience, and social interactions that emerge from the commons)? • What costs and risks are associated with the commons, including any negative externalities? • Are outcomes perceived to be legitimate by members? By decision-makers? By impacted outsiders?

Table 2
Solove Privacy Taxonomy

Privacy Dimension	Specific Concern
Information Collection	Interrogation Surveillance
Information Processing	Aggregation Identification Insecurity Secondary use Exclusion
Information Dissemination	Breach of confidentiality Disclosure Exposure Increased accessibility Blackmail Appropriation Distortion
Invasion	Intrusion Decisional interference

Table 3
Institutional Grammar Applied from Crawford and Ostrom

Institution	Component	Definition		
Rules	Norms	Strategies	Attributes	To whom does this apply? Individual, organizational variables Stage or role in research
			Aims	Specific action
			Conditions	When, where, how aims apply
			Deontics	Modal operators Examples: permitted, obliged, forbidden
			Consequences	Sanction for non-compliance

To better understand the background environments for the action arenas and specific commons arrangements, we conducted network analysis of the online interactions and compared participation in online interactions with available data about participation in the offline demonstrations hosted by each movement. Network analysis of the

interactions between and memberships of each movement illustrated each movement's structure and scope, as well as revealed interactions between movements and with outside organizations. A protocol for analysis of advocacy coalitions, as defined and applied by Weible et al. (2011) and Sanfilippo (2015), respectively, was followed, to assess the networks at multiple levels, using both R and Gephi.

Our structured analysis of individual data types and cases was complemented by comparisons across the social media comments and networks, contextualized with rich discussions from organizer interviews and participant surveys. This process allows unanticipated themes to emerge, including theoretical weaknesses or gaps (e.g. Luker, 2009).

RESULTS

The three cases studied here are well-situated for investigating the influence of privacy concerns on social media-based political activism because they are comparable in their timing and goals and in the ways they used social media, but differ in the degree and types of privacy concerns experienced by their constituencies. Each formed with the goal of organizing a large public demonstration in early 2017; each was successful; and each remained active after the success of its initial large-scale events. Each movement involved a “national” event that took place in Washington, DC, as well as a number of local “satellite” events organized in other locales.

The demographic makeup of each movement was roughly in line with each movement's objectives. Women's March organizers and other participants were overwhelmingly female; DWI group demographics reflected the diversity of undocumented populations, though Dreamers and LatinX participants were among the most visible; and the March for Science was supported by scientific organizations and many participants and organizers were research scientists or medical professionals. However, participation in each movement was also both broader and narrower than its name might have suggested.

Case Descriptions

Women's March

Feminist opposition to the misogyny and chauvinism projected by the Trump administration seeded the Women's March movement shortly after the 2016 election (Fisher, Dow, & Ray, 2017; Moss & Madrell, 2017). The Women's March movement also tied its central feminist agenda to other human rights concerns (Boothroyd, et al., 2017; Fisher, Dow, Row, 2017). The initial marches were scheduled on January 21, 2017, the day after Trump's inauguration. On that date, 673 marches took place around the world, with millions of participants (e.g. Boothroyd, et al., 2017; Wallace & Parlapiano, 2017). In the US, there was a national march in Washington, DC, as well as locally-organized satellite marches in other cities. The Women's March movement has persisted as a platform for political activity. Support for ongoing activities was bolstered with the #MeToo movement, which came to prominence later in 2017 (Boothroyd, et al., 2017; Rose-Redwood & Rose-Redwood, 2017). In addition to anniversary marches in 2018 and 2019, the Women's March has organized smaller events, sometimes coordinating with other resistance movements on issues such as immigration, and leaders and organizers view the development of information resources as an important and ongoing function.

While most Women's March participants were women, Women's March demonstrations included men, many of whom marched alongside female friends or family members. The Women's March was criticized, however, for being overwhelmingly white, in terms of both whose interests were reflected in organizing and who participated (Fisher, Dow, & Ray, 2017; Rose-Redwood & Rose-Redwood, 2017). Local groups were more diverse, both in participation and leadership, with some satellite marches intentionally setting themselves apart by more inclusive names and agendas, such as the Atlanta March for Social Justice and Women, while remaining affiliated with the larger Women's March movement (Rose-Redwood & Rose-Redwood, 2017).

March for Science

The Trump administration's apparent hostility toward science and objective facts triggered the organization of the April 22, 2017, March for Science, which attracted scientists and engineers, academics and industry professionals, educators, students, and others who shared their concerns. Families also turned out for the affiliated Earth Day

events, in part as a means of educating children about the importance of scientific objectivity. Moreover, while STEM fields are well known for historical, and ongoing, gender diversity problems, March for Science groups were often relatively gender-balanced, in terms both of participants and of organizers.

The March for Science, which had over 1 million attendees worldwide, was supported by well-established professional organizations, educational institutions, and the medical community (Milman, 2017). Like the Women's March, the March for Science involved a large national march in Washington DC and locally-organized satellite marches. Organizers and participants have continued to respond to anti-science, anti-fact rhetoric in politics, media, and social networks. For many, this ongoing activity reflects a normative obligation to inform the public and political actors based on their professional expertise (Ley & Brewer, 2018; Motta, 2018).

Day Without Immigrants

The DWI on February 16, 2017, was organized in response to the Trump administration's highly visible, drastic and controversial immigration policies. The DWI movement initially focused on organizing day-long activities intended to illustrate the importance of immigrants, including the undocumented, to the economy. Some restaurants and businesses demonstrated solidarity with the movement by closing, while many more excused absences from work by participants in DWI demonstrations (Stein, 2017). The DWI also included a march in Washington DC, along with many satellite events elsewhere. In February 2017, DWI activities were organized in at least 30 cities across the US.

The DWI movement was much smaller and, as a result, less visible than the other movements. Organizers and participants had diverse preferences and policy objectives, but were united in their desire for immigration reform and their opposition to the border wall and increased racial profiling in law enforcement that accompanied Trump administration policies (Robbins & Correall, 2017). The DWI movement also has lived on beyond the 2017 events that catalyzed its formation, though its structure is most fragmented. It has been especially active in constructing knowledge resources for immigrants and their supporters and distributing information intended to humanize those affected by Trump administration policies.

The DWI movement was broadened by the participation of supporters of the undocumented community. Undocumented immigrants were deterred from taking on more public-facing roles by fear of deportation and other consequences. Documented individuals and the friends and family members of undocumented immigrants instead assumed public-facing and organizing roles in this movement.

Social Media Usage

All three of the movements we studied relied heavily on social media, particularly Facebook, to unite and inform potential participants, develop resources, and coordinate activities (Roth, 2018). Thus, in all three movements, each “national” and “satellite” group had its own public Facebook page, which was used for such purposes. The advantages of social media for political organizing were evident in the extent to which each group was able to grow and coalesce long before emerging on the radar screen of traditional media, yet its use also created distinctive challenges.

Despite this heavy reliance on public Facebook pages, our interviewees reported that much of the active organizing and decision-making took place in more limited online and offline venues. In many instances, the public Facebook pages were used for organizing only in providing contact points or a forum in which organizers could answer questions from other participants. In part, this was because organizers found it difficult to work effectively within Facebook’s complex and “noisy” public-facing arrangements. While private Facebook groups were sometimes used to cut down on this complexity, Facebook’s asynchronicity remained a major limitation for organizers, who tended to communicate through a variety of channels. As an organizer of a large Women’s March satellite event explained:

we have a lot of face-to-face and telephone-based – all of the organizations, and I’ve got my ear to the ground for all of them, are communicating through a variety of technologies. Sure, social media is a big one, but there is no perfect social media tool. So, you know, just keep experimenting, but some combination of Facebook, Twitter, Slack, Skype, then there are these telephone call-ins.

Privacy and Participation

All three of the movements we studied permitted and relied on a spectrum of participation types, utilizing various online platforms and offline means. Various modes of

participation undoubtedly had a range of implications for community structure. For example, they accommodated different levels of interest in and commitment to the cause and facilitated the practical logistics involved in organizing large-scale political events. Our study demonstrates, however, that for some movements and some stakeholders the available modes of participation interacted in significant ways with concerns about personal information flows. These interactions appear to have shaped and constrained individual participation in these movements in ways that are reflected in their resulting organizational structures. Furthermore, it is notable that communities and resources were co-created; while this paper focuses on participation, a companion article explores questions about how privacy governs knowledge resources in online social movements (Sanfilippo & Strandburg, 2021).

Modes of Participation

In the most expansive sense, “participants” might include everyone who supported the movement in any way at all, including: expressing agreement with its aims, providing financial support, attending a national or satellite march, RSVPing on Eventbrite, joining an associated Facebook group, attending offline events or meetings, or serving as an organizer for one of the events. Beyond even this highly inclusive definition of participation, each of the movements we studied had the potential – and the goal – to impact outsiders, particularly including women, immigrants and scientists who did not participate actively, some of whom may have refrained from active participation because of the very privacy concerns that interest us.

Though Facebook participation was open to anyone in principle, all three movements offered modes of participation that supplemented Facebook or avoided it entirely. For example, all three movements allowed march participants to register through Eventbrite, rather than (or in addition to) Facebook, and of course one could attend a demonstration without pre-registering at all. These alternatives expanded the size of the participating community, though the depth of participation available to those who avoided Facebook was limited.

While there were a variety of reasons why some participants and supporters decided not to join public Facebook pages, some participants avoided Facebook because of privacy concerns. As one Women’s March organizer who does not use Facebook explained:

Facebook is just not for me. It's just too all powerful and I'm not interested in being that transparent about my life and interests for the sake of advertising... but being in contact with [the other] organizers, I certainly knew what was going on for the event.

Groups also adopted governance strategies aimed at addressing these privacy concerns. The Women's March notably used governance strategies to facilitate political obscurity for individuals through creative rules-in-use built on the affordances of ICTs to avoid some of the disclosure concerns faced in online petitioning (e.g. Green, 2012). Large groups facilitated privacy through obscurity by configuring Facebook group pages to display numbers of registrants, without disclosing identities, and by permitting the use of "following" rather than "joining" participation modes. Other channels were also established, including encrypted channels for organization of immigration groups and March for Science groups' use of pre-existing organizational infrastructure to protect junior scientists' careers by obscuring their influence behind public intellectuals, established scientists, and professional organizations.

Concern about Facebook participation was most pronounced for the DWI movement, where it reflected the severe privacy concerns of the undocumented. Indeed, DWI groups were almost intentionally obfuscating in their design; many of these groups were composed, at least with respect to public affiliation, primarily of the friends, documented significant others, and children of undocumented immigrants, rather than of undocumented individuals themselves -- the most seriously impacted stakeholders. The fact that many undocumented individuals shied away from publicly acknowledged membership did not preclude their participation or their influence on decision-making, but rather mediated it for safety. As one organizer explained:

My mom and my aunt took me to a protest when I was a kid and from then on, I knew this was important and I wanted to help. I was born here, but people in my family are undocumented. [] ... How can you just watch bias or discrimination and not do something, you know? So in this case, my aunt had been discussing this with other activists around immigration, but wasn't going to go on social media, but I could and did, and then it could get around to lots of other people.

This individual thus played many roles including organizer-group member and proxy for family members.

Membership

We refer to “members” of a particular group or march as individuals who joined the affiliated Facebook group. Though membership in these public Facebook groups was generally open to anyone, it is clear from the above discussion that Facebook group membership is unlikely to have been representative of all participants. While some participated in the marches without joining the Facebook groups, our most detailed information about such individuals was reported to us by Facebook group members, and thus is refracted through their perspectives.

Table 4 compares numbers of Facebook group members, registration numbers from Eventbrite and estimates of actual march participation. Each of the groups we studied used Eventbrite as an alternative registration mechanism. For each movement, we estimated aggregate attendance at the 2017, or first wave of, marches. Follow-up marches are not considered within this study. We also provide the number of individuals who signed up for the marches using Eventbrite and RSVPed via Facebook groups.

Table 4
Attendance versus expectations

Group	Women’s March	March for Science	Day Without Immigrants
Aggregate Attendance	1,578,500	206,000	3,940
Eventbrite RSVPs	798,800	172,000	1,278
Facebook RSVPs	402,026	61,500	621

While the overall attendance numbers varied substantially, all three movements showed a similar spectrum, in that the number of march attendees was larger than the number of Eventbrite RSVPs, which was yet larger than the expected numbers based on responses within the associated Facebook groups. It is not possible to determine the total

fraction of march attendees who registered in advance from these figures because there is an unknown degree of overlap between Facebook group respondents and Eventbrite registrants. It is also likely that some individuals who responded online did not end up attending the march.

All else equal (which it may not be), we would expect greater unwillingness to be publicly affiliated with a movement to result in proportionately greater propensity to use Eventbrite, rather than Facebook, to register one's intention to attend a march. Of course, marches take place in public, but march attendance is not documented in conjunction with identity information. Thus, unexpected personal information flows are minimized (conditional on attending the march) by simply attending a march, without any form of pre-registration.

The comparison in Table 4 shows some striking differences in registration patterns between the three movements, despite the common progression from Facebook members, through Eventbrite registrants, to march attendance. March for Science participants were the most likely to register, with Eventbrite and Facebook registrants numbering 83% and 30% of total estimated attendance, respectively. Taking into account the possibility of overlap (but ignoring the likelihood that some registrants did not march), this means that March for Science registrations projected a staggering 83%-100% of attendance. Women's March recipients were somewhat less likely to register their intentions to attend, with Eventbrite and Facebook registrants numbering 51% and 30% of estimated attendance, respectively, meaning that registrations projected 51% - 76% of attendance. DWI supporters were much less likely to register, whether by RSVPing through Eventbrite (32%) or by joining a Facebook group (16%). Total registrations for DWI marches projected only 32% - 48% of estimated attendance.

These registration numbers might reflect differences between participants in the movements we studied: extent of ICT familiarity and expertise and degree of privacy concern. The DWI Movement's low ratio of pre-registrations to event participants could indicate little access to and familiarity with Facebook and Eventbrite. However, our qualitative data suggest that privacy concerns are likely to have played a particularly significant role in suppressing pre-registration for Day of Immigrants events.

The preference for Eventbrite over Facebook across all three movements may also reflect privacy concerns, since Eventbrite RSVPs are not public, do not link to vast amounts of personal information, and can be made effectively anonymous, while Facebook group membership creates persistent, personally identified, public trails of an individual's involvement. As one key organizer from the New York City Women's March explained:

... we needed to have a way of developing unique registrations, but at the same time, we're dealing with people involved in activism, and we want people to know that their information is secure, right? So, that's one reason we started using Eventbrite, just to get the numbers. Now, the thing is, you don't have to put your real name in there. You don't even have to put in a real email address. You can put in an address, you know, that's a temporary one. People make those all the time... but, you know, it was a way for us to keep track.

Overall, the data suggest an inverse relationship between social power and RSVP accuracy, with relatively socially powerful stakeholders in the March for Science highly willing to pre-register, Women's March stakeholders slightly less willing to do so, and the marginalized stakeholders associated with the DWI significantly less willing to do so, especially through Facebook.

Organizers

Despite these various levels of openness, all of these groups were shaped in important ways by relatively small groups of organizers who took the laboring oar in planning and carrying out group activities. Though each group thus had a more involved subgroup of organizers who usually interacted with one another outside of the public Facebook page, in many cases the boundaries between participant and organizer were relatively permeable, allowing interested and committed individuals to be as involved as they wanted to be. Eventually, however, some of the Women's March groups developed formalized barriers to serving as an organizer, though not to participation in general, reflecting the difficulty of maintaining completely open democracy in very large groups. The national and New York City marches, for example, developed internship programs to allow budding activists to become involved, but largely depended on professionals with experience in organizing, administration, and communication roles.

For the Women's March and March for Science, organizing roles were filled primarily by individuals with a very direct stake in the focal issues. Women's March organizers were nearly all women. March for Science decision-makers often included a combination of scientists, science educators, and STEM students, though other STEM advocates also took on organizing roles. As one March for Science organizer explained:

it seemed that a lot of science faculty were eager to attend, and some of them to speak or do demos for kids or something, but they didn't have time or experience to organize. Also, some of them were concerned about whether that was really professional for them. For me, I work in communications for the university, I didn't have the same concerns and I had the time. It was important to me, in terms of my kids and a world I wanted to live in. I started our local movement, but had a lot of really great students, from biology and chemistry, even engineering, who wanted to help and did a great job.

The DWI movement differed from the others, in that most key organizing roles, at least as documented and presented to outsiders, were filled by advocates and family members, rather than by the undocumented individuals most directly affected by the issues. Advocates and family members took on these public-facing roles in direct response to privacy concerns. As one DWI organizer, for a student-led satellite group, explained:

there are a lot of immigrants within the community. Stamford, as a city, is made up of over 30% immigrants, or non-citizens, so really like a third of people here were born outside of the United States and so we were trying to show that. We were also trying to get rid of peoples' fear, particularly those of students, so that... there was a lot of confusion.

The organizers of this group, in some cases relatives of immigrants, were "civically engaged" and wanted to ensure that their families or classmates were welcome in the community. Some DWI groups were organized by DREAMERS, who, though undocumented felt themselves to be in a more stable position than others. These organizers, while representing the impacted communities, were empowered by their public-facing roles to make governance decisions.

Actors involved in governance often expressed their desire to be inclusive alongside their fears of contrarian influence, particularly given concurrent activism by "white

supremacists and Neo-Nazis”. Boundaries were open, but actively policed, in order to avoid co-option. Thus, though all three movements were using open, public Facebook groups, groups took various approaches to attempt to maintain boundaries and to screen involvement. For example, participants often wanted to engage the broader public, but not necessarily everyone included in their own immediate social networks. As one organizer of a DWI satellite group responded, when asked about establishing boundaries:

We do not want our employers involved. We do not share with police or immigration officers... we prefer those we fear not to be too close, though I think they say keep enemies close... I do not think they are all enemies, but there is fear.

To accomplish this nuanced information governance, group members often leveraged their control over who specific posts would be shared with, based on whether they were friends and family, or colleagues. Though anyone could seek out and read the group’s public Facebook page, individuals exercised control over who would encounter it through their immediate networks. Thus, a degree of obscurity was maintained by informal rules against sharing information about the group’s activities with these individuals directly. These informal rules-in-use were not absolute; indeed, at least one of the Day Without Immigrant groups we studied had an organizer who was a legal immigrant and the employer of other group members.

Decision-makers in all groups often felt personally invested in and frustrated with current politics; most either sought out involvement through social media or became involved in organizing through interpersonal interactions and relationships. The organizers for most local marches formed small, close knit groups, while national level organizing groups and the largest satellites were quite large. Thus, smaller satellites were often organized by 1 to 25 individuals, in contrast to the roughly 1000-member group that organized the national Women’s March.

Organizers were powerful in shaping goals and resources, yet the nature of their control and influence differed dramatically by community size and relationships to outside organizations. The perceived legitimacy of organizers’ decisions was critical in shaping outcomes and participation. Overall, skepticism about decision-makers was significantly less prevalent in our data than skepticism about the legitimacy of Facebook’s influence. Criticisms about organizers were most prevalent in the Women’s March and centered on

diversity and representation, particularly at the national level. One organizer of the Atlanta March for Social Justice and Women addressed her decision to get involved locally, rather than nationally:

we organized the March for Social Justice, which coincided with the Women's March all over, to represent all marginalized communities and to stand up for our rights and opportunities in the face of opposition. We wanted to stand together, for women, for our LGBTQIA friends, for people of color, for my fellow Muslim Americans and all religions, for... autonomy over our bodies and safety, for voting rights, for things we deserve and expect, but are held back and repressed, for victims of sexual violence who aren't believed. For immigrants, of all statuses... I am involved because I want to stand up for myself and my community, not just by marching, but by making the demonstration and ongoing activism as impactful as possible... our history, the history of Atlanta, it's not, maybe, different, just special to us, in terms of race, activism, and what have you... We're very proud to be a diverse and representative group.

This satellite march was uniquely large and independent from the national movement; its organizers and participants viewed it as especially successful and it was prominent in continued local action, in part because participants trusted in the diverse group of organizers.

Privacy and Openness

Involvement of Established Organizations

Movements were supported by pre-existing organizations. The Women's March and March for Science each were affiliated with a large number of outside organizations, including 39 organizations that interacted with both. The DWI movement, by contrast, had few connections with outside organizations. Only one organization, the AFL-CIO, supported both the DWI and the Women's March. The DWI shared no external affiliates with the March for Science.

Outside organizations played dramatically different roles in different movements. At one extreme, many March for Science events were directly organized by pre-existing organizations—professional, academic, and advocacy-oriented. At the other extreme, the DWI movement intentionally eschewed most public affiliations with advocacy groups, even

when receiving other kinds of support from such groups. The Women’s March was positioned at a relative middle ground and, interestingly, also institutionalized itself, formalizing an ongoing organization that was longer lasting and stronger than any formal outgrowth of the other movements.

The separation between DWI groups and outside organizations, despite overlapping membership, was an intentional means to regulate information flow, illustrating how privacy values shape the nested organizational context. As an organizer for a satellite event in the rural, agricultural Midwest explained, “all of us are in the [local organization for undocumented youth], but it’s not the whole [organization]... We all... definitely are impacted by [the organization], but like, it’s its own thing” (interview). Interviewees emphasized that they kept their work with each as distinct as possible. Similarly, an organizer of a DWI satellite event was involved in a pre-existing advocacy organization, but sought to protect DWI participant privacy, as well as to shield the advocacy organization from liability, by keeping the two distinct.

The March for Science directly engaged with outside organizations in pursuit of the same goals. Organizers for multiple satellite groups within the March for Science emphasized that they trusted organizations like AAAS to safeguard member and organizer privacy, more so than social media organizations or their own grassroots efforts, particularly given their trusted infrastructure and the opportunity to employ organizations as shields for graduate student and postdoctoral organizers who cared about the movement but were concerned about professional consequences.

Community Overlap through Cross-Participation

When members of one group also join another group, these joint memberships create channels for the flow of information of various sorts and for various reasons, including personal information about those in bridging roles. Cross-participation may link groups in the same or different movements. This section focuses on cross-participation within movements, while the following section discusses cross-participation between movements. Differences between movements in the extent and form of cross-participation reflect different potential for information flow between groups, which in turn may result from different privacy concerns.

Patterns of cross-membership observed in our data are illustrated in Figure 1. In each of these figures, red, blue and green nodes represent Facebook groups associated with the March for Science, Women’s March and DWI, respectively. Nodes represent the national and satellite groups we studied. Ties between groups indicate cross-membership, with thicker ties indicating more shared members. In Figure 1, intra-movement ties are colored red, blue and green, respectively, while ties crossing movements combine the colors of the nodes at each end. Figure 1a depicts all ties between all of the groups we studied, while panels b through g depict subnetworks of groups within and tied to the March for Science, Women’s March and DWI.

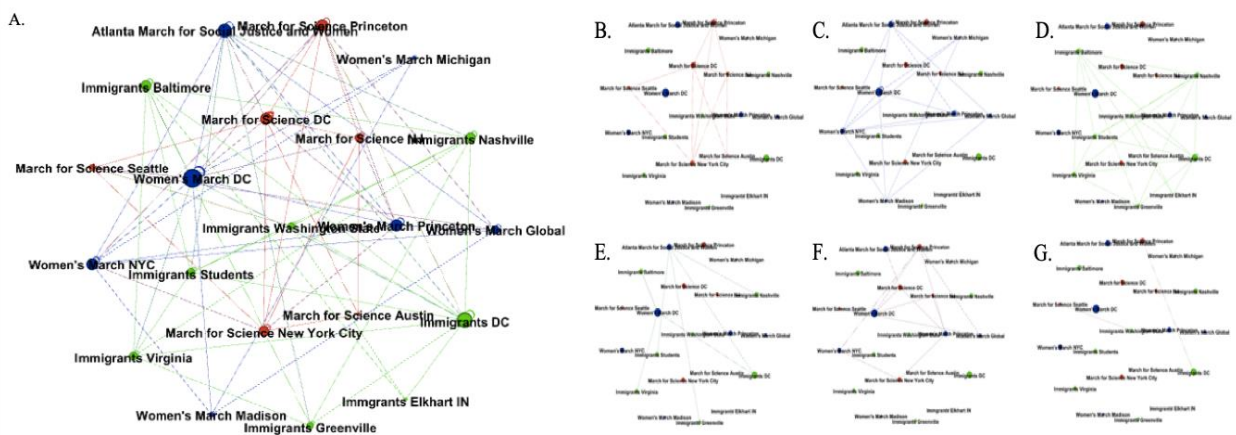


Figure 1. Shared Membership. Figure A illustrates shared membership between Facebook groups included in this study. Node size is scaled to the number of members within each group, while weighted ties represent the number of shared members. Figure B illustrates ties between the six March for Science groups included in this study, depicted in red. Figure C represents 7 Women’s March groups in blue. Ties illustrate how these groups interact with each other through shared members. Some blue nodes are tied to one another, but not to the central hub in the movement, the Washington D.C. Women’s March, indicating decentralization. Green nodes, in figure D, represent 8 Day Without Immigrants groups, with ties linking them to other nodes within the movement representing shared members. This figure represents one of three major partitions within this network, with panels B and C representing alternates. Figure E illustrates membership ties between Day Without Immigrants and Women’s March groups, crossing movements, while figure F illustrates membership ties between March for Science and Women’s March groups, crossing movements. Figure G illustrates that there were very few membership ties between March for Science and Day Without Immigrants groups.

As Figure 1 illustrates, the most common intra-movement ties are those between a movement’s national group and its local satellite groups. Cross-membership between satellite groups and the nationally-oriented groups planning the DC march may reflect interest in signaling support for the national movement. All five of the satellite groups associated with the March for Science, all seven satellite groups associated with the DWI

and five out of six satellite groups associated with the Women's March share members with the respective national groups.

Groups in the DWI movement, by contrast, were densely, but weakly, interconnected. All DWI satellite groups were connected to the national group, but often only by a few members. Ties between satellite groups were much denser than those for the March for Science. This pattern of connections suggests that members of satellite Facebook groups were generally reluctant to expose their personal information more broadly, but that each group developed at least one connection to the national organization, with organizers often serving in representative fashion. The density of weak cross-satellite ties may indicate a preference for coordinating activities among local groups, rather than with a centralized national group. Cross-satellite ties may indicate social relationships among members, based on anecdotal evidence from interviews, but our data does not provide a generalizable explanation.

Women's March satellite groups were connected to the national group more tightly than DWI satellite groups, but less tightly than March for Science satellite groups; indeed, one of the Women's March satellite groups we studied had no shared members with the national group. That group was, however, connected to the next largest group, in New York City, making it unlikely that privacy concerns drove the lack of connection. While the reasons for the less centralized pattern of cross-memberships for the Women's March compared to the March for Science are not entirely clear, here also the data do not suggest that concerns about personal information flow are responsible.

We also anticipated, based in part on previous literature about activists and advocacy groups, that patterns of cross-membership across movements might reflect common goals or objectives between movements (such as opposition to President Donald Trump) or the activities of individuals who are stakeholders in more than one movement due to multiple political concerns or multifaceted identities. Connections between seemingly dissimilar groups may also reflect shared values and opportunities in the form of policy windows, in keeping with the logic of the advocacy coalition framework (Weible, et al., 2011) and display patterns of organization interactions similar those observed in previous analysis of organizational interactions relating to advocacy (Sanfilippo, 2015). Cross-movement memberships can also reflect coalition-building. While coalitions are

often formed between organizations when there are shared priorities (Weible et al., 2011), privacy concerns in these cases lead to unique configurations in which organizational coalitions are replaced by networks of individual connections across movements.

Organizers Bridging and Connecting Movements

Interactions between groups included both membership overlap and knowledge exchange between groups. This latter form of interaction came primarily from organizers who served as bridges between groups, often simply joining other groups within their movement or another, but in some cases actually organizing multiple groups. Figure 1 illustrates the extent to which each group's organizers joined other groups, within and across movements. In figure 2, the colors of the directed ties correspond to organizers' primary affiliations.

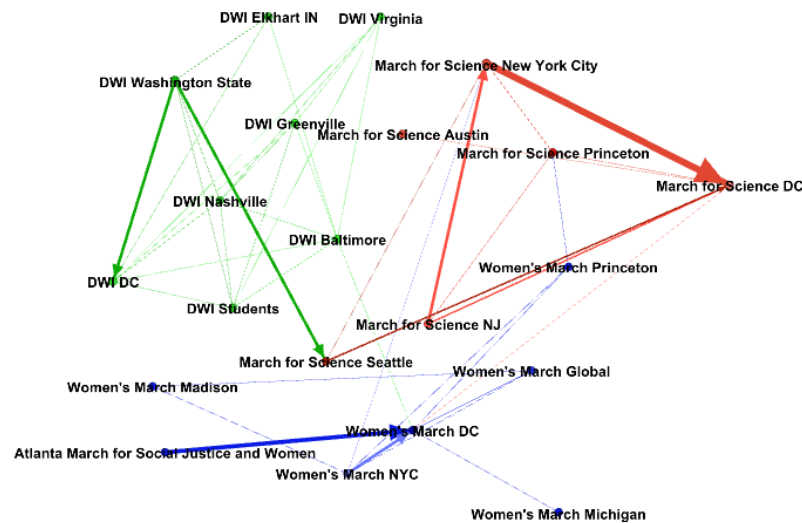


Figure 2. Organizers Bridging Groups. This figure illustrates the extent to which organizers of one Facebook group join other groups as members. Organizers are identified as “hosts,” “creators,” and in pages about the group. Red, blue and green nodes represent Facebook groups affiliated with the national March for Science, Women’s March and Day Without Immigrants, respectively. Directed ties between nodes indicate that someone who organizes within the first group is also a member of the second. The color of each arrow corresponds to the organizer’s primary affiliation (the first node), while an arrow’s weight represents the number of organizers.

Women’s March organizers were only somewhat more likely than March for Science organizers to join groups affiliated with other movements and, it appears that those joint memberships were often driven by geographic proximity. Figure 2 shows minimal overlap between Women’s March and March for Science organizers: only one organizer from the New York City Women’s March also joined the New York City March for Science group,

while one organizer from the Princeton Women's March also joined the Princeton March for Science.

Organizer cross-memberships were particularly substantial for the DWI, with each satellite group connected by organizer cross-memberships to more than three other satellite groups on average. This pattern of cross-memberships suggests a much less centralized organizational approach, based primarily on organizer cross-memberships. However, figure 2 also illustrates that nearly all satellite groups have organizers who are also members of national groups.

This figure also supports comments made throughout interviews about the origins and exchange of ideas about governance practice and the use of social media to support participation. Cross-movement membership among organizers may serve as a route for disseminating shared governance institutions. Though there were cross-memberships, Figure 1 suggests March for Science group organizers rarely joined other groups. The only such connection in Figure 1 shows that at least one organizer from the national March for Science group also joined the national Women's March group, which also emphasizes the pattern of organizers coordinating with or joining geographically co-located groups. Organizers were rather unlikely to join groups associated with other movements. When they did, geographical proximity was key. For example, at least one organizer each from the Washington State DWI group joined the Seattle March for Science group and from the Baltimore DWI group joined the national Women's March group.

DISCUSSION

This discussion maps our results onto particular privacy values and challenges, exploring how issues of privacy and personal information shape participation in political activism when it relies heavily on social media. Following a discussion of openness, specific privacy rules-in-use shaping participation and boundaries across the movements are analyzed: identity values and identification harms, the spectrum of consequences of privacy harms, and privacy as autonomy.

Facebook's platform architecture allows for multiple modes of interaction with a Facebook group include joining, following, and liking, as well as posting or messaging without affiliating and simply responding to event invitations. These choices importantly

differ in how visible they are to the general public and to organizers. Following, rather than joining, a group allows individuals to include information from the groups in the newsfeeds and notifications seen by those in their networks, without publicly revealing that they are followers. The ability to like a group without joining also permitted participants to share their interest with friends, while obscuring it from the general public.

Privacy serves directly as governance and shapes governance. Choices about boundaries and openness to outside organizations were made with privacy values in mind, yet modes of participation governed information flows. Individuals had a range of options for tuning the visibility of their participation. Despite these available mechanisms, some participants were concerned about the tradeoffs involved in using Facebook as an organizing tool.

Where privacy concerns were severe, as they were for some stakeholders, the effects went beyond shaping modes of participation to deterring some individuals from participating and severely constraining the degree to which others were able to participate. Chilling effects of this sort were most pronounced for the DWI group, where inappropriate flows of personal information could result in extremely severe repercussions. Situations in which participation is chilled by fear of repercussions involve burdens and tradeoffs distinct from standard concerns about inappropriate information flow (Brennan-Marquez & Susser, work in progress).

The boundaries established, through the use of multiple platforms and privacy rules-in-use, allowed for open democratic participation, while protecting privacy interests. This was evident with respect to how different groups interacted with outside organizations. While the March for Science employed outside organizations to protect privacy of members and organizers from outsiders, the Women's March and DWI movements were concerned about privacy with respect to such outside organizations. While this difference may reflect March for Science concerns about distinguishing professional from personal identity, it also speaks to differences between contexts in the spectrum of information risks and potential harms. These cases exist in parallel to other communities of practice, such as those that are protecting intellectual property interests, in employing privacy as governance to maintain boundaries.

Boundaries were also maintained in more subtle ways by privacy through obscurity. The spectrum of public and private modes of participation, with individuals making choices for themselves and groups configuring platforms in ways that supported multiple means of participation, maintained visible group boundaries that obscured the full extent of participation. Safety in numbers was particularly true among Women's March members who chose modes of participation without public records, such as following without joining, RSVPing via Eventbrite rather than Facebook, or simply attending without online participation. Obscurity was also sought by more vulnerable individuals, such as those who were undocumented in the DWI movement or students concerned about professional consequences in the March for Science.

These privacy challenges, in addition to the concept of privacy as governance, ought to be explored further in other cases, so as to better inform theory and practice about the implications of governance decisions regarding personal information resources. It is particularly important to further explore the impact of privacy, as governance, regarding communities that include or serve marginalized groups, given that many of the harms and challenges manifest uniquely for personal information sensitive to these groups, such as immigration status.

CONCLUSIONS

Governance of participation in knowledge commons communities and in social movements is significant in shaping knowledge resources and demonstrations, particularly with respect to privacy as governance. Privacy shapes who engages with communities, how they engage, what their roles are, and the boundaries of communities relative to openness, participation barriers, and community overlap. While patterns of participation, characteristics of organizers, and boundaries differed, all three movements were dramatically shaped by privacy as governance with respect to who was included and how resources were managed.

These cases illustrate that how privacy functions as governance is important even when the information resources within commons arrangements are not primarily personal information, as observed in previous analyses of citizen science and the Galaxy Zoo community (e.g. Madison, 2014). Furthermore, they illustrate how people can be valuable

resources governed under collaborative commons institutions, much as was shown within GKC studies of rare disease research networks (Strandburg, Frischmann, & Cui, 2017); this point is significant in further tying the GKC approach to its origins in the IAD framework.

It is clear that the participants, including those that govern, are significant to perceptions of legitimacy, outcomes, and other community characteristics, both as context and in the development of rules-in-use. While the consideration of “who” is often secondary to consideration of resources, it ought to be brought to the forefront of future GKC cases and in consideration of social knowledge construction more broadly. Inquiry into participation and its governance by privacy leads to interesting and unexpected findings.

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