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Order from Chaos: How Networked Activists Self-Organize by Creating a Participation Architecture

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Abstract

Collectives attempting to self-organize without relying on managerial control can leverage open, digital networks to foster information exchange and agility. But, as collectives grow, the open boundaries that enable the mobilization of participants and rapid exchange of ideas can give rise to new organizing challenges that make collective action untenable. We examine this tension by exploring how networked activists self-organize through open, digital networks to achieve shared aims without belonging to a common organization that supports their cause. With a seven-year, inductive field and archival study, we capture how activists from the Anonymous collective organized 70 protest actions while struggling to integrate newcomers and coordinate increasingly complex activities. Rather than succumb to chaos or managerial control, Anonymous learned to self-organize, gradually abandoning normative forms of control in favor of forms of architectural control. By creating a participation architecture—a sociotechnical framework that empowered technical experts and unobtrusively channeled newcomers to designated forums—networked activists enhanced their collective ability to coordinate complex, interdependent actions at scale. Our grounded theoretical model reveals how the challenges of self-organizing emerge with rapid growth and how these can be overcome by configuring architectural control.

Keywords: self-organization, participation architecture, networked activism, digital networks, boundaries, collective action, technology

Self-organization has been touted by scholars and practitioners alike as a means to avoid the shortcomings of managerial control and actualize human potential (Brafman and Beckstrom, 2006; Fjeldstad et al., 2012; Gulati,

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Puranam, and Tushman, 2012; Majchrzak, Malhotra, and Zaggl, 2020). In theory, self-organization entails the spontaneous emergence of order out of local, independent interactions, where ''spontaneous'' signifies the lack of a visible hand commanding the process (Ashby, 1947, 1962; Kauffmann, 1996). In application, self-organization typically refers to instances in which complex, interdependent tasks are accomplished without direct managerial control (Lee and Edmondson, 2017). For example, self-managed teams are designed to soften the edges of managerial control by making select groups of individuals accountable for aspects related to the production of a product or delivery of a service (Barker, 1993). More radical, holistic enterprise systems such as Zappos' ''holacracy'' (Robertson, 2015) attempt to replace managerial control and devolve key decisions that would otherwise be the purview of managers to employees in small, self-organized units, who manage each other according to ''value-based normative rules'' (Barker, 1993: 408). The promise of self-organization as a strategy rests on the notion that, in lieu of direct supervision, the autonomous allocation of effort empowers individuals in ways that unleash their creativity and helps organizations adapt to their external environments (Burns and Stalker, 1961; Turco, 2016; Hamel and Zanini, 2020).

Yet research by organizational theorists and collective action scholars suggests that the reality of self-organization can be quite distant from the rhetoric (Foss and Dobrajska, 2015; Bernstein et al., 2016; Reinecke, 2018). There are at least two recognized pitfalls. First, experiments in self-organizing can become increasingly onerous as collectives grow and operations become more complex (Foss, 2003). With unregulated growth, the norms that support participatory decision making break down and can lead collectives to revert or ''slip back in'' to conventional forms of managerial control (Turco, 2016: 8), increasingly rationalizing what was once normative (Barker, 1993). Second, when individuals participate directly without the benefits of representation, it can be difficult to create any type of normative order that scales. Without a clear basis of authority, indecision and chaos can dilute the capabilities of even the most well-intentioned individuals (e.g., Freeman, 1973; Rothschild and Whitt, 1986). For example, Polletta's (2012) historical study of American experiments in participatory democracy throughout the twentieth century captured a major impasse as collectives expanded their membership. Despite the shared motives of individuals devoted to direct, inclusive participation, their intentions for social change often dissolved into an ''endless meeting'' in which they struggled to make decisions. In other words, participatory decision making is not only difficult to scale but can hinder coordination of complex actions (Whyte and Whyte, 1988).

Despite the prevalence of attempts at self-organization and prominent failures across contexts (e.g., Kanter, 1972; Rothschild-Whitt, 1979; Swidler, 1979; Rothschild and Whitt, 1986), little research has examined *how* self-organized collectives create their own form of order when radically departing from or eschewing managerial control (Gulati, Puranam, and Tushman, 2012; Lee and Edmondson, 2017). Studies of self-organized collectives tend to examine unique, small-scale endeavors like communes, schools, cooperatives, or kibbutzim that do not scale well (e.g., Kanter, 1972; Swidler, 1979; Whyte and Whyte, 1988; Simons and Ingram, 1997). Other research has examined select aspects of self-organization but has not examined instances of decentralized authority that are sufficiently radical to constitute what it means to be fully self-

organized (Lee and Edmondson, 2017). In these cases, a strong leader or executive remains on the sidelines, maintaining some degree of oversight over how work is allocated to help rein in chaos (Perkmann and Spicer, 2014). It stands to reason that ''[m]oving to a context without managerial authority may demand a qualitatively different and more robust set of mechanisms for coordinating work'' (Lee and Edmondson, 2017: 39). Yet scholars have not fully delineated how collectives create practices to support self-organization (O'Mahony and Lakhani, 2011) or how they respond to the challenges that come with growth in direct participation. How do individuals self-organize in the absence of managerial control?

To better understand how spontaneous self-organization unfolds, we consider this question in the context of networked activism, where self-organization emerges from the actions of autonomous individuals working on complex challenges in porous, open networks rather than as the product of an organizational strategy (e.g., Chen and O'Mahony, 2009; Harhoff and Lakhani, 2016; Majchrzak, Malhotra, and Zaggl, 2020). *Networked activists* collaborate through open, digital networks to coordinate protest activity without relying on managerial control, without extensive planning, and occasionally without knowing each other's names. Like other collectives formed in open networks, networked activists tend to favor lateral authority (Dahlander and O'Mahony, 2011), the self-selection of tasks, minimal use of professional leaders, and direct participation (e.g., Calhoun, 1995; Dolata and Schrape, 2016) facilitated by social media (e.g., Leonardi and Vaast, 2017; Tufekci, 2017) or emerging digital technologies (e.g., Earl and Kimport, 2011; Aaltonen and Lanzara, 2015). Unlike corporate experiments, in which self-organization is planned, bounded within a firm, and curated by executives, networked activism provides a rarely explored context to examine how spontaneous self-organizing unfolds within open networks.

We conducted an inductive, longitudinal field and archival study, examining how networked activists within the Anonymous online collective organized protest actions over a seven-year period. The Anonymous context is particularly well suited to study self-organizing as the collective formed over open, public networks without the guidance of any one leader and grew rapidly, becoming a hub for activism. We discovered that as Anonymous grew and experimented with ad hoc protest actions, they experienced two key organizing challenges: how to integrate and how to coordinate a growing cadre of newcomers. To address these challenges, participants in Anonymous transitioned from normative control by configuring a participation architecture: ''a sociotechnical framework that extends participation opportunities to external parties and integrates their contributions'' (West and O'Mahony, 2008: 146). By examining the organizing practices Anonymous adopted and abandoned over time and the mode of control underlying them, we show how networked activists learned to surmount challenges from the growth in newcomer participation. We show that rather than succumb to either managerial control or dissolution, self-organized collectives can confront crises and learn to self-organize, creating order from chaos by configuring a participation architecture that enhances their ability to coordinate complex actions under conditions of rapid growth.

THE PROMISE AND REALITY OF SELF-ORGANIZATION

Although self-organization appears aligned with the current zeitgeist of corporate experiments (Lee and Edmondson, 2017; Majchrzak, Malhotra, and Zaggl, 2020), historically, organizations that favored self-governance, direct representation, flat hierarchies, and lateral authority were rarely sustainable. Collectivist practices designed to foster direct forms of participation tend to suffer one of two outcomes: either ''selling out'' to managerial control or ''falling out'' from the failure of normative control over the actions of autonomous individuals. For instance, free schools were a form of alternative school designed to avoid traditional modes of control believed to promote long-term social ills. In a study of two of these schools, Swidler (1979) found that teachers struggled to influence their students ''without recourse to traditional prerogatives,'' leading to the displacement of founding goals and a return to traditional educational models. When norms prove insufficient to support order and alternative models fail, either leaders tend to introduce traditional control mechanisms (e.g., Anteby and Chan, 2018; Mazmanian and Beckman, 2018; Chown, 2020) or the collective faces dissolution. Failure is often precipitated by frustrated participants who are inadvertently silenced by or disenchanted with the lack of structure and repeatable processes needed to foster decision making and resolve internal organizing challenges (e.g., Freeman, 1973; Polletta, 2012; Reinecke, 2018).

Despite these risks, attempts at self-organization continue. Senge's (2006) learning organization, Laloux's (2014) Teal self-managing organization, and holacratic organizations (Robertson, 2015; Bernstein et al., 2016) represent a new generation of corporate experiments in self-organization. Lee and Edmondson's (2017) ambitious review offered a framework for distinguishing degrees of self-management and concluded that few organizations decentralize authority enough to constitute self-organization. As Lee and Edmondson (2017: 50) argued, ''Efforts to organize post-bureaucratically, such as those described by Turco (2016) or Kellogg, Orlikowski, and Yates (2006), represent major deviations from the classic managerial hierarchy, but retain the manager–subordinate authority relationship.'' Most studies examine only partial delegations of authority to select workers in specified domains instead of capturing attempts at wholesale, system-wide change. Even when delegating control to lower levels, peer-based forms of control, such as concertive control, can become even more constricting than traditional forms of control (Barker, 1993). The few firms that have engaged in radically decentralizing authority, like Zappos and the social media firm Medium, often end up modifying their initial ambitions. When attempting to self-organize, Medium found it ''difficult to coordinate efforts at scale'' and ''time-consuming and divisive to gain alignment'' (Doyle, 2016). In short, we lack an appreciation of the difficulties of sustaining order when implementing self-organization (Lee, 2019). Self-organizing is often harder than it looks, and the organizational infrastructure and effort needed to support the integration and coordination of individual efforts is commonly underestimated.

Radical forms of self-organization, wherein authority is fully decentralized, often unfold spontaneously in collectives that form organically in open networks (e.g., O'Mahony and Ferraro, 2007; Gulati, Puranam, and Tushman, 2012). Well-cited cases such as open-source software (von Hippel and von Krogh, 2003; O'Mahony and Ferraro, 2007; Dahlander and O'Mahony, 2011),

crowd-based organizing (Majchrzak, Malhotra, and Zaggl, 2020), Wikipedia (Aaltonen and Lanzara, 2015; Piskorski and Gorbatâi, 2017), and Burning Man (Chen, 2009; Chen and O'Mahony, 2009) have shown how self-organization emerges to sustain ongoing creative initiatives outside of corporate auspices. In comparing the architectures of collaboration that underlie these types of forms, Fjeldstad and colleagues (2012) pointed to the need for infrastructure that connects actors to one other as well as protocols to guide large-scale multiparty collaboration. Yet they did not specify *how* these conditions are produced. The process by which this architecture takes shape is understudied but important, as this is how the rules guiding subsequent participation are formed (West and O'Mahony, 2008).

Gulati, Puranam, and Tushman (2012) made the case that a tiered participation structure, constituting both core and peripheral participation, is needed to foster coordination and motivate people to contribute to self-organized efforts in appropriate ways. Core members may act as gatekeepers to help ensure the quality or appropriateness of contributions from peripheral members (Blau, 1964; Dahlander and O'Mahony, 2011; Ferraro and O'Mahony, 2012). For instance, following episodes of contributor conflict and a subsequent decline in article quality, Wikipedia founder Jimmy Wales introduced a new core administrator (''admin'') role to regulate contributions (Klapper and Reitzig, 2018). People assuming such roles have been found to take on more coordination work (Dahlander and O'Mahony, 2011) or become more likely to revise or revert the contributions of others (Shaw and Hill, 2014), which can undercut the premise of direct participation. Often, self-organization emerges with modest forms of normative control, whereby peers socialize each other to contribute in appropriate ways (Shah, 2006). With growth and maturity, norms may transition to representative forms of governance to support collective management of production (O'Mahony and Ferraro, 2007; Ferraro and O'Mahony, 2012). Without some form of governance, collectives may dissolve. Yet few studies have observed how collectives attempting to self-organize manage to survive and thrive past this inflection point.

Networked Activism

Networked activists offer a context to examine radical forms of self-organization, as organizing unfolds in open networks in the absence of either formal governance or managerial control. Network activists cooperate through open, digital networks to achieve shared aims but do not necessarily rely on a common, established organization that supports their cause. Open, digital networks—or networks that are publicly accessible—lower participation costs (Diani, 2011; Bennett and Segerberg, 2012) and make it easier for many individuals to engage in activism, ranging from ''Occupy'' and ''#metoo'' demonstrations (e.g., DeCelles, Sonenshein, and King, 2020; Reinecke and Ansari, 2020) to campaigns aiming to curb capitalist excesses (e.g., Yue, Rao, and Ingram, 2013) to calls for attention to corporate malfeasance (e.g., Akchurin and Lee, 2013) and interventions to protect the environment (e.g., Sine and Lee, 2009; Hiatt, Grandy, and Lee, 2015). For example, *The New York Times* identified Facebook as critical to the ability of the ''Yellow Vests'' (*Gilets Jaunes*) to self-organize in protesting economic injustice: ''Call Facebook a tool, a threat, a weapon, it's hard to know. But there would be no Yellow Vests

today without it'' (Peltier and Satariano, 2018). While social networks have historically been important to recruiting activists (McAdam, 1988; Gould 1991, 1993; Diani and McAdam, 2003; Diani, 2011), networked activists mobilize large numbers of participants rapidly via open, publicly available digital networks. Digital networks have become increasingly central to organizing large-scale protests such as the Trump-incited insurgent attacks on the U.S. Capitol, the Yellow Vests protests in France, and the Umbrella Revolution in Hong Kong, creating a scale of collective impact unimaginable to even the most resourceful activists of decades past (Earl and Kimport, 2011). Yet this impact can be ephemeral, as in the case of Arab Spring insurgencies, in which networked activists' efforts dissipated as quickly as they formed (Snow and Moss, 2014; Tufekci, 2017).

Organization scholars may marvel at the speed at which networked activists mobilize, but how these forms bypass the perils of direct participatory decision making is not well understood. The emotional energy (Collins, 2014; Reinecke, 2018), shared purpose (Massa, 2017), common identity (King, Clemens, and Fry, 2011; Wry, Lounsbury, and Glynn, 2011), or cultural cohesion (Gusfield, 1962) that brings people together to drive social change in open networks is insufficient to sustain lasting impact without a means to direct independent effort toward collective ends (Klandermans and Oegema, 1987; Klandermans, 2004; Taylor et al., 2009). Organizing in open networks can be challenging as open networks are, by definition, accessible to anyone and yet managed by no one (Ferraro and O'Mahony, 2012). Individuals may not share common identities, skills, or experiences, which can inhibit the formation of or commitment to shared norms. Participants may not identify with or see themselves as belonging to a particular social movement and operate without a shared identity or professional leadership to guide their efforts (e.g., Calhoun, 1995; Castells, 2004). Thus networked activists tend to operate more as a ''crowd'' or ''mob'' guided by passion and collective intentionality rather than in alignment with a formalized charter or clearly articulated mission (e.g., Melucci, 1996; Bennett, Segerberg, and Walker, 2014; Majchrzak, Malhotra, and Zaggl, 2020).

Yet even the most ardent activists benefit from the scaffolding offered by established organizations to attract resources, coordinate activities, and accommodate the growth of new participants (McCarthy and Zald, 1977; Staggenborg, 1988). Otherwise, distributed efforts toward shared ends may end up ''flailing out against an unjust universe'' (McAdam and Scott, 2005: 6), regardless of the numbers mobilized to support a cause. Traditionally, activists benefited from the support of established social movement organizations (e.g., the Woman's Christian Temperance Union) to advance a change agenda and organize protest actions (Clemens, 1993; Hiatt, Sine, and Tolbert, 2009). Without strong leadership, activists can become radicalized, distancing themselves from needed resources (Haines, 1984; Gutierrez, Howard-Grenville, and Scully, 2010) or shifting away from their founding ethos, mission, or goal (Jenkins, 1977; Osterman, 2006; Levy, Reinecke, and Manning, 2016; Lee, Hiatt, and Lounsbury, 2017). In traditional social movement organizations, professional organizers help temper extremes and restore both enthusiasm and order by guiding activists toward a shared vision (Morris and Staggenborg, 2004) or identity (Wry, Lounsbury, and Glynn, 2011). Without such guidance, activists may grow and gain momentum but find large-scale coordination of

collective action fragile or taxing to sustain. Little research has examined how networked activists overcome the challenges of sustaining momentum at scale.

The unregulated, rapid growth of participation in open networks can be a mixed blessing as the strategies that initially mobilize diverse participants can later sow the seeds of goal displacement (Grodal and O'Mahony, 2017). Scholars of collective action tend to view the mobilization of new participants as positive in terms of the ability to foster worthiness, unity, numbers, and commitment (Tilly, 1999). Large numbers of people committed to a cause signal power: they attract attention, trigger the allocation of resources, and stimulate further growth of participants (McCarthy and Zald, 1977; McCarthy and Wolfson, 1996; McAdam and Snow, 1997). Yet broad mobilization of networked activists can not only be difficult to organize but also inhibit meaningful ongoing participation—cultivating ''slacktivism'' or ''clicktivism'' that lacks sustained commitment to the cause (Land, 2009: 205).

While the growth of new participants can increase the capacity for collective impact (Tilly, 1978), it can also amplify the diversity of ideas about how to organize, sowing the seeds of chaos. Complexity from participants' diverse identities or motives can introduce conflicting ideas about how to organize (Zald and Ash, 1966), particularly when there is no well-articulated collective identity (Wry, Lounsbury, and Glynn, 2011). For example, during Black Lives Matter protests, an influx of new participants who favored transgressive tactics such as looting and property damage threatened peaceful protests organized by local leaders focused on advancing criminal justice reform (Leazenby and Polk, 2020). Wry, Lounsbury, and Glynn (2011: 449) argued that ''articulating a clear defining collective identity story that identifies the group's orienting purpose and core practices'' can help corral diverse efforts. Reinecke (2018) proposed that fostering and sustaining emotional energy is key to sustaining the collective activities of diverse participants. Thus, networked activists need to figure out how to corral the enthusiasm of a growing body of diverse participants without creating schisms or diffusing momentum (Zald and Ash, 1966). But this can be tricky in the context of open networks, in which few boundaries to participation exist. What may be underappreciated in extant research but very much appreciated by anyone trying to direct the efforts of networked activists is that organizing a growing cadre of activists can be an unwieldy endeavor. The challenge is how to integrate and coordinate passionate, autonomous participants who may not be heedful (e.g., Weick and Roberts, 1993) or expert at organizing.

METHODS

Many scholars have identified antecedent conditions for self-organization to emerge (e.g., Ostrom, 1995), but it is rare to gain access to a research setting in which this process is observable at inception. We leveraged three years of ethnographic data and four years of archival data to develop a fine-grained understanding of how networked activists self-organized in their first seven years. As networked activism thrives on direct participation without the help of external leaders, ours is an excellent context to observe how self-organization unfolds organically. This form of activism is not characterized by the organizational boundaries and employment relationships typical of corporate self-

organizing experiments. Consequently, organizing practices are more visible and organizing challenges are discussed more openly, making the contemporaneous study of self-organization viable. Our inductive, longitudinal field approach entailed observation and documentation of activists' organizing practices across both online and offline forums (Kozinets, 2010; Hine, 2015) to obtain a multivocal, robust perspective (Akemu and Abdelnour, 2018).

Research Context

We engaged in theoretical sampling to identify a growing, unexpectedly impactful collective of networked activists: Anonymous. Although Anonymous lacked the professional leadership or formal structures activists often rely on (e.g., Morris and Staggenborg, 2004), they became capable of strategic action over time (Dolata and Schrape, 2016) by making use of accessible technologies (Orlikowski, 2000; Earl and Kimport, 2011; Leonardi, 2011) to disrupt powerful financial institutions and governmental entities. Collectives like Anonymous, which emerge without a clear, formal leader, are understudied but are an increasingly prominent source of social disruption (Tufekci, 2017). By studying networked activists like Anonymous, we can better explain how the more general challenges of self-organization in open networks can be overcome.

4chan imageboard. The Anonymous collective grew out of an imageboard called 4chan founded by Christopher Poole in 2003 as a discussion forum and image-sharing repository for Japanese animation (anime) and related interests. By design, individuals posted images and comments on 4chan in ways that maintained participants' anonymity. Poole sought only the pure sharing of anime without the cultivation of individual reputations. Identifiers that could link to a real-world identity were not allowed, permitting participation without etiquette concerns. 4chan assigned randomized numbers that changed every time a participant left and re-entered the site, compelling each participant to adopt variations of the generic username ''Anonymous'' and ensuring that they would remain unidentifiable.

/b forum. As interest in 4chan grew, so did the variety of topics posted by participants. Two years after its founding, Poole found that the imageboard was overwhelmed by pornographic and offensive content that did not align with his initial vision. Thus he designated a second forum—called ''/b''—as a place where NSFW (''not safe for work'') discussions could take place. With little moderation, no predetermined purpose, a requirement that all contributions be anonymous, and a sense that ''this was the place to let your naughty hang out,'' /b grew in popularity and became known as an Internet ''cesspool'' (Jeffries, 2013). Participants in /b celebrated pranks that advanced the pursuit of *Lulz*—recreation achieved at the expense of others—reveling in the exchange of crude images and ideas that challenged the boundaries of propriety. As one participant noted:

> If you want to lose all moral value and sanity, feel free to visit /b/. The majority of all 4chan traffic frequents this board. Illnesses and sexual deviations including but certainly not limited to autism and coprophilia have been scientifically proven to be

> symptoms of browsing /b/. Most people who regularly visit /b/ (or ''/b/tards'') are sociopaths altogether. (Wiki describing 4chan imageboards)[1]

Participants on /b began referring to each other as *Anons* (which we adopt going forward) and used the moniker *Anonymous* to refer to the collective. This moniker provided a ''big tent'' under which a host of varied interpretations of what Anonymous signified could co-exist (Jones et al., 2012). Many shared memes expressed disdain for political correctness and celebrated the free flow of information, developing norms of what constituted Lulz. No formal leaders articulating a coherent identity story ever emerged (e.g., Wry, Lounsbury, and Glynn, 2011). Forum participants maintained varied ideas about what they thought Anonymous was and could become. As they gained confidence in their ad hoc pranks, Anons gradually shifted their evolving purpose from recreational to political concerns (Massa, 2017), transitioning from having fun at the expense of others to engaging in protest actions that came to fit a definition of activism as ''everyday acts of defiance'' intended to upend the status quo (Baumgardner and Richards, 2000: 283).

One advantage of studying networked activists like Anonymous is that, at the time of this study, most interactions occurred in online, public forums available not only to all participants but also to scholars. Following recent work by Kozinets (2010) and Leonardi (2015), when conducting ethnography in digital settings, the targets of analysis are the communications and actions of individuals captured in digital content such as text, images, or videos. Although the personal identities of participating Anons remained undisclosed for the duration of this study, their communications and organizing practices were observed and analyzed, providing reliable data on how individuals organized their activities.

Data Collection

Before data collection began, the first author observed websites identified with Anonymous, becoming familiar with the community's norms and *argot*: jargon specific to Anons. This early observation period helped identify the digital forums where Anons discussed their activities. Following Kozinets (2010), Anonymous sites (i.e., websites, chatrooms) chosen for observation met the following criteria: (1) content relevant to the research question; (2) high ''traffic'' of postings; (3) large numbers of discrete posters; (4) detailed and descriptively rich data; and (5) a wide variety of participant-to-participant interactions. The sites observed are listed in Online Appendix A (http://journals.sagepub.com/doi/suppl/10.1177/00018392211008880). Ethnographic research is characterized by prolonged engagement in a culturally distinct social world replete with its own

[1] Anonymous communications are replete with terms that are deliberately offensive to mainstream audiences. For instance, derogatory suffixes are common across forums: newcomers who do not adhere to established norms and practices are called ''newfags,'' site veterans are called ''oldfags,'' and users of /b are ''/b/tards.'' As Knuttila (2011) noted, despite the obvious crudeness and gratuitous usage of the terms, they serve various functions within the collective: they are used as signals of belonging (*argot* or jargon) and as tools to shock casual observers. They follow a ''Troll'' aesthetic in their intentional offensiveness and political incorrectness. Given the relevant function they serve in enforcing normative control, we have chosen to include the native terms as they were observed and studied in our paper.

ways of being and doing (Becker, 1976; Van Maanen, 1988). Depth of engagement allows one to understand and convey activities through thick description (Denzin and Lincoln, 2005; Emerson, Fretz, and Shaw, 2011). This can be accomplished online as well as in person (Akemu and Abdelmour, 2018).

From January 2008 to February 2011, the first author spent at least 10 hours per week observing interactions online; researching content created such as videos, memes, and argot; and gathering data relevant to Anons' activities. The first author took field notes of participant interactions with particular attention to the organizing practices used but was not a ''participant observer'' (Spradley, 1979; Geertz, 1984). Rather, following the advice of Langer and Beckmann (2005), the first author ''lurked'' or covertly observed actions without interfering to ensure the legality of the author's own actions and to capture authentic behavior unaffected by observation (see also Roulet et al., 2017). As Akemu and Abdelmour (2018) suggested, ethnographers can become co-present with their informants in digital settings either through archival records of informants' interactions or through contemporaneous observations of the process by which those digital artifacts are produced. Consistent with recommended approaches for studying organizing processes over time, we collected seven years of field data that enabled us to trace events through both archival and contemporaneous approaches (Langley and Tsoukas, 2010).

We collected archival data of Anonymous communications, memes, and visual representations over an 88-month period from October 2003 to February 2011. For 38 of those months (January 2008 to February 2011), we also collected two types of field data: (1) real-time, digital communications on the /b imageboard in 4chan and other Anonymous sites (n = 1,157 discussion threads and chat logs containing at least 10 comments each and n = 167 images; see also Online Appendix A) and (2) field observations of protest actions at four street protests in the Boston and Cambridge, Massachusetts areas.[2] The methodological timeline shown in Figure 1 displays four years of archival data and three years of ethnographic field data collected in situ.

Data Analysis

To analyze these data, we used an iterative, grounded approach (Locke, 2001; Corbin and Strauss, 2011; Thornberg and Charmaz, 2014), as well as analytic moves proposed by Grodal, Anteby, and Holm (2020). To code multiple sources of data across one common data set, we used the qualitative software package NVIVO from 2008. When possible, data sources were time-coded based on when the content was posted, allowing examination of how activities unfolded in sequence. As Lee and Edmondson (2017: 51) noted, when self-organizing systems confront ''significant conflicts or crises,'' that provides an opportunity to ''understand the degree to which radically decentralized systems can survive through high levels of internal or external turbulence.'' Thus during initial coding we focused on a puzzle: how Anons managed to organize new protest actions despite ongoing challenges with integrating and coordinating new participants.

[2] These observations included Scientology protests in February 2008, the 12th global protest against Scientology in January 2009, sit-ins in support of Occupy Wall Street in July 2011, and protests against the Boston Police Department in January 2012 in response to a police raid on the Occupy Boston campsite.

Figure 1. Methodological Timeline

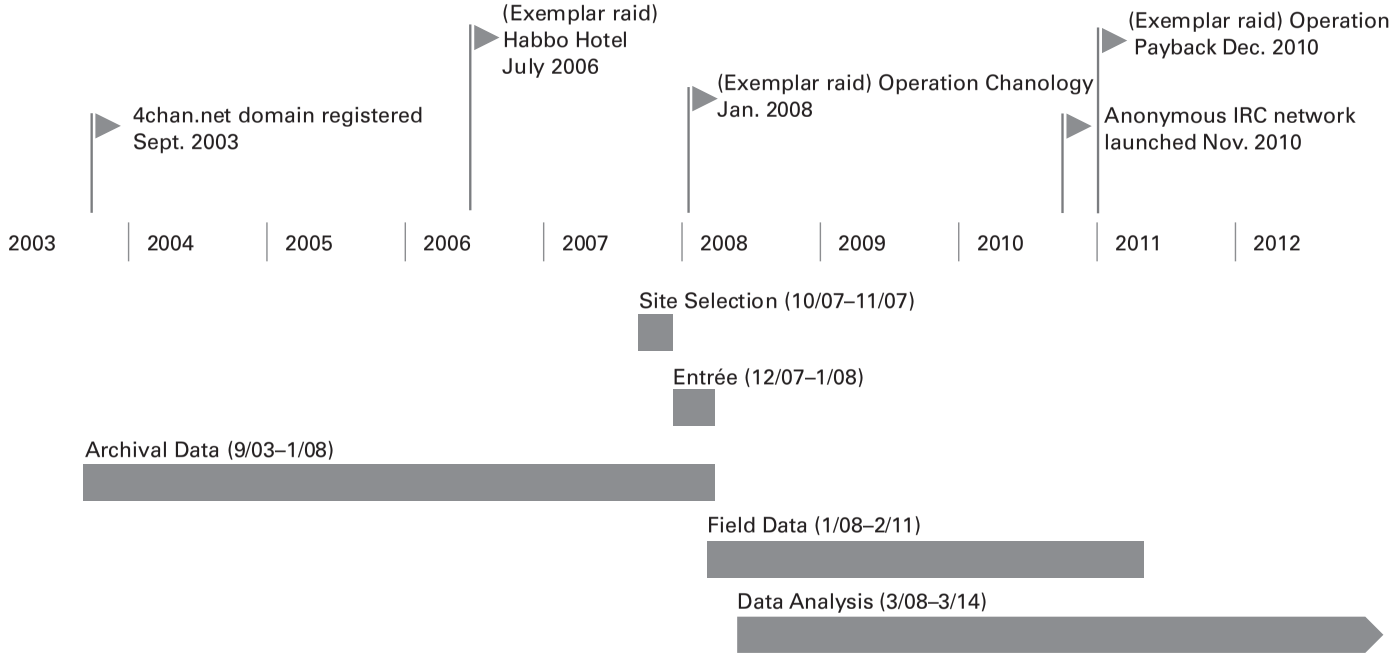


Table 1. Escalation of Networked Activism (Sept. 2003–Feb. 2011)

	Phase 1: Experimentation Ad Hoc Protest Actions (Sept. 2003–Dec. 2007)	Phase 2: Chaos Participation Growth and Disorder (Jan. 2008–Dec. 2009)	Phase 3: Order Configuring a Participation Architecture (Jan. 2010–Feb. 2011)
Activities			
Posting frequency (4chan.org/b)	979,000 posts per month / 48 million total	5.5 million posts per month / 132 million total	10 million posts per month / 130 million total
Number of protest actions (N = 70)	18 raids over 51 months (.35 raids per month)	19 raids over 23 months (.83 raids per month)	33 raids over 13 months (2.5 raids per month)
Pace of protest	39 days between raids	33 days between raids	21 days between raids
Targets			
Type	Small websites / individuals	Large non-profits	Private entities / corporate targets / large public
Number / variety	22 targets raided / new target every 70 days	8 targets raided / new target every 90 days	36 targets raided / new target every 30 days
Defensive capabilities	Undefended / "soft"	Minimally defended	Well-defended targets / "hard"
Scope of Capabilities			
Types of activism	Contained (nuisance pranks)	Contained and transgressive (peaceful rallies, flooding)	Transgressive and illegal (DDoS, malware)
Participant expertise	Minimal technical skill and no programming of web tools	Moderate technical skill (e.g., flooding software)	Expert technical skill (e.g., bot network, custom software)

Coding proceeded through four stages of analysis: (I) logging different forms of escalation in activism; (II) mapping changes in how activism was organized over time; (III) identifying how Anons changed their practices; and (IV) inducting a grounded theoretical model.

Stage I: Escalation of activism. Foundational studies of activism have tended to focus on predicting a single dependent variable such as the pace of protest activity (e.g., McAdam, 1983). Consistent with this approach, we measured the pace of activism, but—as shown in Table 1—we also tracked additional measures such as the growth of participants engaged in protest activities, types of targets, scope of activists' capabilities, and degree of expertise required to engage in activism. Multiple variables provided a comprehensive understanding of how Anonymous escalated activism over time.

To measure participation, we captured the frequency of unique postings to Anons' primary forum, the 4chan.org/b imageboard. The 4chan imageboard measured community participation by celebrating when GETs, a running count of posts to the imageboard, hit specific growth milestones. Posting frequency increased tenfold from 979,000 to 10 million posts per month during the time of our study.

To unpack the pace of activism, we first identified 70 protest actions or raids that occurred during the seven years of study; see Online Appendix B for a complete list. For Anons, a *raid* is a standalone attack on one or more targets. Multiple raids bundled together—focused on the same target or driven by the same motive—constitute an *operation*. Raids had defined starting and ending periods and could be identified by time-stamped, punctuated periods of activity in community forums. For instance, a single distributed denial of service

(DDoS) attack against the Church of Scientology (CoS) website servers was considered a raid; a series of attacks on the CoS relying on different methods that took place over a month in February 2008 was considered an operation. Calls for raids that did not mobilize support were not considered raids. We measured the pace of activism as the time between raids in days, finding a sharp reduction in the elapsed time between raids over seven years.

To code the targets of activism, we categorized targets as public, corporate, or nonprofit organizations in line with Walker, Martin, and McCarthy (2008) and Bartley and Child (2014). Capturing the nature of targets is important because target selection can reflect activists' growing ambitions (Reinecke and Ansari, 2020). Because Anons distinguished between ''soft'' and ''hard'' targets, we coded the defensive capabilities of targets, i.e., how challenging it would be to mount an attack against them. We drew on three data sources: target websites' security features, discussions of the targets' vulnerabilities in Anonymous forums, and post-raid debriefs. Targets were considered ''undefended'' if they had no perceivable defense capabilities. We coded sites as ''minimally defended'' if they had moderate technical skills and defensive capabilities. For example, a virtual reality site frequented by teens with minimal moderation by amateur site administrators was considered a soft target by Anonymous, and we coded it as minimally defended. Such websites typically lacked the enterprise-level protections of well-defended targets. We coded sites as ''well defended'' if they had defensive capabilities so advanced that only expert hackers could penetrate them. Online retailer Amazon was deemed by Anons as one of the hardest targets, and we coded it as well defended due to its servers' resilience against typical DDoS attacks.

We coded the scope of Anonymous' capabilities in terms of the approach or the types of protest actions undertaken (see Online Appendix B). We coded protest actions such as peaceful rallies, symbolic displays, and other forms of civil disobedience as ''contained.'' Outright attacks on targets such as website flooding and *defacing*—overwhelming websites with requests, avatars, memes, or images—were coded as ''transgressive.'' We coded actions in violation of federal laws such as the Computer Fraud and Abuse Act (CFAA) (18 U.S.C. § 1030) as ''illegal.'' This coding is largely consistent with Walker and colleagues' (2008) method of coding different approaches to activism. We also coded the technical expertise required to execute these protest actions, noting whether minimal, moderate, or expert levels of technical skill were needed to participate. Activities such as posting to imageboards, wikis, or digital repositories required minimal technical skill. Activities that required downloading software to participate, such as IP (Internet Protocol) masking during DDoS attacks, required moderate technical skill. Activities that required the advanced use of phishing (probing targets for personal information through seemingly innocuous inquiries), DDoS attacks, SQL injection (using malicious code to try to destroy or disable a database), and multi-stage social engineering (e.g., tricking people to obtain passwords) required expert technical skill. Both authors visited Anonymous discussion forums to assess tools' difficulty for informants and iterated to resolve any coding differences. Tools that were more challenging to learn tended to have more disruptive effects, with botnet deployment being the most disruptive.

Stage II: Changes in the organization of activism. We created numerous tables and figures to map changes in the ways Anons organized protest actions, and we demarcated phase start and end points at which their ways of organizing shifted to address emergent organizing challenges. We looked for clear evidence of ''continuity in the activities within each period and . . . certain discontinuities at [their] frontiers'' (Langley, 1999: 703). As in previous studies (Koopmans, 1993), this helped us identify phases of organization. In phase 1, which we label the ''experimentation'' phase (Sept. 2003–Dec. 2007), a small, insular group of Anons engaged in independent ad hoc raids on soft targets. In phase 2, ''chaos'' (Jan. 2008–Dec. 2009), a growing number of newcomers and veterans engaged in loosely organized raids to upend a single, minimally defended target. In phase 3, ''order'' (Jan. 2010–Feb. 2011), Anons configured a participation architecture: differentiated modes of participation for newcomers and veterans to enable multi-pronged, concurrent operations aimed at well-defended targets.

Stage III: Organizing practices. We identified two primary challenges that affected Anonymous' ability to self-organize across these three phases. Anons were challenged by how to integrate new participants to engage in increasingly complex protest actions and how to coordinate the actions of a growing number of participants unfamiliar with Anonymous' norms and operations. We analyzed the practices Anons introduced and adapted during the 70 raids that took place between 2003 and 2011. Our operating definition of a *practice* focused on the activities, behaviors, and things that enabled purposive, everyday action (Feldman and Orlikowski, 2011). We considered a practice to be new if it was not used in a prior phase.

With fine-grained observations, we noted when Anons introduced practices that either reinforced normative control or configured how and where participants could interact and communicate though architectural control. For example, initially Anons used norms to shame newcomers into adopting established practices. We coded this as a practice reliant on normative control and noted when this practice became less effective or strained by growth. When Anons began segmenting participation and channeling newcomers into designated forums, we coded this as ''architectural control,'' because control was now achieved by delimiting the spaces where newcomers could participate. Over time, we observed decreased usage of practices leveraging normative control and increased usage of practices using architectural control.

Stage IV: Inducting a grounded theoretical model. After the first three stages of analysis, we selected an exemplar raid from each phase to narratively link the practices Anons used to address the challenges of self-organizing. We based our selection of exemplar raids on the significance of each raid to Anons, as indicated by the degree to which Anons referenced a raid long after its conclusion. This helped provide internal validity of the prior analyses by confirming the relationship between changes in organizing practices and the type of control Anons relied on. We iterated repeatedly between a thick narrative of raids and comparative figures and tables to show how self-organization evolved. We then created visual displays (shown in subsequent sections) to reflect how Anons' process of organizing transitioned from ad hoc experimentation reliant

on normative control, to chaos, and then to the gradual configuration of an ordered participation architecture: ''the opportunity structure extended to potential external contributors'' (West and O'Mahony, 2008). Once we understood how participation was becoming ordered, we delineated the roles that emerged with the configuration of a participation architecture and how these roles were filled. In doing so, we realized that, rather than fall victim to the chaos that emerged with growth, Anons learned to self-organize by configuring a participation architecture that would channel the growing enthusiasm of newcomers. Based on these findings, we inducted a theoretical model grounded in our context that could inform other instantiations of self-organized activity.

EXPLAINING HOW NETWORKED ACTIVISTS SELF-ORGANIZE

We observed how networked activists mobilized new participants, fostering the escalation of protest actions, as shown in Table 1. We traced this escalation across three phases over seven years, which we labeled experimentation, chaos, and order. Fine-grained analysis of our data revealed the escalation of activism in terms of not only participation growth but also raid frequency and pace, types of targets, and types of activism. Over time, we found a sharp increase in the frequency and pace of raids (all 70 of which are listed in Online Appendix B). Activists also escalated their ambitions, pursuing increasingly well-defended or ''hard'' targets—from online teen communities to major corporations like Amazon and PayPal. Activists' scope of capabilities increased from contained nuisance pranks to transgressive and illegal multi-pronged operations. Over time, tactics increasingly relied on expert rather than minimal or novice skill, moving from flooding websites with avatars to programming botnets that automated sophisticated, large-scale attacks.

At the same time, we were puzzled as to how this escalation happened in the face of increasing chaos and disorder. As the number of participants grew, Anons struggled with two organizing challenges: how to integrate new participants and how to coordinate collective action. By tracing the practices adopted and abandoned in each phase, as shown in Table 2, we explain how the normative control initially established became compromised and how Anons transitioned to architectural forms of control to create order. Next, we detail the practices Anons used to address participation challenges differently across the three phases.

Phase 1: Experimentation: Ad Hoc Protest Actions (Sept. 2003–Dec. 2007)

Initially, the /b imageboard was open to anyone able to find it. No passwords or warnings protected an unsuspecting web surfer from stumbling into /b's showcase of offensive content. Several participants described it as ''the wild west'' where ''anything goes and nobody cares'' (Encyclopedia Dramatica). Early participants in /b experimented with ad hoc protest actions that they called *raids*—attacks on unsuspecting targets.[3] At this time, raids consisted of pranks

[3] At the founding of 4chan in 2003, only 20 contributors participated regularly. Over 200,000 unique, anonymous visitors would visit the community every month by early 2005 (DING DONG IMPORTANT by Moot - 2/26/05 @ 5:30AM EST).

Table 2. Practices Configuring Participation (2003–2011)

Organizing Challenge	Form of Control	Practices Configuring Participation	Phase 1: Experimentation (Sept. 2003–Dec. 2007)	Phase 2: Chaos (Jan. 2008–Dec. 2009)	Phase 3: Order (Jan. 2010–Feb. 2011)
How to integrate new participants?	Normative	Explaining culture/practices through real-time dialogue/memes	◑	○	○
		Communicating in argot to signal belonging	●	◕	◔
		Shaming newcomers for norm non-compliance	◑	●	◔
		Testing new participants skills	○	●	◔
		Posting protocols and norms in wiki	◔	●	◑
	Architectural	Designing tutorials for newcomer instruction	○	◔	◑
How to coordinate collective action?	Normative	Adjusting protest actions through dialogue	●	◑	○
		Composing representations explaining protest actions	●	●	◔
	Architectural	Bundling raids under umbrella operations	○	◑	●
		Partitioning newcomers and veterans	○	◔	●
		Assigning operator roles	○	○	●
		Channeling newcomers into curated forums	○	○	●
		Automating attacks through use of software	○	◔	●

No adoption ○
Minimal adoption ◔
Partial adoption ◑
Full adoption ●
■ Color indicates practice is commonly deployed in our findings
□ No color indicates practice is largely absent in our findings

like flooding online forums by disrupting discussion threads or invading websites with avatars. Over time, raids became a core activity in /b. Shii, an early collaborator with the 4chan founder, Christopher Poole, noted that participants ''join raids and do whatever to keep the Lulz going. Every b/tard [self-deprecating reference to /b participants] was in it for the Lulz and I'm not sure why you were in there [4chan forum] if you weren't'' (www.shii.org, Dec. 2007).

A raid was initiated by any Anon who posted a call to action, and execution of a raid unfolded in real time without much planning or discussion of target selection. Gathering interest in a call for a raid could fail unless one understood Anons' argot and emerging norms of contribution. Calls for raids that were deemed petty or mundane were disregarded as signs of newcomers' ignorance. For instance, calls for personal vendettas (e.g., defacement of ex-girlfriends' websites) were shunned by others who wrote ''NYPA,'' i.e., ''not your personal army.'' Personal vendettas revealed participants' misunderstanding of the norms that constituted Lulz. When newcomers posted calls that violated norms—either because they were not written in argot or because their posts revealed self-identifying information—newcomers were ignored, shamed with name calling, or admonished to ''lurk moar,'' i.e., observe from the sidelines and learn more before calling for a raid.

Once a call was deemed credible, asynchronous, rapid-fire interactions in /b would ensue and give momentum to an unfolding raid. Few directives were

issued after the initial call to arms, and participants were free to follow their own interpretations of it. Raids were typically aimed at what Anons considered soft targets: defenseless websites that posed minimal threat of retaliation. Raids did not require extensive planning to create modest disruptions: participants worked independently in cycles—mobilizing and executing serial raids, one impromptu target at a time—relying on tools that could be used by anyone with minimal technical skill. During this phase, raids occurred intermittently (every 39 days on average) as Anons worked at a leisurely pace to provoke reactions from soft targets. All participants were considered equal; even the original poster of a call to action would fade from the spotlight, becoming just another anonymous participant once a raid was underway.

Exemplar raid. In mid-2006, Anons targeted the Habbo Hotel, a virtual online community where teenagers gathered to socialize.[4] Habbo raids were the most popular of the 18 raids recorded during this phase, and celebrations of the first Habbo attacks were held in subsequent years. Raids were triggered by an open call to arms and followed by detailed instructions:

> [A]non raids at habbo hotel US take place at the pool side room and we usually do /b/ lockades and if we have enough /b/lackup we can do other stuff. You need a character that is all black with a big black afro and a black suit. Name can NOT have anything about /b/ . . . you don't have to be creative as you will be banned A LOT. If you get banned there is no point in waiting the 2 or so hours. Make a new account, any name, any e-mail. it says it sends an activation e-mail but you don't need to activate for it to work. accounts take about 30 seconds to make for epic fun. (June 2006, posted to 4chan, /b forum)

To signal that this raid was credible, instructions were partially written in argot, including several key pieces of information: the technical location of the Habbo Hotel environment (U.S. servers, pool side room); how to create an avatar that other Anons could identify (black afro and black suit); and tips on how to circumvent banning systems put in place by website moderators (make a new account). So, while this raid was open to anyone who wished to participate and instructions were spelled out, to fully participate, one had to be immersed in the norms Anons had cultivated within the /b forum.

Raids commenced when Anons logged into the Habbo Hotel website, with droves of identical avatars sporting ''afros'' actively blocking or disrupting interactions among legitimate users of the website. This prank provided ongoing amusement for Anons and spurred continued engagement. This Habbo raid lasted for 18 hours as Anons shared programming vulnerabilities and limitations of the Habbo website within /b. Participants in the raid were repeatedly met by site moderators' attempts to ban Anons from re-entering the Habbo site: ''They have been kicking out everyone and shutting down the servers for a couple of hours, or maybe we are overloading . . . they think we will leave, that we

[4] According to the organization's customer support website, ''Habbo Hotel is an online community for players 13 years or older where you create your very own Habbo character and design hotel rooms. You'll also meet new friends, chat, organize parties, look after virtual pets, create and play games and complete quests. Lots of activities in the hotel will earn you badges too. Habbo is all about having fun with friends in a safe and exciting environment'' (https://help.habbo.com/entries/22561483-What-is-Habbo, accessed on July 16, 2013).

need sleep . . . just make sure to report back when the servers come back up'' (Anon, /b forum). Anons delighted in continuously experimenting with website flooding tactics to overcome modest obstacles thrown up by Habbo site moderators: ''Another successful/blockade/brothers . . . mods [moderators] were crying, harbl [penis] in hand . . . sweet victory'' (raid contributor in 4chan, /b forum). Only Anons immersed in argot would understand the full meaning of this post, i.e., *we humiliated you; your impotence was exposed*. Participants celebrated, delighting in the creation of a new capability, which rallied their collective confidence and elevated their ambitions.

Practices configuring participation. Anons' first organizing challenge was to figure out how to integrate new participants by identifying which calls to action could be relied upon to provide Lulz and by leveraging normative control to socialize those who needed a little extra guidance. As shown in Table 3a, the primary practices shaping participation at this stage were explaining, communicating, and the shaming by veterans of newcomers ignorant or in violation of Anons' newly established norms. Veterans documented their raid exploits in public wikis that served a dual purpose: explaining how to participate in and communicate about raid exploits, which could help newcomers get socialized, and celebrating wins to motivate new participants to return for more mayhem. Anons quickly learned to evaluate one another's competence and experience by assessing each other's usage of argot and adherence to norms of anonymous postings. For example, participants using a name other than ''Anonymous'' revealed themselves as unfamiliar with the well-established norm of anonymity. Veterans enforcing norms through shaming called those unfamiliar or unheedful of norms ''namefags'' (for revealing their real names or using a pseudonym) or ''tripfags'' (for using tripcodes that revealed their identity). While participation was open to anyone, one's ability to inspire contributions from others was dependent on competence gained through immersion. Ultimately, language served as a normative filter through which fellow participants' worthiness was evaluated.

A second challenge Anons confronted was how to coordinate collective action. Participants with varying technical expertise sometimes struggled to effectively contribute to raids. Detailed instructions could fall short of what was needed to guide participants with varying levels of familiarity with online tactics. For example, participants did not always synchronize their actions to create the desired disruptive impact. One participant bemoaned both wins and fails after a raid on Habbo Hotel in 2007:

> Habbo '07 can be considered both Win and Fail. Large amounts of evidence indicate that the raid was, in fact, a success: Habbo.com was shut down for a large amount of time and flickered back up intermittently, while foreign hotels remained raided pretty badly. Many, however, deplore the lack of coordination relative to the '06 raid, resulting in failed SwastiGETs and rampant chaos. Despite the differences, however, most /b/tards agreed it was a Lulzy event. (https://encyclopediadramatica.rs/The_Great_Habbo_Raid_of_July_2007 accessed July 21, 2013)

To improve the coordination of participants' disjointed efforts and enhance their collective impact, veterans began composing step-by-step visualizations explaining how to effectively participate in a raid. But these visualizations could

Table 3a. Phase 1: Experimentation (Ad Hoc Protest Actions, Sept. 2003–Dec. 2007)

Organizing Challenge	Practices Configuring Participation	Representative Data
How to integrate new participants?	Explaining culture/ practices through real-time dialogue/memes	''AIDS is now word-filtered (but not, as every /b/tard now knows, AIDS with a lower-case L) as a direct result of the 7/12 raid in the Language section of Moderation and Guidance. In fact, harbl is another 4chan word, which demonstrates their importance in the raids generally. . . . Signed, Anonymous, who is Legion'' (An Anon explains some argot, memes, and a diversionary tactic to new participants in 4chan, /b, July 19, 2006)
	Communicating in argot to signal belonging	''We have forgotten our most treasured memes. . . . Instead, we have shitty memes such as desu [Japanese term used by 4chan participants to signal appreciation of anime subculture], which most /b/-tards don't even pronounce properly. We're so wrapped up in . . . raiding websites that we've forgotten what it means to be a /b/tard . . .'' (Anonymous post on 4chan, /b urging contributors to immerse themselves in 4chan culture)
	Shaming newcomers for norm non-compliance	''A namefag [participant who refuses to remain anonymous] with blue.text . . . claimed that compared to most if not all /a/ users, he's seen the most amount of anime and that he uses his name simply to 'state facts.' These not-so-humble claims have been seen as pathetic attempts at e-peen stroking [reference to self-aggrandizement] . . .'' (A veteran Anon shames a peripheral participant who defied norms by using his name)
How to coordinate collective action?	Adjusting protest actions through dialogue	Fri Oct 13, 2006 9:48 pm / AIDS subject: HABBO AM NOT WORKING ANON 1: I haven't been banned or anything, and I have the latest Shockwave, but when I open the window it doesn't work. I have a bar at the top saying how many are online and 'log out', but the rest is black. HALP PLZ ANON 2: Try using habbit? ANON 1: Habbit? I'm not banned, it just doesn't work :-(ANON 2: Try it anyways just in case. If you recently changed ip's it's possible that you obtained an ip which has already been previously banned. ANON 3: That's not banned, that's something else fucking up. A ban would let you go like normal, until you signed in, or reregister then you would get another ban message. Try reinstalling shockwave, Ive had habbo fag up on me like that. ANON 1: Just tried. It doesn't work on MyCoke either, it says I don't have the latest Shockwave but when I look, I actually do. Thanks, I will reinstall and see how it goes. ANON 2: Doesn't happen for me. If it persists, I'll take a screenshot and upload it to Photobucket. (Exchange demonstrating how Anons collaborate to make real-time adjustments to being banned by moderators)
	Composing representations explaining protest actions	ANON 1: Ok, so yea, as you all know Halloween is on its way. Time: 5:00PM (EST) Main Targets: Habbosphere Pool Deck, Rooftop, and Theaterdome. (Off Topic: BTW! NEW MEME! WHEN SOMEONE SAYS, ''WHERE ARE OUR BAG OF TRICKS'', YOU SAY, ''SILLY [. . .] TRICKS ARE FOR HABBOS.'') ANON 2: I take it this is in the US Habbo. There are a lot to choose from, try and point out which one you mean plxkthx. I personally can't wait till b&fire night (Nov 5th)/Will prolly turn up ANON 3: . . . Needs a poster to be official ANON 1: OK CALL THIS THE MOST FUCKED UP POSTER EVER BUT I DID IT QUICK AND DID NOT TAKE TIME ON IT. . . . BUT ITS A POSTER. (BTW POSTER FIX: IT IS 5:00PM EST.) ANON 3: Thats OK for now. but we need an official one soon. Someone get a hold of some dat Shoop. ANON 4: [Participant shares poster as an image attachment] Distribute at will (Exchange posted Oct. 10, 2006 demonstrates how a call to arms with general participation instruction led to the creation of a ''poster'' used to spread news of the raid and signal that it was a legitimate Anonymous action [poolsclosed.us forum])

quickly become obsolete as real-time raid adjustments unfolded. Anons continuously alerted each other of changes in raid plans and target responses through asynchronous dialogue in the /b imageboard where they reported real-time adjustments. For example, when a target changed account creation requirements, Anons suggested fixes and altered their tactics within minutes. Like children on a playground, all participants were equal, brainstorming new tactics and sharing them in an open forum, determining what the game would be just before engaging in play. As one contributor put it, ''We are there [/b forum] all the time when we are on a raid . . . we just switch tabs to see what is going on and do what we have to from there . . .'' (4chan, /b, Dec. 2007).

During this phase, all forms of participation were open and were limited only by one's ability to decipher Anons' argot and learn the norms needed to effectively participate. The targets for activism were relatively easy to impact and not necessarily politically motivated. By the end of this phase, veteran Anons began to get frustrated with socializing newcomers and started to more formally document how to participate in a raid and detail what made raids effective or pleasing to reduce the challenge of integrating newcomers into Anonymous.

Phase 2: Chaos: Participation Growth and Disorder (Jan. 2008–Dec. 2009)

As attacks on defenseless targets such as Habbo Hotel became less challenging and more routine, Anons began seeking more sophisticated targets (refer to Table 1) that would ''finally test Anon'' (PartyVan IRC, Jan. 23, 2008). In 2008, ad hoc, sequential raids were loosely bundled into a single operation that aligned the distributed efforts of diverse Anons against a single hard target: the Church of Scientology. This first operation was named Project Chanology, a portmanteau referring to a war by the ''chans'' against the Church of Scientology (CoS). To gather the numbers needed to disrupt the CoS, Anons mobilized participants from several adjacent online forums that had not participated in prior raids. Given the CoS's reputation for retaliation and for having robust defenses against cyberattacks, veteran Anons began engaging in more planning in advance of a raid. The challenge was that many of the newcomers recruited to this large-scale operation were unfamiliar with what Anons considered Lulz and ignorant of Anonymous' norms for interacting. This introduced a degree of disorder that proved disruptive to organizing complex, large-scale protest actions.

Exemplar operation. Anons chose the CoS as a target when its litigiousness threatened Anons' celebration of the free flow of information on the Internet. In January 2008, a video of Tom Cruise discussing his Scientologist beliefs was posted to multiple video-sharing websites. Attorneys representing the CoS threatened legal action against websites that posted it. Anons interpreted this threat as an affront to a growing, shared belief that all information on the Internet should flow freely. Participants in the /b forum issued a call for Anons and lurkers in adjacent sites to become ''heroes of the Internet'' and ''battle for justice'':

> Gentlemen, this is what I have been waiting for. . . . This is a battle for justice. . . . Now, gentlemen, we are going to fight for something that is right. I say damn those of us who advise against this fight. I say damn those of us who say this is foolish. /b/rothers, our time has come for us to rise as not only heroes of the Internet, but as its Guardians. /b/rothers. Let the demons of the Intarwebs [Internet] become the angels that shall vanquish the evil that dare turn its face to us. /b/rothers . . . man the harpoons! (4chan, /b)

To grow this operation, Anons leveraged social media, mobilizing new participants from adjacent public forums such as 711chan.org. Anons also began an unprecedented planning process, as veterans moved planning from asynchronous postings in /b to real-time IRC (Internet Relay Chat) to avoid the

slow crawl of asynchronous communication crowded with irrelevant memes and questions posted by newcomers: ''Talk amongst one another, find a better place to plan it, and then carry out what can and must be done. It's time, /b/'' (4chan, /b forum).

IRC channels were not only more difficult to access for those new to Anon practices but also afforded new ways to organize protest actions. Any participant could identify a gap in planning—such as the lack of banners to promote a raid—and either address the gap themselves or create a new IRC channel where others could help address it (e.g., #raidbanner). Participants in open IRC channels created videos to mobilize new participants or debate the advantages and disadvantages of various attack tools and tactics (e.g., website flooding versus website defacement) out of range of /b. As select participants transitioned to IRC, many abandoned the earlier practices put in place on 4chan to protect anonymity. Users were no longer forced to choose an anonymous identifier, and some began using a consistent pseudonym, enabling them to accumulate reputations, which allowed participants to more easily distinguish newcomers from veterans.

The first operation, Project Chanology, commenced when a critical mass gathered on IRC to launch website attacks on Scientology.org. The first YouTube video posted by early participants threatening the CoS received over 5 million views within a few days. Veteran Anons guided a growing contingent of newcomers to aim their primary weapon—the Low Orbit Ion Cannon (LOIC), an open source website testing application—to overload and disrupt the main CoS website. This technique initially worked well, as veterans were familiar with LOIC, which was commonly used to stress test commercial websites. Another popular tool, Gigaloader, helped coordinate individual attacks to maximize collective effect.[5] These tools enabled more website disruption than the flooding attacks used on Habbo Hotel as distributed participants could synchronize independent attacks aimed at a common IP (Internet Protocol) address. The initial raid swamped CoS websites with large volumes of server requests, blocking access to those websites from January 18–25, 2008.

Anons' mobilizing efforts tapped into deep-seated anti-CoS sentiments that existed long before the emergence of Anonymous. Many newcomers, unfamiliar with Anons' quest for Lulz, were interested in disrupting the CoS through less technically sophisticated means than veteran Anons would use. Newcomers had their own ideas of how to participate, which did not cohere with veterans' ideas of what constituted technically challenging, Lulz-seeking exploits. With little filtering or editing of newcomers' ideas possible, a host of newcomers created disorder, launching rogue protest actions in haphazard directions without adhering to Anons' cultivated norms of contribution. Rogue protest actions included ''black faxing''—overwhelming CoS fax machines with dark pages—or calling in fake pizza orders and taxi pickup requests to overwhelm local CoS offices.

[5] ''Gigaloader allowed people to paste links to images for a target website. It would constantly reload those images and in turn would quickly use up a website's bandwidth. With as few as a hundred or more users sending the same requests, it had the potential to slow the website down to a crawl or render it totally unavailable'' (http://www.linux-magazine.com/Online/Features/Anonymous-Activist-Hackers-in-the-Headlines).

Other newcomers were reluctant to engage in website attacks and were more comfortable with less transgressive forms of civil disobedience such as street protests. Independent regional cells that eschewed raids in IRC focused instead on coordinating street protests worldwide; they created numerous unvetted wiki entries to explain how to acquire street protest permits, conduct marches, and distribute signage and color-coded maps. Street demonstrations overwhelmed veterans with mundane logistical concerns that distracted them from more technically demanding exploits. A wide variety of disjointed raids on the CoS continued for six months, garnering Anonymous media attention and further flooding its forums with eager newcomers. What was at first a focused denial of service attack on the CoS spiraled into a chaotic free-for-all.

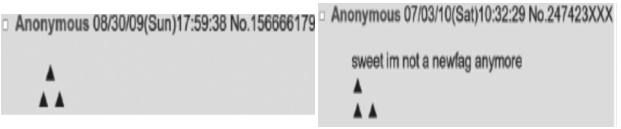
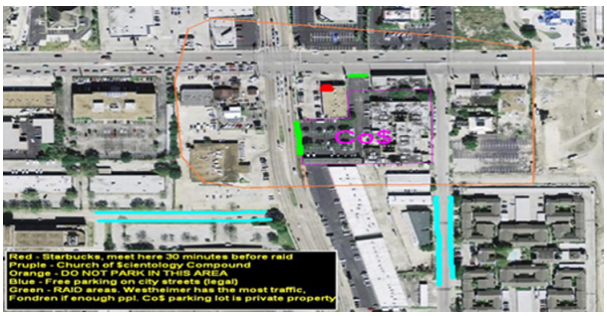
The CoS attacks were significant as this was Anons' first multi-pronged operation, wherein we observed large-scale mobilization and the bundling of multiple types of raids directed toward a single target. But this unregulated growth came at a cost, as it created chaos around how to engage in protest actions. The technical exploits that had initially thrilled Anons when experimenting with pranks were now combined with myriad protest actions advanced by newcomers that veteran Anons found mundane. Veterans were frustrated and exhausted by the effort required to coordinate online and offline efforts in ways that would create meaningful impact. Participants were now expected to participate in planning in IRC channels, compose easy-to-grasp instructions, and create videos or visual representations with maps and directions to route newcomers to offline protests. Veterans wore themselves out trying to organize an expanding repertoire of protest actions and explain them to participants unaware of Anonymous norms. A veteran user on an IRC exchange noted that ''Hordes of newfags . . . are in control and there is no way to get it [control] back without destroying what we created'' (Partyvan IRC, Dec. 2009). Veterans were dismayed by their loss of control over the protest actions undertaken and their inability to shape Anonymous' direction. Without clear ways to integrate and coordinate newcomers' activities, veteran Anons could do little in open forums to prevent the proliferation of rogue raids.

Practices configuring participation. With unregulated growth, the normative control practices that had previously supported organizing ad hoc protest actions failed to socialize and integrate hordes of newcomers. Veterans tried to figure out how to direct newcomers who had their own ideas of what Anons should do. With more voices came more ideas. Without the guidance of a strong leader or a coherent collective identity narrative, what constituted an acceptable protest action expanded haphazardly, challenging the collective's ability to self-organize.[6] Veterans had always depended on normative evaluation of argot to verify who was a ''true /brother'' (''I'm not talking to anyone who can't tell me what loli was popular and when'').[7] But, as shown in Table 3b, the normative practices established in the prior phase were woefully inadequate to socialize and integrate hordes of newcomers eager to engage in CoS

[6] Thank you to our reviewers for raising this point.

[7] *Loli* is a Japanese slang term commonly used in Japanese anime (cartoons) and manga (magazines). It refers to a female who is underage, appears to be underage, or acts like a girl through dress and childlike behavior.

Table 3b. Phase 2: Chaos (Participation Growth and Disorder, Jan. 2008–Dec. 2009)

Organizing Challenge	Practices Configuring Participation	Representative Data
How to integrate new participants?	Testing new participants' skills	''. . . threads pop up on /b/, claiming that this certain thread is the final boss of the internet's first level, and whoever posts in the thread is no longer a newfag. That is total bullshit, however . . . you will never become a true /b/rother :(.'' (Message to lurker on 4chan after failing to use tri-force properly. Tri-force served as a test of programming skill used to determine if a participant could be considered a reliable raid participant without sacrificing anonymity) Examples of tri-forcing: On the left, an Anon does it perfectly. On the right, the tri-force is not aligned. 
	Posting protocols and norms in wiki	''Ok, newfags, here's the news facts: 1. Anonymous is not some 'awesome group of awesome people doing awesome acts of kindness and awesomely hacking things.'; 2. Anonymous does not care about other people.; 3. Anonymous is not some avenging army.; 4. Anonymous is not YOUR personal army.; 6. True Anon have long since forsaken any scrap of humanity.; 7. If you want to be a lovey dovey faggot, Paul Fetch's group is that way. -----> ; 9. If you want a cause, join greenpeace. Don't fucking call yourself Anon.; 10. If you are part of the chanology cause (member of enturbulation or any of their other forums, or '*chans') again, DONT FUCKING CALL YOUSELF ANON! WE WERE ANONYMOUSFIRST. YOU GUYS AREN'T ALLOWED IN THE TREEHOUSE.'' (A veteran Anon trying to shame newcomers and make it transparent that Anonymous has normative standards it seeks to uphold. From ''Project Chanology'' in Encyclopedia Dramatica, http://encyclopediadramatica.com/Project_Chanology, post titled ''HEY FAGGOTS,'' Oct. 2008, accessed in Nov. 2008)
How to coordinate collective action?	Adjusting protest actions through dialogue	''can't ban VPNs posting from behind IPredator VPN returns a message saying you are spam . . . you have to disable it to post . . .'' (Veteran describing usage of VPN [virtual private network] to newcomers seeking help on how to protect their personal information during a raid)
	Composing representations explaining protest actions	''. . . Parking is near local school within walking distance but out of sight of COS, meet there at 10:30. . . . We need a permit, just in case. There are two areas we can stand, one on a sidewalk next to the COS yard and one across the street. If we stand near the church, do not go into their lawn. . . .''  (Posting and visual representation for Dallas, TX Church of Scientology protest provide detailed instructions on what to do and bring to the physical site)
	Bundling raids under umbrella operations	''Declaring that a state of war exists between the 'Church' of Scientology and the Internet and making provisions to prosecute the same. Whereas the 'Church' of Scientology has committed unprovoked acts of war against the Internet and Society as a whole; and Whereas, such acts continue to pose an unusual and extraordinary threat to the security and freedom of the Internet and its users; and Whereas, such acts render it both necessary and appropriate that Anonymous exercise its rights to self-defense and to seek out lulz: . . . Anonymous is hereby authorized and directed to employ the entire force of Anonymous and the resources of the Internet to prosecute war against the 'Church' of Scientology. . . .'' (Posting on 711chan designed to unite different online collectives and factions under a single umbrella of Anonymous and Project Chanology [operation] titled ''The Formal Declaration of War,'' /i/NSURGENCY)

raids any way they saw fit. When norms failed to gain compliance, veterans began adopting new, cumbersome practices.

First, veterans attempted to test whether new participants could accomplish technically expert tasks; they prompted newcomers to perform programming feats such as *tri-forcing* wherein users were asked to align three triangles on their screen. While some newcomers aspired to pass these tests, others continued to engage in rogue raids and bypass veterans' attempts to create order. As the scope of protest activities (i.e., street protests and online raids) and number of participants expanded, the logistics of testing newcomers became too difficult, sapping veterans' enthusiasm.

Second, veteran Anons began composing detailed instructions and directing newcomers to wikis like Encyclopedia Dramatica to guide participation. Yet few newcomers took the time to immerse themselves in this content and become familiar with the many types of attacks now conducted by Anonymous. At the same time, Anons introduced new tools to coordinate the timing of mass denial of service attacks so that individual efforts could collectively overwhelm targeted websites. To participate, newcomers had to be convinced that a particular target was worth attacking and log in to the tool at the appointed time. While many joined such raids, ensuring enough participants were synchronized across time zones became onerous.

In this phase, influxes of newcomers mobilized from the CoS operation frustrated veterans who sought transgressive tactics without expending the effort needed to integrate and coordinate well-intentioned, albeit inexperienced, newcomers. ''We keep getting deep into these massive operations that bog Anon down and don't allow focus on other shit . . . We can't afford another newfag shitstorm'' (Anonops, Dec 2009). When ''the excitement of the initial attacks wasn't there anymore'' (Pistol, AnonIRC), IRC organizers drifted away from the CoS operations. Rumors of possible FBI raids led some to seek cover: ''Time to lay low for a while . . . serious business is getting serious'' (Partyvan IRC). During this lull, veteran Anons worked behind the scenes to create order over the rogue actions of newcomers and configure participation in ways that would make self-organizing less onerous.

Phase 3: Order: Configuring a Participation Architecture (Jan. 2010–Feb. 2011)

After Operation Chanology, veteran Anons began creating order from chaos by designing a participation architecture that would systematically channel newcomers into designated, open forums, segregated from veterans in closed forums. This partitioning allowed veterans to curate activism in a more technically sophisticated direction. Anons increased their pace of activism (from one raid every 33 days to one raid every 21 days), executing more technically expert raids without organizing masses of inexperienced participants. As shown in Table 2, the haphazard tactics of the prior phase were largely abandoned in favor of automated solutions executed by smaller numbers of experts. To ease the challenges of organizing unskilled or ill-informed newcomers, mobilization efforts became more selective, focusing only on those participants skilled enough to engage in protest actions effectively.

Unskilled participants, sometimes referred to as ''surface members,'' were relegated to mundane tasks, as reported by an AnonIRC poster: ''Depending

on your level of involvement, you communicate different ways. Surface members like DDoSers and picketers are generally organized through twitter, facebook, or forums. . . . The most progress, however, is made from IRC communication.'' ''The most progress'' now unfolded in IRC forums as veteran Anons created closed, invite-only IRC channels, housed in secret servers outside the reach of both law enforcement and newcomers. Hosting IRC forums on servers owned by Anons gave veteran Anons more control over how to structure communication channels and allowed them to define where newcomers could participate. By channeling newcomers away from the planning unfolding in closed operations, veteran Anons were able to curate expert operations without the work of bringing novices up to speed.

Exemplar operations. In December 2010, WikiLeaks came under pressure to stop publishing secret U.S. diplomatic cables. Fearing litigation, companies such as PayPal, Amazon, Bank of America, MasterCard, and Visa stopped accepting donations to WikiLeaks. In response, Anons organized ''Operation Payback: Avenge Assange'' and launched distributed denial-of-service (DDoS) raids against these firms ''to fight the first infowar ever fought'':

> Julian Assange deifies everything we hold dear. He despises and fights censorship constantly, is possibly the most successful international troll of all time. Now, Julian is the prime focus of a global manhunt, in both the physical and the virtual realms. . . . Therefore, Anonymous has a chance to kick back for Julian. We have a chance to fight the oppressive future which looms ahead. We have a chance to fight in the first infowar ever fought. (Operation Avenge Assange flyer, Encyclopedia Dramatica)

Rather than mobilize a broad base of contributors as they had for Project Chanology, IRC operators began publicizing attacks in select forums to attract only skilled contributors. The mobilization of ''surface members'' did not happen until significant planning had already occurred within the closed IRC channels (e.g., #command), which usurped newcomers' ability to shape the operation. Calls to action became more polished and easily shareable via banners designed to recruit newcomers to serve as foot soldiers in the ''first infowar,'' albeit with sharply curtailed roles (as we will show in Table 3c).

Instead of being shamed or socialized to adhere to community norms, newcomers were now treated as ''cannon fodder'' (AnonOps, Jan. 2011). Veterans who had adopted IP masking tools to hide their pseudonyms when engaging in illegal attacks did not always teach newcomers about such tools in advance of raids. Many newcomers using DDoS tools to attack Federal Trade Commission–regulated websites like MasterCard and PayPal did not have IP masking protections in place; in this way, veterans leveraged newcomers as decoys. As one Anon explained, ''the flooding of servers with all of these newb I.P.'s distracted the feds from hunting down the real men behind the mask'' (AnonOps IRC, Jan. 2011).

Veteran Anons carefully planned the massive ''Operation Payback'' operation. One visual representation summarized a blend of tactics: ''1.) DdoS, 2.) Spreading the cables, 3.) Voting for Julian Assange on the Time's 2010 Person of the Year, 4.) Spreading information on Twitter, Myspace, Facebook and other social networking sites, 5.) Printing out and distributing cables, 6.) Complaining to local political figures, and 7.) Protesting.'' To support

Table 3c. Phase 3: Order (Configuring a Participation Architecture, Jan. 2010–Feb. 2011)

Organizing Challenge	Practices Configuring Participation	Representative Data
How to integrate new participants?	Designing tutorials for newcomer instruction	''Hello Newbloods, . . . As a new user it is impossible for us to know your current level of understanding of the various components that make IRC so powerful and useful. That makes the creation of guides and tutorials difficult. Experienced netizens and those with a technical background will find much of this information boring and will want to bypass it all and get on with chatting. . . . This will allow you to not only familiarize yourself with the terminology but will let you ask thoughtful questions which allows us to help you quickly and accurately. We maintain a dedicated channel on the network for this purpose with both network staff and knowledgeable volunteers who are happy to help you set up your own IRC client and secure your connection. So have a look through the pages first then join us on the network.'' (Introductory text welcoming new participants to Anonymous and guiding them toward tutorial channels populated by experienced volunteers who might answer lingering questions, https://newblood.anonops.com/) ''To help you understand . . . how you can become a member of the Anonymous collective; we have a dedicated web page (https://newblood.anonops.com) that will help you guide through. . . .'' (Announcement of new tutorial space, https://anonhq.com/opnewblood-anonymous-recruiting/, posted to 4chan, /b in response to questions about how to participate in Anon protest actions)
How to coordinate collective action?	Partitioning newcomers and veterans	''*Now talking on #pure-eliteMay 31 11:58:25 *Topic #pure-elites: security research and development. - PRIV8! PRIV8! No leaks, no vanity.'' (Contributor warns others to keep information compartmentalized to elite forums, i.e., #pure-elite)
	Assigning operator roles	''Their year in review video details what they have done, and it is clear they have similar plans, if not more. . . . Some have linked to how to set up chatting in IRC and how to be anonymous when browsing the Internet. Can anyone LOL? . . . press release on AnonNews characterizes an 'Expect Us' banner. See for yourself. Apparently, a lot of the new operations would be led by @Crypt0nymous who has proven himself as a channel op.'' (An Anon ridicules efforts to educate newcomers and points to a channel operator who will be taking on a greater leadership role after having ''proven himself'') ''Heidi Ho there /b/ I'm a Newfag and now that I've been here all Summer I was wondering if I need a letter of recommendation From a Registered OldFag'' (New participant in IRC channels jokes about how difficult it is to gain access to closed operations and references a channel operator, i.e., ''Registered OldFag'')
	Channeling newcomers into curated forums	''Get an IRC client, connect to irc.anonops.li, join #opnewblood and #anonsec. newblood is for new users, anonsec is for the downloading of necessary security programs. #anonsec is information I was just made privvy to within the past few hours. . . .'' (AMAnonymous discussion for newcomers on how to get involved with Anonymous activities) Calls to arms banner containing key elements necessary to synchronize raid efforts, including launch times synchronized across time zones in recognition of a global rather than local audience, a target URL, tools that support the attack with cross-platform support, designated IRC forums for coordination, and real-time update livestreams. 
	Automating attacks through use of software	''Botnets are a big part of it now. Without them the big boys won't feel a thing. That is the big lie—it isn't about 9000 people getting together. It is just a few guys with botnets bringing these guys down.'' (Participant describing Operation Payback raid on AnonOps) ''Makes you wonder how many Zeus botnet handlers are actually in Anonymous. Imagine the joy of being a LulzSec [closed channel, expert participants] dude right now. via SANS'' (An Anon discussing how an elite, splinter group of Anonymous veterans, LulzSec, infected less-experienced participants with malware inside the freely distributed and promoted tool Slowloris, March 5, 2012)

multi-pronged, concurrent operations, veteran Anons created functionally specific IRC channels, each identified by a keyword signaling its purpose: from general discussion (#Forum) to supporting DDoS attacks (#Target). Subchannels for planning new protest actions were created as needed. Each channel was controlled by an operator who guided requests for help: ''Piti: request: need peeps to get in on #OperationPayback/banner.''

The largest forum during the first weeks of December 2010 was #OperationPayback with over 4,000 contributors. Within that forum, Anons debated how to exploit the secure servers run by Mastercard, Visa, and PayPal to protest their refusal to process donations for Wikileaks. These servers were designed to handle high volumes of web traffic and were well defended against the types of DDoS attacks Anons had favored in the past. Even with 4,000 contributors, Anons were unable to disrupt corporate targets armed with servers resilient to thousands of people pinging them at the same time. Amazon was not a viable target due to its enterprise-level cloud security: ''We cannot attack Amazon, currently. The previous schedule was to do so, but we don't have enough forces'' (AnonOps IRC, #AnonOps channel, Dec. 6, 2010).

Thus PayPal was selected as an initial target, and several veterans volunteered their botnets to help scale the server attacks. *Botnets* are networks of hijacked computer devices used to grow, automate, and speed up a hacker's ability to carry out cyberattacks. One Anon bot herder commanding a 30,000-computer botnet launched several waves of attacks.[8] Anons were thrilled with their ability to exploit an automated virtual army, even if their botnets compromised unsuspecting bystanders: ''Looking forward to when the SWAT teams go into a house and find grandma playing mahjong on her infected computer . . .'' (Darknet IRC). On December 8, 2010, Mastercard and Visa websites were taken down by botnets, which prevented many clients from accessing their financial records for a few days. Newcomers who failed to mask their IP addresses while participating in the attacks were tracked by the FBI, leading to several arrests. For example, a 16-year-old boy was arrested in the Hague in connection with the attacks against Mastercard and PayPal. Using IP addresses provided by PayPal, the FBI investigated eight IRC servers used by Anonymous, and ''log files showed that the commands to execute the DDoS on PayPal actually came from [this IP]. . . .'' Two of the log files included an identical message: ''Good_night, paypal_Sweet_dreams_from_AnonOPs.''

Despite several arrests, server attacks continued, but further disruptions were minimal as corporate targets diverted traffic to supplementary servers. With well-defended targets adapting their defenses to combat the server raids, ''the game had changed,'' and veteran Anons organized new tactics in response: directing participants to the newly unfolding Operation Leakspin, which targeted the same grievance but focused on redirecting web content to focus public attention on leaked State Department cables. Operation Leakspin required reading State Department cables in depth, annotating them to shape their interpretation, and redirecting web traffic to distribute the ''best[,] least exposed'' Wikileaks information:

[8] A bot herder leads a collective of hijacked devices with remote commands. Once they have compiled the bots (e.g., by surreptitiously gaining access to the computers of unsuspecting users who may have clicked a link in an errant e-mail or downloaded a virus), a herder uses command programming to drive their next actions.

> Gentlemen, we have, at best, given them a black eye [server attacks]. The game has changed. When the game changes, so too must our strategies. Begin searching through Wikileaks, find only the best least exposed leaks you can get your hands on. Post summaries of them along with the complete source. Encourage the reader to read more. Make one-to-two-minute YouTube videos reading the leaks. Use misleading tags, everything from ''Tea Party'' to ''Bieber'' [redirecting]. Post snippets of the leaks everywhere. They don't fear the LOIC [DDoS tool], they fear exposure. The fun begins at 9:00 PM EST.

These tactics required expert technical skill and tended to produce more visible and lasting wounds on targets.

At the conclusion of Operations Payback and Leakspin, Anons turned their attention to protesters in the Tunisian uprising associated with the Arab Spring. When Tunisians were blocked from accessing the Internet by their own government, Anons worked to distribute instructions on how to circumvent the blockages, forming a global base for networked activism on the world stage.

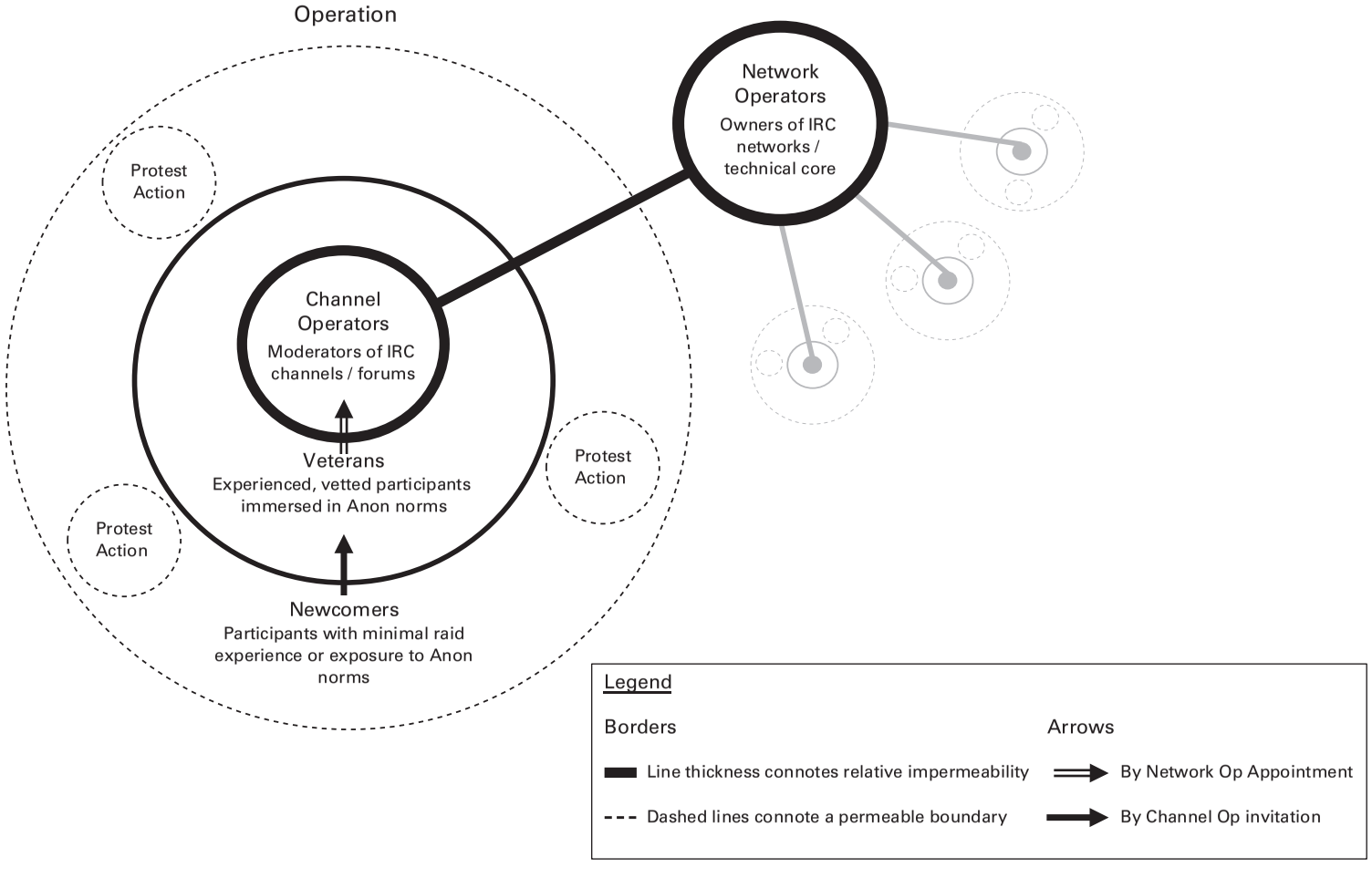
Practices configuring participation. In this phase, veterans created new, independent communication forums they could control, developing a network of IRC forums exclusive to Anonymous that formed the basis of a participation architecture. Veterans who volunteered their own servers to host independent IRC networks formed the technical core of the network, becoming network operators. Network operators could assign other veterans to be channel operators only after they demonstrated their expert technical skills during raids. Channel operators then controlled the IRC forums in which protest actions were planned, as shown in Figure 2.

Network operators administered the IRC networks while channel operators moderated activity within specific IRC forums. Channel operators managed discussions and could create or collapse forums or ban uncooperative participants as they saw fit. Both types of operators controlled what was visible and accessible to newcomers entering a network. Thus the architecture that operators created channeled newcomer participation to forums (e.g., #tutorial or #opnewblood) that were partitioned away from invite-only planning forums (#pure-elite, PRIV8). As operators configured this architecture, they began creating two tiers of participation. ''Surface members'' were insulated from the planning activities unfolding at the core of the network and were relegated to the outer surfaces of the network, while the network core became the architects of participation. This helped compartmentalize mission-critical information much like in a terrorist cell, as only core participants organizing the network were aware of operation planning, while participants' awareness in the outermost rings of the network remained at the surface level.

Channel and network operators managed the network's growth by controlling the innermost nodes and curating the protest actions possible through control over the discussion forums available. The organizing challenges that had previously plagued Anons remained constant, but they were handled differently as Anons transitioned from normative control practices (explaining, communicating, and shaming newcomers) to architectural control practices (partitioning and channeling newcomers to designated areas) as shown in Table 3c.

Inside closed channels, veteran Anons gained curation control: they could either mobilize surface members or use automated solutions such as botnets

Figure 2. Anonymous' Participation Architecture (ca. 2010)



to coordinate distributed denial-of-service (DDoS) attacks. Now, they could administer such attacks at the press of a button—creating the impression that thousands were participating instead of a handful—while leapfrogging the challenges of integrating and coordinating newcomers. Comparing Anons' approach to integrating newcomers over time, we observed normative practices giving way to an increasingly partitioned participation architecture that segmented newcomers from veterans (refer to Figure 2). This new order enhanced Anons' ability to escalate their collective impact by reducing their reliance on organizing masses of untrained participants. By the end of this phase, control over the participation architecture amplified the capabilities of the expert few rather than giving voice to the unskilled many.

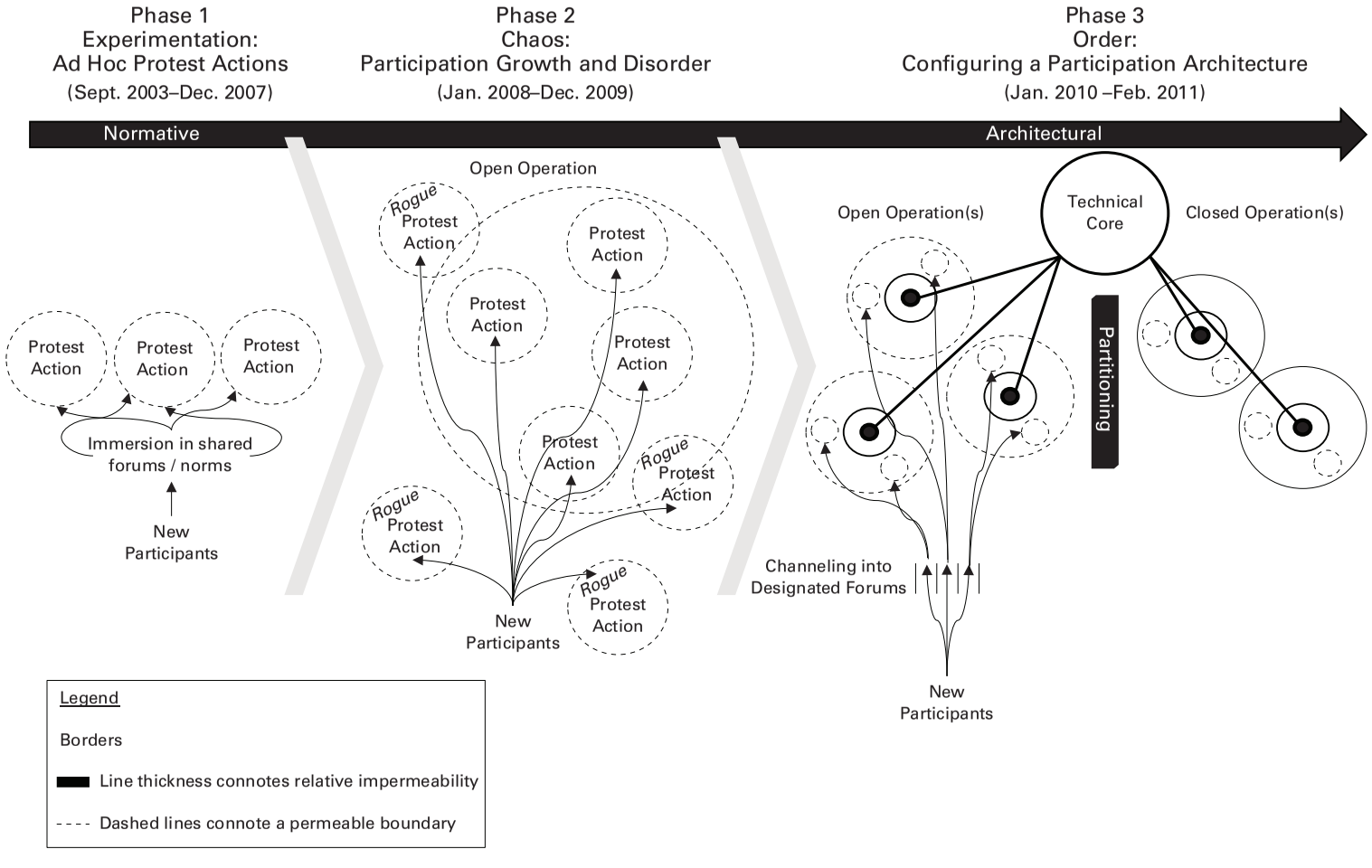
Learning to Self-Organize: Creating Order from Chaos

To generate theory that might inform self-organization in other open networked contexts, we inducted a grounded theoretical model as shown in Figure 3. To explore the potential external validity of this model, we consider how the process of creating a participation architecture might unfold in other contexts, focusing on activism in open networks more generally.

Experimentation. Initially, small-scale, experimental activities take place without undue organizing challenges in digital forums open to all participants. For example, at the onset of the Yellow Vests (*Gilets Jaunes*) protests in France, working people independently posted petitions and videos on social media forums ''without a set leader, trade union or political party behind them'' (Chrisafis, 2018). Spontaneous protest actions requiring limited if any planning or coordination emerge as individuals create norms and learn how to interact with each other. In this phase, activists cultivate norms to support networked interactions and develop confidence in their ability to create modest impact. While some networked activists may plateau at this stage (e.g., Tufecki, 2017), others who seek impact through growth may confront chaos.

Chaos. When larger numbers of participants join open forums, diverse newcomers unaware of established norms may expand upon or reinterpret the initial ambition, giving rise to chaos: disjointed and divergent ways to engage in protest that can undermine coordinated collective action. For example, as support for the Black Lives Matter movement grew, some sought justice through looting while others engaged in more traditional forms of protest. Organizing breakdowns occur when new participants disregard or undermine previously established norms. This is particularly likely when there is no well-articulated collective identity story and no strong leader to tell that story (e.g., Wry, Lounsbury, and Glynn, 2011). In open networks, where authority over action is distributed, it becomes challenging to regulate participation growth, straining the coordination of collective impact. Reinecke (2018) showed how Occupy London campsites, which served as a testing ground for a more equitable way of living, faced an influx of poor, homeless people who challenged the camp's commitment to its founding values. When confronting chaos, activists may ''fall out'' into dissolution or ''sell out'' and introduce managerial or professional leadership.

Figure 3. Order from Chaos: Explaining the Configuration of a Participation Architecture



Order. Order from chaos can be created by invoking strong leadership (Morris and Staggenborg, 2004) that can articulate a coherent collective identity (Wry, Lounsbury, and Glynn, 2011). But this may be difficult to achieve when people self-organize in open networks. Under these circumstances, order can be established by creating new boundaries (Chen and O'Mahony, 2009; Grodal, 2018) or by establishing new forms of collective governance (e.g., O'Mahony and Ferraro, 2007; Ferraro and O'Mahony, 2012; O'Mahony and Karp, 2020). Our research offers another way order can emerge from chaos: by transitioning from normative to architectural control. By configuring a participation architecture that channels new participants into designated forums and simultaneously supports the curation of planning in closed forums, control over direct participation in open networks emerges without the overt stain of managerial control (refer to Figure 3). The participation architecture limits the channels visible and accessible to newcomers, helping to direct attention (e.g., Ocasio, 2011) and effort toward activities once deemed normative. This produces partitions, with tiered levels of participation with different levels of access (e.g., Gulati, Puranam, and Tushman, 2012), as shown in Figure 2. Architectural control is established through the creation of new roles with administration rights to design the types of participation possible—without any one person claiming authority over another.

DISCUSSION

How do individuals self-organize in the absence of managerial control? Most scholars have focused on how self-managed groups function within the context of traditional hierarchies (Lee and Edmondson, 2017). Thus we selected an extreme setting (Siggelkow, 2007), networked activism, in which self-organization emerged through the actions of autonomous individuals in open networks (Gulati, Puranam, and Tushman, 2012) rather than by management strategy. We began by observing how networked activists experimented and learned to organize ad hoc protest actions, primarily relying on normative forms of control to guide participation. We traced how chaos unfolded with the mobilization of newcomers. While the growth of new participants enhanced the impact of large-scale protest actions, it also served as a double-edged sword (Zald and Ash, 1966; Grodal and O'Mahony, 2017) by hampering the integration and coordination of collective action. Despite this breakdown in normative control, we show that Anonymous became increasingly capable of executing complex, multi-pronged, global protests over the course of seven years. Moreover, we offer a grounded theoretical explanation of how order emerged from chaos: by transitioning to architectural control to address challenges of self-organization. In doing so, we contribute a theoretical explanation of the process by which networked activists descend into chaos *and* organize their way out.

The Work of Self-Organizing: Integrating and Coordinating Newcomers

Many scholars have studied self-organization, lauding the efforts of individuals who seek new ways of structuring collective action without managerial control (Burns and Stalker, 1961; von Hippel and von Krogh, 2003; Fjeldstad et al., 2012; Gulati, Puranam, and Tushman, 2012; Majchrzak, Malhotra, and Zaggl, 2020). Descriptive portrayals of these efforts tend to be largely positive given

that, at face value, individual autonomy appears attractive, particularly when juxtaposed with the rigidity of established forms of managerial control (e.g., Anteby and Chan, 2018; Mazmanian and Beckman, 2018; Chown, 2020). Practitioner rhetoric reinforces this notion, tending toward ''hyperbolic'' promises of ''nirvana'' achieved by empowering people with responsibility without relying on managerial control (Lee and Edmondson, 2017: 51).

Yet self-organization is not easy, and our research exposes many of the vulnerabilities inherent in this mode of organizing that are easily overlooked. When few structures are in place to integrate and coordinate newcomers, efforts to achieve collective ends can become strained and unravel—particularly in unbounded, open networks (Chen, 2009; Chen and O'Mahony, 2009). Network scholars have acknowledged that ''beyond a certain threshold of size, complexity, and volume of exchange'' open networks can become less efficient than vertically organized command and control structures (Podolny and Page, 1998; Castells, 2004: 5). Our research helps explain why: normative controls can break down with rapid growth. Prior research on organizing open-source communities supports this idea, showing that coordinating collective action within open networks can trigger organizing crises (e.g., Ferraro and O'Mahony, 2012). New forms of order often emerge at the edge of chaos as systems learn to adapt to increased complexity (Ashby, 1962; Kauffmann, 1996; Brown and Eisenhardt, 1998). But few empirical studies have examined how the challenges of self-organizing in open networks are surmounted.

With fine-grained analyses of how networked activists organized protest actions over time, our research takes on this gap. We find that self-organizing in open networks requires the constant integration of newcomers and coordination of rapidly changing activities that vary in unpredictable ways—and that these challenges are exacerbated by participant growth. Much research on ''the emergent nature of the process of coordination'' (Okhuysen and Bechky, 2009: 469) has focused on the *practices* that ''allow individuals to specialize on narrowly defined tasks while contributing to interdependent goals in ways that may be difficult to specify in advance'' (Seidel and O'Mahony, 2014: 691). But this research has often assumed that much organizational or cultural scaffolding was present at the onset. Police SWAT teams (Bechky and Okhuysen, 2011), emergency technicians (Faraj and Xiao, 2006), and emergency responders all ''struggle to collaborate under extreme time pressure and risk, with inadequate information, with emotionally laden volition . . .'' (Majchrzak, Jarvenpaa, and Hollingshed, 2007: 158). Yet in these settings individuals often share a common identity (Wry, Lounsbury, and Glynn, 2011), occupational community (Van Maanen, 2010), or culture that helps collaborators forge interaction agreements (Faraj and Xiao, 2006) or establish the common ground necessary to coordinate tasks even when communication is constrained (Bechky and Okhuysen, 2011).

In our context, participants could not initially identify each other, much less rely on the shared identity, community, or culture that demarks well-bounded work groups (e.g., Barker, 1993; Edmondson, 1999). Thus the ''glue'' provided by a shared identity such as in the case of civil rights organizations (e.g., Morris, 1981) and other participatory social movement organizations (e.g., Kanter, 1972; Rothchild and Whitt, 1986; Polletta, 2012) was weak—requiring more engagement from veterans to integrate newcomers. Although strong authority figures and cohesive norms can help socialize newcomers (Rink et al.,

2013), our research suggests that norms can lose their relevance in fast-growing open networks when socialization takes time and enforcement mechanisms are weak. When norms governing behavior were not internalized by a growing majority of Anons, the coordination of collective action was impaired. This gave rise to an appreciation of what architecture could do to ameliorate the growing pains of organizing direct participation. Gulati and colleagues (2012) suggested that the tiering or stratification of participation helps reduce coordination complexity and serves as a motivational mechanism (see also Fjedlstad et al., 2012), but little research explains how these tiers are constructed or maintained. Without this understanding we cannot explain how structure emerges in the absence of managerial guidance. Our research explains the process through which participation tiers emerge and how this fosters order from chaos. This finding is crucial as it provides a missing link to explain the emergence of self-organization, as the tiering of participation is foundational to a robust participation architecture that doesn't crumble under the strains of rapid growth.

Configuring a Participation Architecture as a Form of Control

Scholars focused on the intersection of organization and technology have captured various ways in which digital technologies transform work in organizations (e.g., Bailey, Leonardi, and Barley, 2012; Barley, Bechky, and Milliken, 2017; Leonardi and Vaast, 2017). Digital technologies are being introduced not only to assist organizing efforts or boost productivity but also increasingly as a means of control (Anteby and Chan, 2018). For example, scholars have turned their attention to the more controversial use of algorithms to direct employee behaviors at work (Kellogg, Valentine, and Christin, 2020). Yet this is not just a corporate phenomenon. The automation of rote work is also occurring in open communities, where de facto leaders in key roles—like editors at Wikipedia (Aaltonen and Lanzara, 2015; Piskorski and Gorbatâi, 2017), open-source leaders (Dahlander and O'Mahony, 2011), or network system administrators (Orlikowski and Yates, 1994)—create and reinforce participation norms or protocols through digital controls. For example, Wikipedia editors use bots to perform routine maintenance functions and decrease their dependence on novices (Aaltonen and Lanzara, 2015).

The networked activists we studied first attempted to use normative control: shunning, shaming, and deploying other inculturation practices to shape participation behavior. These high-touch efforts to direct participation were initially adequate but failed in the face of rapid growth. While ''ambient awareness'' (Leonardi, 2015) can foster the diffusion of norms and help people learn how to work in new ways (Leonardi, 2014), this awareness became diluted as Anonymous grew. To combat chaos, veterans configured a participation architecture that partitioned different types of participants and delimited the actions available to newcomers. Partitioning, like bracketing (e.g., Lingo and O'Mahony, 2010), can be considered a form of boundary work (Tushman, 1977; Gieryn, 1983) in that it involves the segmentation of different types of participation in ways that protect the technical core (Thompson, 1967; Dahlander and O'Mahony, 2011).

Unlike boundary management or gatekeeping (e.g., Lingo and O'Mahony, 2010; Ferraro and O'Mahony, 2012) wherein those in control actively filter

participants, architectural control operates passively by delimiting the set of paths available and defining the spaces where specific types of actions are possible. With architecture assuming some of the work of organizing participation, veterans could stop ''nudging'' (Bhargava and Loewenstein, 2015) newcomers with ineffectual attempts at norm enforcement and let them be systematically channeled into forums that bounded their palette of possible actions. In short, Anonymous transitioned from the active work of normative control to the passive work of architectural control—from enforcing behavioral codes to coding behavior (e.g., Lessig, 2009).

In contrast to existing theories of coercive control (Anteby and Chan, 2018), normative control (Kunda, 1992), concertive control (Barker, 1993), and managerial control (Mazmanian and Beckman, 2018; Chown, 2020), our research explains how order was created by leveraging a novel form of control: architectural control. Rather than relying on control from peers or managers, architectural control is accomplished by constructing the spaces and places through which participation can flow, enabling the channeling of participation in ways that support growth and curatorial control. Architectural control reveals itself by determining the avenues of participation possible. By leveraging architectural control, activists learned to scale direct participation, channeling newcomers to designated forums and bypassing the need to socialize them. Although veterans became architects of control, they do not align with broader definitions of leadership as informal social influence (Podolny, Khurana, and Hill-Popper, 2004). Yet the new roles created—network operators and channel operators—do exercise a novel form of control that is effective at influencing participation.

Configuring a participation architecture was not straightforward; it was an unwieldy process marked by waves of uncontrolled growth coupled with the selective closure of certain avenues of participation to achieve channeling and curation. Past instances of collectivist organizations that suffered from an inability to manage direct participation (e.g., Kanter, 1972; Swidler, 1979; Rothchild and Whitt, 1986) quite possibly could have benefited from configuring a participation architecture. This capability may provide a source of resiliency that helps self-organized collectives learn to manage their own growth and may help inform the next wave of corporate experiments in self-organization. Would holacracy function better, for instance, if participation were tiered and contributions were scaffolded by online forums with designated functions? Future research could examine the key activities and mechanisms that help configure a participation architecture in the corporate realm and explore how different types of structures produce a range of participation outcomes.

Sustaining Networked Activism

Our research also contributes a new understanding of the ways in which activists organize their activities and strive for social impact. Historically, when scholars assessed activists' capacity to achieve social impact, they relied on the ability to display WUNC: worthiness, unity, numbers, and commitment (Tilly, 1999). In other words, dedicated masses mobilized in visible, coordinated uprisings, protests, and other forms of contestation (e.g., Klandermans and Oegema, 1987; Brulle et al., 2007). Yet in the context we studied, the mobilization of new participants fostered growth but also stretched or displaced initial

intentions (e.g., Zald and Ash, 1966; Grodal and O'Mahony, 2017). Anons gradually overcame this duality by learning to regulate the growth of new participants, becoming capable of escalating protest actions with fewer yet more-skilled contributors.

Our findings suggest that the ability to leverage technology either to create the illusion of numbers or to automate the actions of a mobilized mass of activists is important to sustaining networked activism. By automating routine tasks associated with organizing protest actions, veterans reduced their reliance on newcomers as well as the time spent socializing and integrating them. Over time, a select expert core of veterans armed with botnets became capable of engaging in full-scale protest actions with the click of a button. This finding challenges a core assumption of the collective action literature: that numbers are necessary to produce social impact. In an environment rich with digital technology, it may be possible to create far-reaching impact with fewer rather than more people (Earl and Kimport, 2011). While many scholars are concerned with the effects of automation on workers (Kellogg, Valentine, and Cristin, 2020), future research could examine the ways in which actors outside formal organizations leverage automation to amplify their impact. These studies would do well to consider the role that automation plays not only in markets (Brynjolfsson and McAfee, 2012; Orlikowski and Scott, 2013) or on the factory floor (Zuboff, 1988) but also in organizing activism. When networked activists create a participation architecture and leverage automation to empower the few, smaller numbers may create a larger impact than passionate masses.

Conclusion

Thus far, the rhetoric and promise of self-organization has outpaced empirical study of on-the-ground realities. Successful corporations such as Zappos and Valve have demonstrated ways in which aspects of self-organization can be implemented under the auspices of executive control (Fjeldstad et al., 2012; Gulati, Puranam, and Tushman, 2012; Lee and Edmondson, 2017), but little research has examined the organic and spontaneous process by which self-organization unfolds in open networks. By identifying ways in which networked activists can surmount the challenges of self-organizing under conditions of unfettered growth, we shed light on how individuals can create an independent, collective basis of power without relying on managerial authority—for better or for worse. Though we examined an extreme case, the prevalence of networked activism is not likely to disappear any time soon. Networked activists such as Arab Spring demonstrators (Tufekci, 2017), Occupy protestors (Reinecke, 2018), and Trump supporters storming the U.S. Capitol have demonstrated the outsized influence, as well as the fragility, of self-organized efforts. Clearly more research is needed to explain not only how self-organization emerges but also how it can be sustained or disrupted. Our research is but an initial attempt at elaborating how self-organization unfolds in open networks, but we hope it seeds scholarly interest in the mechanisms that support self-organized collectives writ large.

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Supplemental Material

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