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Seven Dimensions of Contemporary Participation Disentangled

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Participation is today central to many kinds of research and design practice in information studies and beyond. From user-generated content to crowdsourcing to peer production to fan fiction to citizen science, the concept remains both unexamined and heterogeneous in its definition. Intuitions about participation are confirmed by some examples, but scandalized by others, and it is difficult to pinpoint why participation seems to be robust in some cases and partial in others. In this paper we offer an empirically based, comparative analysis of participation that demonstrates its multidimensionality and provides a framework that allows clear distinctions and better analyses of the role of participation. We derive 7 dimensions of participations from the literature on participation and exemplify those dimensions using a set of 102 cases of contemporary participation that include uses of the Internet and new media.

Introduction

In the last decade, participation has been central to many kinds of research and design practice. From user-generated content to crowdsourcing to peer production to fan fiction to citizen science, participation has captured imaginations and provided new opportunities. The concept is often used, but it is rarely defined the same way across a voluminous,

heterogeneous, multidisciplinary literature. And it remains strikingly unexamined in information studies and related fields (media studies, communication, science studies).¹ This paper provides an empirically based, multidimensional description of participation that can be used to create clear distinctions and better analyses of its structure, role, and effect.

Participation can be interpreted surprisingly broadly: from highly skilled time-consuming forms of participation such as writing a software device driver for Linux or organizing a multi-city protest, to low-effort or even no-effort forms such as making a comment on a blog, tagging a document with a keyword, or strengthening a search algorithm simply by using it. In information, communication, and media studies participation is relevant to social tagging, social bookmarking, user-generated content, communities of practice, fan fiction, participatory culture, and the relationship between amateurs and experts (Arazy, Yeo, & Nov, 2013; Ding et al., 2009; Fish & Srinivasan, 2011; Jenkins, Purushotma, Weigel, & Robison, 2007; Jenkins, 1992, 2006; Nov, Naaman, & Ye, 2009; Postigo, 2011; Rosenbaum & Shachaf, 2010; Wenger, 2000; Xu, Ma, Chen, & Ma, 2013; Yi, 2012). In some cases the concept of participation is confounded with democracy or democratization, and in places it is used interchangeably with

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¹Carpentier (2011) is almost unique in this literature for his critical examination of participation and media. He identifies “minimal” participation as situations of high power imbalance when a small powerful group controls access to media and “maximal” participation as situations of relative power equity when no party monopolizes media and access is widely available.

cooperation, collaboration, engagement, or access—but rarely is it explicitly singled out with the question: What is it and how does it work?

Participation is also an important value for legitimacy in the current era. It connotes openness and transparency, inclusion and diversity, democracy and voice, equality and deliberation, in addition to more recent ideas of amateur expertise, collective intelligence, or “the wisdom of crowds.” Government agencies, corporations, philanthropic organizations, and especially scientific infrastructures must increasingly legitimate themselves by being open to public involvement and by enabling more participation (Cornwall, 2011; Delwiche, 2013; Fung & Wright, 2003; Irwin & Wynne, 1996; Joss & Durant, 1995; Rowe, 2005; Wynne, 1996, 2007). Additionally, participation is not restricted to the political sphere of democratic governance, but extends to nearly all domains of life and work. This has been particularly evident after the advent of the Internet, as evidenced by the wealth of research on user-generated content, free and open source software, crowdsourcing, peer production, or participatory culture (Benkler, 2002, 2011; Delwiche, 2013; Deuze, 2006; Fang, 2009; Fish, Murillo, Nguyen, Panofsky, & Kelty, 2011; Geiger, Seedorf, Schulze, Nickerson, & Schader, 2011; Hippel, 2005; Ke, 2009; Kreiss, Finn, & Turner, 2010; Krishnamurthy, 2006; Lakhani & Wolf, 2005; Lakhani, 2003; Lessig, 2005; OHern & Rindfleisch 2010; Oudshoorn, 2003; Prainsack, 2011; Schäfer, 2011; Viégas, Wattenberg, & McKeon, 2007; Wiggins & Crowston, 2011). Society, it seems, is being transformed anew by participation.

However, we are also routinely scandalized by the fact that participation seems to fail or to produce unwanted effects. Facebook, for instance, is labeled a “participatory” service, but its existence is predicated on the extraction and sale of personal information; Yelp and other rating sites are routinely gamed by fake participants, and Google faces privacy and censorship criticisms for its use of implicit participation (Hoofnagle, 2009; Fuchs, 2010; Kang & McAllister, 2011; Schäfer, 2011). Most of these cases involve massive numbers of participants, but violate our intuitions about what participation is, or what it is supposed to achieve. In some cases it is seen as exacerbating existing forms (or pathologies) of consumerism (Andersson, 2012; Fuchs, 2010; Goldberg, 2010; Petersen, 2008); in others it is seen as a veiled form of surplus value extraction or exploitative labor practices (Lovink, 2007, 2011; Scholz, 2013; Terranova, 2004). In still others, concrete issues of labor relations, unionization, or even addiction have been explored (Brabham, 2012; Felstiner, 2012; Irani, 2012; Schüll, 2012).

The difficulty, we argue, comes from treating participation as one-dimensional. This enables enthusiastic practitioners, academic analysts, and committed critics alike to cherry pick one aspect of participation and substitute it for the whole. Such partial definitions produce confusion at the theoretical and the practical level—and since participation is clearly an important, legitimating, regulatory ideal, it is essential that we produce better frameworks for assessing

whether a project, organization, company, or government program that claims to be participatory actually is so, and how. If one hopes to distinguish good from bad participation, or to mount an effective critique of either a particular instance of participation or its incorporation generally, a richer description of how participation works is necessary.

The point of this paper is less to produce a new theory of participation or to argue for revision of previous theories, but rather to synthesize theories addressing participation to demonstrate its multidimensionality and provide a tool for empirically based, comparative analysis that allows clear distinctions and better analyses of its roles. We intend this description to guide work in the broad domains of information studies, communication, and science and technology studies where participation is relevant, in order to make possible clear descriptive and normative claims.

To demonstrate this multidimensionality, we have derived seven distinct aspects of participation using the existing literature on participation, and from our observations and understandings of 102 case studies that have been collected for this project (<http://birds.recursivepublic.net/>). The seven dimensions that we describe here are (Table 1):

1. The educative dividend of participation.
2. Access to decision-making and goal setting in addition to task-completion.
3. The control or ownership of resources produced by participation.
4. Its voluntary character and the capacity for exit.
5. The effectiveness of voice.
6. The use of metrics for understanding or evaluating participation.
7. The collective, affective experience of participation.

Other dimensions do exist in the literature, but they are often specific to a particular domain or practice; we have distilled our list to only those dimensions that can be universally applied irrespective of particular domain or practice. Our case studies, however, exemplify these dimensions with particular cases of participation that are enabled by the Internet and social or mobile media technologies. Put differently, we claim that the technology of new media does not fundamentally change the nature of participation—any kind of participation can be understood as having these core dimensions.

A related issue, often posed as a criticism of participation, concerns the inclusivity or exclusivity of a given case, such as the debates about “digital divides” or concerns about race, gender, class, or other markers of diversity. But there is no obvious correlation with more or less (or better or worse) participation. For instance, some cases (e.g., Facebook) that have maximum gender and racial diversity are less participatory than cases that lack this kind of diversity (e.g., Wikipedia). Furthermore, inclusivity or exclusivity as a feature of access to a given site of participation is rarely distinguished from the mechanisms of equality or hierarchy that are internal to that site. Our contribution here is to study the structure

TABLE 1. Summary of seven dimensions of participation.

Dimensions	Description	Representative scholarly literature	Contemporary cases that exemplify the participatory dimension	
			Strong	Weak
1. Educative Dividend	Learning something valuable, esp. learning how to participate effectively	Pateman 1976	Zooniverse, 23andMe	Match.com
2. Goals and Tasks	Participants not only undertake tasks but help set goals	Weber 1968; Cooke and Kothari 2001; Dachler and Wilpert 1978	Linux/Linux Foundation	Pinterest; Current TV
3. Resource Control	Participants get to control (own or use) resources, not merely produce them	Cole 1944; Marx 1964; Mauss 1990; Montgomery 1979	Second Life; Mukurtu	Patients Like Me
4. Exit	Capacity to leave without penalty and with resources	Hirschman 1970	Global Voices	Facebook
5. Voice (OP→FSE)	Opportunities to “speak back” in order to influence outcomes	Hirschman 1970; Habermas 1992	Wikipedia; Apache	OKCupid
6. Visible Metrics	Empirical demonstrations of the connection between participation and outcomes	Pateman 2012; Marres 2012	Foldit	Revision 3
7. Affective/ Communicative Capacity	Collective effervescence and the experience of being part of an audience; communication within OP, affect, affiliation, and sociability	Jenkins 1992; Fiske 2011 Durkheim 1915	Instagram	Bitcoin

and function of forms of participation qua participation, rather than the global context of who is participating.

Materials and Methods

To illustrate the seven dimensions of participation described here we rely on an extensive literature review and a set of 102 case studies of contemporary participation. The seven dimensions presented here are derived from this literature, based on extensive reading and research into multiple domains and traditions of work on participation. The cases are used in this paper to exemplify the presence or absence of one or another of the dimensions. We do not derive the dimensions from these cases, but they have played a role in confirming that the choice of dimensions is sound. This work is based on an interdisciplinary inquiry among researchers in interpretive social science: anthropology, sociology, media studies, science and technology studies, and information and communication studies.

In the next section we delve into the heterogeneous literature on participation; our reading of this literature was not confined to any particular discipline, and reveals that there are multiple nonoverlapping places where participation has been explored at both a theoretical level and in terms of practical implementation. The most robust literature comes from the domains of (a) political theory and participatory democracy; (b) worker participation; (c) public administration; and (d) the international development literature. Other domains such as art, architecture, urban planning, cooperative and socialist planning, management, participatory design, and cultural studies corroborate our choices.


To exemplify these dimensions we make use of our collection of 102 cases of Internet-enabled participation. These

cases are deliberately structured to enable structured comparison in a context of presumed diversity, but also to preserve some of the richness of qualitative inquiry that enables debate and discussion to be grounded in the particularities of context. For each case, researchers answered a series of 32 structured questions, designed to facilitate comparison, about the entity under study based on public records and interviews with participants. The schema of questions (Fish et al., 2011) explored four broad areas: organization/structure; ontogeny; behavior; and interaction with other entities (for an example, see Figure 1). These cases are not a sample of a population of participatory cases (our goal is to more rigorously define the dimensions of this “population”) but were selected in order to maximize the diversity of instances of participation. The only rigid criteria were (a) an explicit (self-reported) or implicit (ascribed) claim to include participation, “democratization,” crowdsourcing, user-generated content, citizen engagement, and other similar terms; and (b) a “dyadic” structure, meaning a structure consisting of both a “formal social enterprise” (FSE) and an “organized public” (OP). An entity’s FSE is the bureaucratic (often) incorporated, contractually-based entity. The OP is the informal group that comprises the participants. Fish et al. (2011) describe variations in the formation, structure, and relationship of FSE and OP and Currie, Kelty, and Murillo (2013) show how they affect entities’ governance and innovations.

To extend the diversity of cases, the research team constructed a long list ($n > 200$) of possible candidates (discovered through journalistic and mass media accounts, researcher experience, scholarly literature, and other sources), and settled on a range of cases from multiple domains intended to cover significant differences in the

Basic Info

NAME Fold It

LOGO 

URL <http://fodit.lwpportal/>

HABITAT Gaming Environments/Platforms

CLASSIFICATION Science and/or Engineering

BRAND Playful in an almost-DIY, craft-oriented way. Fold.it hopes to make something complicated (protein folding) seem fun and interesting, something you can do.

Structure



















FSE NAME Foldit

FSE ORGANIZATION STYLE Flat minimally organized network

FSE OWNER/FOUNDER The game is a collaboration of computer science/game engineers and protein biochemists. It was developed by doctoral student Seth Cooper and postdoctoral researcher Adrien Treuille, both in computer science and engineering, working with Zoran Popovic, a UW associate professor of computer science and engineering; David Baker, a UW professor of biochemistry and Howard Hughes Medical Institute investigator; and David Salasain, a UW professor of computer science and engineering.

FSE SIGNIFICANT MEMBERS Foldit is developed by Center for Game Science at University of Washington in collaboration with UW Department of Biochemistry.
 Game Concept and Design: Seth Cooper, Zoran Popovic, James Barbero, Zoran Popovic?, David Baker, David Salasain
 Principal Investigators: Zoran Popovic?, David Baker
 Game Creators: Seth Cooper, Adrien Treuille, James Barbero, Joshua Snyder, Daniel Suckin, Philipp Kolhenbühl, Kathleen Tule, Michael Brennan, Alex Cho Eyyeler, Hao Lu, Lu Sen Tin, Ilya Makedon, Mathias Hillmann, Sean Gottschalk, Jeff Flattin, Kelian Xu, Jeff Lowdermilk, Riley Adams, Jeemyung Lee, Ming Yoo, Alex Chia, Eric Butler
1,000,000+

Birds (All 102)

Logo	Name	Habitat	Classification
	23andMe	HTML, HTTP, and Associated Services	Science and/or Engineering
	4chan	HTML, HTTP, and Associated Services	Internet Forum / Mailing List
	Al Jazeera's The Stream	Television and Internet Video	Citizen Journalism
	All For Good	HTML, HTTP, and Associated Services	Social Entrepreneurialism
	Amazon.com	HTML, HTTP, and Associated Services	Culture Industry
	Android OS	Mobile	FOSS
	Anonymous	Darknet	Activist
	Apache	UNIX+ Internet	FOSS
	Bakspace	HTML, HTTP, and Associated Services	Craft, DIY, Consumer goods
	Bitcoin	UNIX+ Internet	FOSS
	Blender	UNIX+ Internet	FOSS
	Blip.tv	Television and Internet Video	Culture Industry
	BOINC	API/Application Specific	Science and/or Engineering
	BookCrossing.com	HTML, HTTP, and Associated Services	Education
	BSD/FreeBSD	UNIX+ Internet	FOSS
	Change.org	HTML, HTTP, and Associated Services	Activist
	CNN's iReport	Television and Internet Video	Citizen Journalism
	Connexions	HTML, HTTP, and Associated Services	Education

Filters

HABITAT: **Filter**

CLASSIFICATION: **Filter**

FSE ORG. STYLE: **Filter**

OP ORG. STYLE: **Filter**

SEARCH OTHER CREDITS: **Filter**

[Clear Filters](#)

FIG. 1. Sample cases in the "Birds of the Internet" database. At left, the basic information for one case (9 of 32 fields shown); at right, a listing of available cases with selected criteria for filtering/sorting (18 of 102 cases shown). [Color figure can be viewed in the online issue, which is available at wileyonlinelibrary.com.]

structure and function of participation. These choices include different kinds of organizations (from hierarchically organized corporations to acephalous movements); different technologies (Internet, web-based, mobile media, gaming); different life spans, from over 20 years old to under 2 years old, including many that no longer exist; and different modes of participation including direct/indirect, formal/informal, paid/unpaid, voluntary/involuntary, etc. The general domains include the following: Free/Open Source Software (FOSS) (19); social networking (14); science/engineering (13); culture industry/other (13); activist (10); education (7); citizen journalism (7); social entrepreneurialism (6); craft/DIY/consumer goods (5); games/persistent worlds (4); and forum/ mailing list (4). A complete description of these case studies, and the software system for analyzing and visualizing them is available in the Supplementary Materials (<http://birds.recursivepublic.net>).

The Heterogeneity of Participation

Participation is a vague, jumbled concept, but there is a diverse history of attempts to capture and understand it. In its basic definition participation concerns collective actions that form something larger so that those involved become part of and share in the entity or effects created. Uses range from the familiar forms of democratic political participation to the Christian sacrament—becoming part of Christ through the consumption of the Eucharist.² In this section we derive, from the various scholarly definitions, seven dimensions to participation often bundled together under the label.

Over the last 40–50 years, multiple disciplines have sought to capture the meaning and function of participation both theoretically and practically—but have generally done so in isolation from one another. So, for instance, in 1969, Arnstein developed a “ladder” of citizen participation based on (and intended for use in) citizen participation in urban redevelopment. In 1978, Dachler and Wilpert surveyed the literature in worker participation and produced a complex systems analysis of the multidimensionality of worker participation. And entirely distinct from these two approaches, in 1980 Cohen and Uphoff published the culmination of their investigation of participation in international rural development. These theories overlap in particular ways, but do not cite each other, and are highly domain-specific. They also represent particular moments in the history of participation—in the first case, the reforms of the 1950s and 1960s Great Society programs in the U.S., in the second the enthusiasm for new forms of improving quality and worker involvement after WWII, and in the last case the traumas of decolonization and the rise of the international development industry.

²See the Oxford English Dictionary (online): <http://www.oed.com/view/Entry/138245?redirectedFrom=participation&> (Accessed August 2, 2013).

By the 1990s, many of these domains of participation had both become routine and had gone through several stages of critique and revision. The emergence of a “new wave” of participatory enthusiasm is thus both reinventing participation after the Internet, and confronting anew (often unawares) a long-standing problematization of participation.

The handful of works that do attempt to define contemporary Internet or media participation (Carpentier, 2011; Delwiche, 2013) are based primarily on the tradition of the political theory of participatory democracy, with its roots in 1960s student protests (Cook & Morgan, 1971; Fung & Wright, 2003; Kaufman, 1960; Pateman, 1976). Many of these political theories were normative—designed to guide political action in the world, not simply describe it—and offered explanations based on practical action as well as theories of human nature or political organization. Today they overlap in many places with either so-called communitarian or pluralist critiques (Brown, 1995; Etzioni, 1995; C. Taylor, 1994; Walzer, 1983) or theories of “deliberative democracy” (Mutz, 2006), both of which emphasize the small-scale nature of this tradition of participation in democracy.

Alternatively, some contemporary social scientists understand online activity (from e-mail to social networking) only as a variable affecting off-line participation in politics or organizations (Earl & Kimport, 2011; Farrell, 2012; Gibson, Römmele, & Ward, 2004; Wellman, Haase, Witte, & Hampton, 2001). This approach has sometimes led to unconstructive debates about whether participation online (qua political participation) is as “real” as off-line participation (Gladwell, 2010; Kelty, 2013; Morozov, 2013). These debates reduce participation to political participation, and often tend to treat it as a simple binary (taking part / not taking part).

Participation is most immediately an issue for scholars of political theory, and it is often simply reduced to questions of democracy. But this association is relatively recent: *participatory democracy* emerged in response to and in support of the political movements of the 1960s (Bachrach & Aryeh Botwinick, 1992; Bachrach & Baratz, 1970; Kaufman, 1960; Macpherson, 1980; Pateman, 1976), specifically the Students for Democratic Society (SDS) whose *Port Huron Statement* from 1962 inaugurated the term (Cook & Morgan, 1971; Hayden, 1962; Miller, 1987). The resurgence followed the growth of the bureaucratic state and an increasing anxiety about the disappearance of individuality in “mass society”—hence, its allegiance with works like Whyte’s *Organization Man* and Reich’s *The Greening of America*. Theories of participatory democracy are routinely critiqued as appropriate only to small-scale organization and local political governance. As a result, much of contemporary political science restricts participation to the circumscribed domains of voting, participating in campaigns, or, on occasion, being involved in the day-to-day operation of government. Pateman’s *Participation and Democratic Theory* painted a much more expansive picture of the role of participation in democratic societies, proposing a relation

between the “patterns of authority” that exist throughout society (home, work, leisure) as well as in government. More recently, sociologists and political theorists have argued for a renewal of political democracy under the label of *empowered democracy* (Fung & Wright, 2003) or versions of syndicalism and anarchism (Graeber, 2004, 2009, 2013) or local governance (Cabannes, 2004; Wampler & Avritzer, 2008). Such renewals have been particularly clear in the cases of Occupy and the North African and Arab uprisings of 2011–2013, where classical participatory forms and new social media have so evidently mixed, with as yet uncertain effects (Srinivasan, 2013).

But the analysis of participation has occurred in many other forums beyond political theory. For instance, a very common, but underexplored precursor for Internet-enabled participation is the history of worker participation—a 150-year long tradition with roots in the trade union, cooperative, and “Industrial Democracy” movements of the late 19th century (Blumberg, 1969; M. Derber, 1970; Lichtenstein, 1993; Webb & Webb, 1902; Woodworth, 1985). The early 20th century saw a wealth of experiments in worker participation, often in conflict with the growth of scientific management (Follett, 1940; Jacoby, 1983; Lichtenstein, 1993; McCartin, 1997; Montgomery, 1979; F. Taylor, 1967); such experiments resurfaced in another form as part of the Industrial Relations approach (Coch & French, 1948; Mayo, 1933; Roethlisberger & Mayo, 1949) and in the 1960s and 1970s, especially in places such as Britain’s Tavistock Institute, and in Sweden under the label of “participatory design” (Asaro, 2000; Dachler & Wilpert, 1978; C. Derber & Schwartz, 1983; Gregory, 2003; Kensing & Blomberg, 1998; Lezaun, 2011; Marcolin, D’Andrea, & Hakken, 2012; Strauss, 2006). The focus is often on the psychology and subjective experience of worker participation, and the reciprocal effect this has on productivity, efficiency, or profitability. But issues of power are also central: how to give workers greater control, voice, leadership, or authority both in the workplace itself, but also in the unions that would eventually form the most powerful antagonists of corporate leadership.

In global development, participation was enthusiastically embraced in the 1970s and 1980s as part of decolonization and the emergence of an international development industry; but it has since seen dramatic critiques and reversals starting in the 1990s (Cooke & Kothari, 2001; Parfitt, 2004; Rahnama, 1990). Some of these critiques (Cooke & Kothari, 2001) focus on the ill effects of “engineering” participation and bear directly on many of the cases we focus on in our research; others look to the support of narrow successes (such as participatory budgeting) as a way to temper claims about participation’s effectiveness (Cabannes, 2004; Pateman, 2012; Wampler & Avritzer, 2008; Wampler, 2012).

Participation has also been a key but usually implicit component of work in cultural studies of fan fiction and user-generated content (Jenkins et al., 2007; Jenkins, 2006; Schäfer, 2011) and, more recently, an area of heated debate in the art world (Bishop, 2006, 2012; Bourriaud, 2002;

Frieling, 2008). Much of this work has focused on fandom and consumer control and involvement in the production of culture; this appeal to participation has some clear genealogical and political affiliation with forms of participatory political theory (Delwiche, 2013; Jenkins et al., 2007; Jenkins, 1992), but has only recently extended beyond the realm of the arts and culture. A smaller tradition of research on audience participation has explored similar themes around the emotional experience of being part of an audience, the techniques for producing a sense of audience (such as the laugh track in TV sitcoms, or callers on the call-in radio show); or methods of becoming involved in the outcome of television or radio shows, from 19th century periodicals to contemporary reality television (Carpentier, 2011b; Fish, 2013; Griffen-Foley, 2004; Smith, 2005).

Finally, much recent work on free software, open source, and free culture has focused on intellectual property law, free speech, privacy, and the rights of users to determine their own relationship to the tools and technologies they use (Benkler, 2002; Berry, 2008; Boyle, 2003, 2008; Broca, 2012; Chan, 2007; Chopra & Dexter, 2007; Coleman, 2004, 2009, 2012; Söderberg, 2008). Although not strictly about participation, the overlaps with the classical liberal political tradition are clear.

Exemplifying Participation

In this section we explore in more detail the seven dimensions of participation, including canonical sources for each; we exemplify them by choosing cases from our database that we argue provide clear examples of a given dimension. At the end of the section we give a brief overview of two of the most well-known cases of participation—Wikipedia and Facebook—to show how the distribution of dimensions differs between them, and why one seems to confirm our intuitions about participation and the other contradicts them.

Educative Dividend

Civic virtue is a key aspect of the political theory of participation; from Machiavelli, Locke, Rousseau, Mill, and De Tocqueville, to the 19th century French socialists like Proudhon and Fourier, the 20th century British socialists like G.D.H. Cole to more recent work on communitarianism, deliberative democracy, and participatory democracy. Civic virtue both justifies such theories and hobbles them because it is necessary in order for participation as a collective effort to benefit everyone, but it is also clearly difficult to instill such virtues in (all) individuals in the first place. Many such theories, therefore, rely on the idea that participation itself leads to greater civic virtue: that one learns to participate by participating, and thus education in virtue is a feature of participation.

Pateman’s 1976 classic *Participation and Democratic Theory* explores the history of this theory, which starts with a critique of then existing “elite” democratic theory

(e.g., those of Robert Michels, Robert Dahl, or Harry Eckstein). According to Pateman, democratic theories of the early-mid-20th century abandoned a participatory theory because the sociological evidence concerning engagement and apathy led them to assert that most people are constitutionally incapable of, or simply uninterested in, participating. Participatory theory, by contrast, offers a different explanation—that apathy or lack of engagement follows from a lack of participation, rather than preceding it. If there were more opportunities for participation, individuals would cultivate those skills to a greater extent and ultimately develop civic virtue and participate to a greater extent. Pateman suggests that the “patterns of authority” across society (at work, at home, and locally as well as nationally) have an effect on this cultivation.

An educative dividend comes in two forms: first, the cultivation of “participatory” skills specifically or what is classically understood as civic virtue. But second are simply marketable skills or life experience that result from learning-by-doing. Thus, a key dimension of participation is the dual educative dividend that might result from participation: civic virtue as well as new skills, new ways of approaching the world, or the opening of new possibilities and life chances for the individual.

A wide range of educational dividends can be demonstrated in our case studies. For example, the site Zooniverse allows scientists to enlist public participation in labor-intensive data collection exercises like identifying types of galaxies captured in telescope images or characterizing bats’ audible calls. As data accumulate for scientists’ projects, participants learn about the particular project, but also about the scientific process. The site 23andMe asks participant-consumers to submit a DNA sample for genotyping and then to provide information about their health, background, and traits. Through this, participants learn what their genetic data reveal about their disease risks and ancestry (as interpreted somewhat controversially by 23andMe) while supplying the company’s researchers with valuable data for genetic science. MoveOn.org, an online resource for left-leaning political action, serves both to educate people about the substance of issues and in the practice of participation. Although scholars are divided about the authenticity of the political action that Moveon.org and analogous organizations enable (Earl & Kimport, 2011), clearly education about a form of political participation is a crucial element of what they deliver to users, and in this they address Pateman’s concerns.

Although an educational dividend is a very common outcome of participatory projects, some fail to provide one. For example, Match.com, the well-known online dating site, and Meetup.com, a site that helps connect people for non-romantic activities, provide very little by way of an educational dividend other than providing, for example, some “tips” for successful dating. The purpose of these sites is largely to facilitate the search process for “off-line” interactions, not to provide a robust platform for participation per se.

Goals versus Tasks

Perhaps the most intuitive meaning of participation is the possibility of affecting the setting of goals and making decisions—not merely the accomplishment of tasks oriented towards those goals. From worker participation to participation in development planning to participatory democracy, the move has always been “upward” towards increasing involvement in the management, agenda, and operations of any project or organization. At the same time, bureaucracy and the division of labor provide a countervailing “downward” force that has worked to manage scale, equity, and the distribution of power, often restricting the sense of participation (Du Gay, 2000; Durkheim, 1964; Kreiss et al., 2010; Weber, 1968). Classic labor analyses (both Marxist and non) have noted the disempowering aspects of this distinction (Burawoy, 1979; Montgomery, 1979).

A key aspect of this dimension, therefore, has to do with the structuring of participation, its relationship to voice (dimension #5), and to the development of affordances and metrics (dimension #6) that enable, ease, or provide feedback on participation. If participation is too highly “engineered,” it is likely to seem inauthentic and the goals will appear inaccessible to the participant. Development critiques (Cooke & Kothari, 2001) often point out that when participation is too bureaucratized it generates “professional” participants who know how to work the system (see also Epstein, 2008). Conversely, unstructured projects can require extensive preexisting experience or knowledge, as in the case of free software. In our analysis, this dimension is intimately related to the nature of the FSE and OP, and to the respective ontogeny of them. Some projects develop organically through participation in tasks and goals and spawn more complex bureaucratic structures (FSEs); others begin life as structured bureaucratic entities that preserve a distinction between an FSE that sets goals and an OP that accomplishes tasks. The key point is that participation in goals and tasks is inherently connected to the organizational structure of the entities involved.

Very few projects try to involve all participants directly in goal setting as well as task completion. The case of the Linux Kernel is an example. The Linux Foundation (founded long after the project began, as the public face of the Linux developer community) now manages the project’s organizational aspects, from Linux conferences to communicating with its corporate users. The tasks and goals for Linux, however, are not set by the foundation, but are nominally open to debate and influenced by all active members of the community. *Tasks* (like installing and testing the kernel, bug hunting and fixing, refactoring code, etc.) are consensually defined and distributed according to the interests or expertise of the active collaborators in the project. *Goals* are similarly open to negotiation by active developers, in forums such as the lkml.org mailing lists, projects focused on Linux hardware platforms or other distributions, or at conferences. Not all individuals have equal bearing on goal setting. For instance, contributors with the most “commits”—changes

that are incorporated into the official release—is a mark of high reputation. So even though the hierarchy of developers is by rule fluid and open, it takes a meritocratic form composed of those contributors with entrenched good standing.

The social networking site Pinterest provides a stark example of the opposite case. The FSE of Pinterest is called Cold Brew Labs, a company founded by ex-employees of Google and Radius Ventures. While participants in the OP can engage in limited tasks—pinning, repinning, creating pinboards, commenting, building widgets—they have no control over the infrastructure beyond the limited design modification of their own account, and no formal control over the goals of Pinterest or the reuse of content that a user posts, either during or after terminating an account. The terms of service assign the results of users' tasks to the company. Pinterest shares this structure with many other similar projects that encourage participation such as Etsy, Tumblr, Twitter, Facebook, Amazon, LiveJournal, and dating sites Grindr and OkCupid. Even citizen journalism projects like Free Press, Free Speech TV, Al Jazeera, CNN's iReport, and Next New Networks that are explicitly oriented towards "democratization" of the media, do not allow participation in goal setting. Current TV, for example, traded heavily in the rhetoric of participatory journalism and democratization of the media, but restricted participation to the provision of journalistic content; participants were not engaged in decisions over what content would be chosen to air or what kinds of financial or commercial arrangement would govern the project (Fish, 2013).

Control and Ownership of Resources

A complicated and increasingly important dimension of participation concerns the nature of a resource and the capacity for participants to decide on its circulation. It is one of the central problems for the literature on participation of all kinds—from exploitation and alienation at one end to forms of socialism, redistribution, or gift economy at the other (Cole, 1944; Marx, 1964; Mauss, 1990; Montgomery, 1979). Often the idea of resource is confined to money—wages or investments of some kind—but most kinds of participation emphasize less concrete resources, such as voice, expertise, political or social capital, or in the contemporary era, informational resources (Benkler, 2006, 2011; Bourdieu, 1977; Hirschman, 1970; Lessig, 2008). Marxist analyses often emphasize that workers must control the fruits of their labor and, in particular, the means of production to achieve emancipation. The idea that participation is veiled exploitation derives from this tradition and it suggests that authentic participation must involve the control of the resources at stake, however that might be defined (Fisher, 2012; Fuchs, 2010; Petersen, 2008; Söderberg, 2002; Terranova, 2004).

"Resource" has a deliberately tangible sound to it, but many cases of participation may not produce anything tangible or circulable. Labor unions and worker participation

schemes have long focused on the question of resources, such as the substance of collective bargaining (i.e., wages and benefits), as well as the ownership stake in a company or the expertise or "craftsmanship" stake in the production of goods (Attewell, 1987; Braverman, 1975; Freeman & Medoff, 1984; Lee, 1981; Sennett, 2008). In many of the cases we are concerned with, it is intellectual property and contract law that governs the resources in question, and so there is often a concrete legal locus to the resources produced by participation (Boyle, 1996, 2008).

Additionally, more than one resource may be at stake in any given case of participation, often depending on which perspective is taken (participants, those enabling participation, those funding it, etc.) Identifying the resource is a necessary step preliminary to defining how it is made available—individually, collectively, or in some other arrangement. In contemporary participation information has been given value, often monetary value, in new and experimental forms. But information and information resources are neither new, nor is their value—although the scale, mode of circulation, and "tangibility" (or "objectivity" perhaps) of such resources is taking different forms.

In our cases, the resources identified ranged from identifiable and tangible (precisely managed versions of software in FOSS projects) to ephemeral, intangible, and uncertain (association and action in Anonymous or Indymedia). In between are various forms of data, scientific results, stories and content, consumer goods, designs, social relationship "graphs," and forms of education or learning. Resource control also differs depending on whether it is governed by copyright licenses, terms of service, contracts, or an implicit culture of some kind. The complexity of the resource question in fact suggests to us that there are multiple aspects to this dimension yet to be explored.

The online world Second Life illustrates this complexity. Depending on the perspective there are different resources that emerge from participation. From the perspective of the FSE (Linden Labs), downloads of the software and the creation of user accounts are one kind of resource; from the perspective of the OP (denizens of Second Life), Linden Dollars and the virtual objects that residents make or buy are valuable resources, as are the experiences afforded by interaction and communication in world. The software provided by Linden Labs is governed by terms of use and cannot be modified, sold, or otherwise used except under those terms. Objects created in the world, by contrast, are governed by copyright law and Creative Commons licenses and are owned by participants, and thus can be individually controlled and distributed. However, unlike free and open source software, or Wikipedia entries, objects created in Second Life are only usable in Second Life. They might be sold or traded outside of the world, but can only technically be viewed or handled, and hence produce value, pleasure, or education in-world. Experiences in-world are governed by cultural norms (cf. Boellstorff, 2008) and might issue from or result in relationships or connections that transcend Second Life, but are affected only marginally by terms of

service or copyright law (e.g., in the case of defamatory speech or other criminal activities).

Patients Like Me exemplifies a different form of resource control and use. The project collects large amounts of health data from willing participants and displays it to them in coherent and processed ways, but does not make it collectively or freely available—rather, it is packaged and sold to third parties for whom such data is a valuable resource in other settings, such as research or healthcare provision. Other sites articulate very specific forms of control intended to work in the interest of participants. Another example, Mukurtu, an online platform for indigenous communities to manage digital cultural heritage, makes the strong claim that maximum openness and circulation is not always in the interest of participants, and that collective, within-community decisions about restriction need to be respected. Mukurtu in fact represents an ideal case for exploring the tradeoffs between control/ownership of resources and participation in goals/tasks (Christen, 2012).

Exit . . .

A classic in economic analysis, Hirschmann's *Exit, Voice and Loyalty* (1970), explored a theory of loyalty in organizations by asking when consumers (or voters) choose to respond to organizational decline with exit and when they choose voice. Exit refers to the act of switching to a competitor (as in the case of competing products), or dropping out of a market or a political sphere altogether. Hirschman's presentation of exit and voice is not explicitly figured as a theory of participation, but it has key features of participation rarely remarked on, viz. its character as a *voluntary activity*. Almost no situations outright *prevent* exit (indentured labor contracts or slavery might be such cases) but many can make it difficult, dangerous, or threatening to do so (as in the case of clientelism in politics). Loss of reputation or social ties, loss of access to resources, and potentially the threat of retribution can all be adverse correlates with the value of participation.

In the cases we considered, “quitting” is always possible, but there is variation in the consequences of doing so. A common detrimental effect is loss of control or access to the resources created through participation. In the case of Facebook, for example, the resource is the social network itself as well as the content (images, posts, links, etc.) that has been uploaded by Facebook users. Leaving Facebook is detrimental not only because one loses access to the network and its content but also because in doing so one leaves behind rights to content for as long as that content circulates on Facebook. Facebook's user agreement includes a license to use all intellectual property (IP) that has been shared on its platform “[t]his IP License ends when you delete your IP content or your account *unless your content has been shared with others, and they have not deleted it.*”³

³“Facebook: Statement of Rights and Responsibilities” <https://www.facebook.com/legal/terms>, emphasis added.

Paradoxically, you need a Facebook account to know whether your content is still “shared” and whether Facebook's license to it is still valid. Thus, in the sense of restoring control over your intellectual property to its “pre-Facebook” status, exiting Facebook is extremely difficult: even after you delete your account, you are still subject to the IP licensing agreement you entered into with Facebook when you signed up.

On the other hand, we find that participation around many “open” resources entails a stronger capacity for exit because access to the resource is not contingent upon participation. The citizen journalism project Global Voices illustrates this point. Global Voices is a community of bloggers and translators who collectively curate independently produced content, translate material, and encourage coverage of issues often excluded from international reporting. Global Voice's content is published under a Creative Commons Attribution-only license, meaning it is free to access and share so long as the author is appropriately attributed.⁴ Even after “exiting” Global Voices, participants (like everyone else) are free to access Global Voice materials. More important, former participants' work continues to be attributed to them under the Creative Commons (CC) license. Thus, exiting Global Voices does not entail a loss of control over intellectual property as it does for social media platforms such as Facebook.

. . . and Voice

Hirschman's alternative—“voice”—was meant to capture the tension between loyalty and defection. What were the conditions, he asked, in which a consumer or voter was moved to complain (or campaign), rather than switch affiliations? Indeed, voice is generally treated as one of the most, if not the most central capacities for participation in democracy—from the Greek agora (Arendt, 1958) to the public coffee house and the New England town hall meeting (Habermas, 1992; Tocqueville, 2000). The expansion of voice by the Internet is often given as one reason for its “democratic” nature; conversely, it is also suspected of producing echo chambers and “bubbles” that limit the effects of participation (Dreyfus, 2001; Pariser, 2011).

Nearly every case in our database contains mechanisms through which participants may submit feedback, voice dissent, complain, or discuss with other members. These mechanisms may take various forms, public or private, active or passive; examples include random surveys, active public discussion forums, open comments sections, or mailing lists whose very purpose is to empower participant voices. Some like Change.org are entirely devoted to activating political voice.

But does feedback register, and if so how? How is it related to participation in the goals, direction, activities, resource allocation, or policies of an organization? And are

⁴“Global Voices Attribution Policy” <http://globalvoicesonline.org/about/global-voices-attribution-policy/>

participants able to monitor when their feedback is having influence, being heard, and acted upon? Additionally, for voice to be effective, there can be no adverse effects from speaking up, no punitive effects or retribution for doing so.

In our case studies, voice refers to the smaller, more centrally coordinated FSE taking feedback and shifting direction in response to a larger, more populous OP. For example, Wikipedia displays a number of highly effective mechanisms for users to direct activity through voice: The rules of Wikipedia editing coupled with the Talk Pages feature enable Wikipedia editors to communicate or debate among themselves and provide a mechanism for the distributed collectivity to make decisions about editing, content, or adherence to community standards. Likewise, the Apache server software development project privileges the feedback of its users by structuring its OP in such a way that the most committed and experienced users gain more control over the project, in effect earning greater authority based on a successful record of contribution.

In contrast, other cases display the reverse dynamic, an inability or unwillingness to incorporate users' input as to what the activity should be or how it should proceed. Social networks like MySpace or the dating sites such as OkCupid appear to invite users to comment, e-mail, or tweet their wishes, but the structure of the organization, the goals of the overall entity, and the manner in which such goals are pursued are never truly up for any debate. Whatever feedback or comment users generate likely becomes a saleable resource for a commercial entity rather than some form of democratic conversation or negotiation.

Metrics of Participation

Classic theories of participation rarely articulate the effects of participation beyond the production of "civic virtue," but there is nonetheless a consistent concern with the collective (rather than merely the individual) experience of participation (hence the adjective "civic" rather than personal or private virtue). In contemporary terms, a key feature of this collective experience is the representation of participatory experience—the creation of metrics or signs of participation that either model the outcome of increased participation, or allow an individual to monitor (to varying degrees of detail) his or her contribution to something, and its effects. This can range from the simple tally of votes to more complex accounting and audit of individual participation, or run towards more qualitative feedback and interaction, as in the classical forms of apprenticeship or mentoring. The rise of statistics and polling as technologies of collective representation have played and continue to play a central role in making such participation visible (Desrosières, 1998; Didier, 2009; Hacking, 1990; Igo, 2007; Latour, 2005; Marres, 2009, 2012). Among all the dimensions of participation, this is perhaps the least often explicitly named, but the most likely to produce the experience of

linking the individual and the collective experience together in meaningful ways—but only if participants can see, access, or manipulate or ultimately control (dimension #3) those representations and data.

According to Pateman (2012), participants are more likely to continue participating in a project when they are able to see the "connection between participation and outcomes" (p. 12). As such, these metrics must be "transparent"—metrics that are openly provided to participants for the purpose of measuring participation. "Hidden" metrics, such as usage statistics or cookies, which are unavailable to participants and used solely for the benefit of the FSE, can sometimes be made visible, but for the most part are irrelevant to the subjective experience of participation.

In the examples we studied a wide range of metrics, including quantitative and qualitative measurements, offer participants the experience of participation by making their contribution visible. For instance, Foldit, an online game developed by the University of Washington's Center for Game Science and the Department of Biochemistry to improve protein folding science, offers participants a clear understanding of the results of their participation: Players receive a "score" based on how well they optimize three principles of protein folding (tight packing, hiding hydrophobic sites, and minimizing spatial clashes). Furthermore, participants who score well are added to a "hall of fame" and receive public recognition for their contributions to the collective scientific goal of predicting the structure of a protein based on its amino acid sequence.

While Foldit is an example of a case where individual participation is measured and publicly lauded, others foster a passive and unmeasured form of participation. For instance, Revision3 is an online television network that airs user-submitted content. Although amateur content producers are able to participate by submitting shows, the main form of participation that enables the organization to exist occurs through viewers. Revision3 has over 250 million views per month and these views generate distribution partners and advertising revenue. Therefore, the vast majority of participants consume content, and the metrics their participation produces, such as the amount of advertising revenue that is generated from individual views, are "hidden" from public view, and as such do not feed back into an experience of effective participation.

Collective, Affective, and Communicative Experience of Participation

Lastly, participation is fundamentally a collective experience among individuals—and often participation is understood as a convivial, face-to-face, and affective experience among peers—as opposed to anonymous, disconnected, or rationalized intercourse among strangers (e.g., in a market). As a result, many theories of participation assume that individuals will have or will develop a method of experiencing participation as a collective

experience, somewhat like Durkheim's notion of "collective effervescence" (Durkheim, 1915). There are several features of this experience: the "audience participation" aspect concerns the collective sense of being bound temporally and culturally around events (such as TV shows or movies or political events); the communicative aspect concerns the ability of the OP to communicate with each other and without the necessary mediation of an FSE (Twitter being a particularly salient case of this modality); and the affective aspect concerns the development of a language or culture of commitment, frustration, anger, pleasure, or satisfaction. Restricting or deliberately severing such ties within the OP has the effect of making the experience seem less participatory, even if the functional outcome is the same. Theories of participation often reference these affective or communicational aspects without necessarily making them central to a theory (Fiske, 2011; Jenkins, 1992).

In contradistinction to "voice" described earlier, which presumes OP members "speaking back to" the FSE that structures participation, this dimension concerns the cultivation of communication, affect, or collective experience within the OP ("speaking among"). Many participatory projects are aimed more or less strictly at producing this dimension: social media and networking sites, dating sites, photo-sharing apps, and mailing lists are all aimed specifically at producing an affective communicative capacity for members of the OP, often quite separate from and unconnected to the goals and operation of the FSE.

Instagram illustrates well the dimension of affective and communicative capacity. Instagram employed a number of features similar to other photography apps, including filters for creating a nostalgic look and the ability to share photos on social networks. The app quickly evolved into a popular social network in its own right due in part to the incorporation of user-supplied hashtags, which allowed amateur photographers to find relevant photos, easily find simpatico user profiles, and join spontaneous themed collaborations (i.e., #trashyfriday, #gpoywednesday, #lategram), sometimes in response to events of local and global cultural significance. Users of the app can communicate with each other in several modalities: by sharing pictures, by commenting on them, by tagging them, or by liking them, with the emphasis on the visual form and its ability to enhance an affective tie between users.

Not all participatory projects include this dimension, however. An example is Bitcoin, a cryptographic currency that forms the basis of an online money economy. While there are many different exchanges, mailing lists, and marketplaces, using Bitcoin does not facilitate any particular form of communication other than rigorously anonymous payment. In this case the subjective experience of participation is not one of conviviality and copresence in a project, but it can nonetheless include a sense of belonging to a crowd or collective of bitcoin users, especially insofar as this crowd perceives itself as oppositional, underground, or avant-garde in some way.

Making the Difference Clear: Participation in Wikipedia and Facebook

The point of disentangling participation and exemplifying the seven dimensions is to more clearly analyze and evaluate any given case of a "participatory" project. To avoid reducing participation to a single dimension, it is important to look at how each of the seven dimensions shows up in any given case. Here we look at two canonical examples of contemporary participatory Internet-based entities: Wikipedia and Facebook. Looking at how all seven dimensions work in each case gives us a sharper sense of why the former seems to be a paradigm case of successful, equitable participation, and the latter does not.

Wikipedia creates educative dividends of multiple kinds, from substantive knowledge in multiple areas to collaborative editing know-how to a political understanding of cooperation within a distributed setting, and in this particular case, a heightened sense of Internet politics most evident in the protests against Stop Online Piracy Act (SOPA) and Protect IP Act (PIPA) in 2012 (Oz, 2012). It allows participation in goals and tasks as users can flesh out, correct, or edit entries but also can debate the meaning of "the encyclopedia" in ways that affect its standards and organization. There are multiple opportunities for voice (communication to the FSE or the leadership) and the setup fosters communicative and affective bonds among committed users (see dimension #5). The Creative Commons Attribution-Share-Alike License governing content means the resource remains available to all including those who exit. Editors can monitor statistics about specific articles, in order to intervene in lively debates, as well as see who the most active editors are. In addition, participation in Wikipedia can produce a strong sense of commitment and collective affective experience, especially around events and ongoing controversies that require continuous attention—both in particular articles and more generally. A criticism often made is that the barrier to entry can be high, as in free and open source projects.⁵ There are also critiques of both free software and Wikipedia that suggest they privilege White, male, unmarked participation that exclude or otherwise render unpleasant the experience for anyone who is not. On balance, Wikipedia can be said to exemplify, to varying extents, all of the dimensions of participation we have explored here.

Facebook is a much different kind of entity. Its claim to "participation" derives largely from the fact that users freely generate the content that gives the social network its value. As an "educative" platform, that education is restricted to either substantive areas (interest groups or professional networks) or to a certain kind of expertise in using the platform itself (which can be quite economically valuable to individuals who enter the industry of social media experts and

⁵See, for example, "7 Open source projects to cut your teeth on (and the ones to avoid)" by Rikki Endsley, *ITWorld*, May 17th, 2013; URL: <http://www.itworld.com/print/356932> (Accessed July 26th, 2013) as well as the associated Slashdot thread chock full of opinions about barriers to access in Open source: <http://classic.slashdot.org/story/13/05/20/1131222>

consultants). Access to decision-making or goal setting is almost totally absent, although the company has made rather high-profile attempts to allow democracy to enter into the determination of the terms of service. In terms of resources, Facebook's business plan clearly depends on their ability to share control with users of the content that is created, and the terms of service make this explicit (see dimension #3). So unlike Wikipedia, which clearly intends to create a commons of user-generated content that cannot be enclosed, Facebook's strategy is the opposite. As we discussed earlier (see dimension #4), exiting from Facebook is made complicated by the fact that one cannot simply take one's content out of the network, and that Facebook continues both to use it for commercial purposes and allow other users to circulate it. Voice is also not central to the experience of Facebook, other than via limited questions of user support. In terms of metrics, and in terms of a collective effervescence, however, Facebook is quite participatory. Its creation of "friending," "liking," and the timeline allow users a very sophisticated picture of the activity they and those in their network engage in, and for many users it provides a deep, affective set of attachments and a modality for communication that justifiably render it a fascinating, large-scale experiment in this aspect of participation. And unlike Wikipedia, with over a billion users by 2012, Facebook is as diverse as the planet, and so by this criterion it does not appear to include or exclude any specific segment of the population.

By comparing these two cases, we can clearly see that there are multiple meanings of participation, different "styles," with Wikipedia satisfying all, or nearly all, of the dimensions we have highlighted here, and Facebook satisfying only two or three of them. As such, it is possible to more accurately point out the difference between the two entities, and to account for our intuitions about them. Wikipedia does in fact represent a very broad, consistent, and effective model of participation. Facebook provides a particular kind of participatory experience, hemmed in with metrics and representations that confirm that experience, but without providing any access to decision-making, voice, or goal setting, and by asking participants to sacrifice control and ownership of resources to the extent that exiting from Facebook becomes a difficult, even painful thing to do.

Conclusion

The analysis presented here reveals that although the language and rhetoric of participation have been ubiquitous for most of the last decade, the diversity of practices demonstrates that there are multiple dimensions to the meaning of participation. In this article we have provided a framework that allows clear distinctions and better analyses of the role of participation. With this tool we can make clear descriptive and normative evaluations of participation that can guide both the analysis and the design/practice of participation. Indeed, we assert that any attempt to theorize

participation today, in the absence of a framework such as this, will resort to cherry-picking one or another aspect of participation and either unwittingly obscure the function of participation, or do so for deliberate rhetorical reasons.

A key theoretical point to take from this is that participation is not a simple either/or parameter, and that as a result it is not its presence or absence that is important, but the configuration of dimensions which render it "participatory." As such, the question of what the best and worst configurations of participation can now be more clearly stated: What is the empirical distribution of the different configurations of participation? Are these different configurations something that can be clustered according to "modes" or "styles" of participation? And if so, what are the functions and effects of different styles? Answering this question is preliminary to any attempt to elaborate a more robust normative theory of participation, and also preliminary to any claim that the concept of participation has been transformed in the last decade as a result of the kinds of practices, technologies, and rhetoric that now surround participation. One might ask "has the Internet changed participation?" But it is not a question that can be answered without clearly stating what participation is, or what it is intended to achieve in its different modes.

An important implication of our more reticulate model of participation is that it allows us to better capture the distribution of participatory practices. If it is the case, as Pateman argued in the 1970s, that the "patterns of authority" present in our society determine in part the kinds of participation that will come to exist, then the distribution of practices in participation today will affect our collective social imaginary of what participation is and what it can achieve. As Pateman suggested many years ago, "we have seen that the evidence supports the arguments of Rousseau, Mill and Cole that we do learn to participate by participating and that feelings of political efficacy are more likely to be developed in a participatory environment. Furthermore, the evidence indicates that experience of a participatory authority structure might also be effective in diminishing tendencies toward non-democratic attitudes in the individual" (1976, p. 105). In light of our work here, such a claim might be refined to take account of the multiple modes of participation that exist empirically around us today.

Given the scale at which many "participatory" activities are experienced today, where hundreds of millions of people interact with each other and an organization—and call it "participation"—it is hard to imagine that such experiences do not have an effect on the collective experience of democracy, equality, inclusion, or effectiveness. Would it not be safe to assume that these forms of participation are patterning people in ways that dispose them to some kinds of participation but not others?

References

- Andersson, J. (2012). Learning from the file-sharers: Civic modes of justification versus industrial ones. *Arts Marketing: An International Journal*, 2(2), 104–117.

- Arazy, O., Yeo, L., & Nov, O. (2013). Stay on the Wikipedia task: When task-related disagreements slip into personal and procedural conflicts. *Journal of the American Society for Information Science and Technology*, 64(8), 1634–1648.
- Arendt, H. (1958). *The human condition*. Chicago: University of Chicago Press.
- Arnstein, S.R. (1969). A ladder of citizen participation. *Journal of the American Institute of Planners*, 35(4), 216–224.
- Asaro, P. (2000). Transforming society by transforming technology: the science and politics of participatory design. *Accounting, Management and Information Technologies*, 10(4), 257–290.
- Attewell, P. (1987). The deskilling controversy. *Work and Occupations*, 14(3), 323–346.
- Bachrach, P., & Aryeh Botwinick. (1992). *Power and empowerment: A radical theory of participatory democracy*. Philadelphia: Temple University Press.
- Bachrach, P., & Baratz, M. (1970). *Power and poverty theory and practice*. New York: Oxford University Press.
- Benkler, Y. (2002). Coase's Penguin, or, Linux and "The Nature of the Firm." *The Yale Law Journal*, 112(3), 369–446.
- Benkler, Y. (2006). *The wealth of networks: How social production transforms markets and freedom*. New Haven, CT: Yale University Press.
- Benkler, Y. (2011). *The penguin and the Leviathan: The triumph of cooperation over self-interest*. New York: Crown Business.
- Berry, D. (2008). *Copy, rip, burn: The politics of copyleft and open source*. London: Pluto Press.
- Bishop, C. (2006). *Participation*. London, Cambridge, MA: Whitechapel, MIT Press.
- Bishop, C. (2012). *Artificial hells: Participatory art and the politics of spectatorship*. London, New York: Verso Books.
- Blumberg, P. (1969). *Industrial democracy the sociology of participation*. New York: Schocken Books.
- Boellstorff, T. (2008). *Coming of age in Second Life: an anthropologist explores the virtually human*. Princeton: Princeton University Press, 2008.
- Bourdieu, P. (1977). *Outline of a theory of practice*. Cambridge, UK, New York: Cambridge University Press.
- Bourriaud, N. (2002). *Relational aesthetics*. Dijon, France: Les Presses du re'el.
- Boyle, J. (1996). *Shamans, software, and spleens: Law and the construction of the information society*. Cambridge, MA: Harvard University Press.
- Boyle, J. (2003). The second enclosure movement and the construction of the public domain. *Law and Contemporary Problems*, 66(1/2), 33–74.
- Boyle, J. (2008). *The public domain: Enclosing the commons of the mind*. New Haven, CT: Yale University Press.
- Brabham, D.C. (2012). The myth of amateur crowds. *Information, Communication & Society*, 15(3), 394–410.
- Braverman, H. (1975). *Labor and monopoly capital: The degradation of work in the twentieth century*. New York: Monthly Review Press.
- Broca, S. (2012). *L'utopie du logiciel libre: La construction de projets de transformation sociale en lien avec le mouvement du free software*. Ph.D Dissertation, Université I, Paris: Sorbonne.
- Brown, W. (1995). *States of injury: Power and freedom in late modernity*. Princeton NJ: Princeton University Press.
- Burawoy, M. (1979). *Manufacturing consent: Changes in the labor process under monopoly capitalism*. Chicago: University of Chicago Press.
- Cabannes, Y. (2004). Participatory budgeting: A significant contribution to participatory democracy. *Environment and Urbanization*, 16(1), 27–46.
- Carpentier, N. (2011a). *Media and participation: A site of ideological-democratic struggle*. Bristol, UK, Chicago: Intellect.
- Carpentier, N. (2011b). New configurations of the audience? The challenges of user-generated content for audience theory and media participation. In V. Nightingale (Ed.), *The handbook of media audiences* (ch. 9). Oxford, UK: Wiley-Blackwell.
- Chan, A.S. (2007). Retiring the network spokesman: The poly-vocality of free software networks in Peru. *Science Studies*, 20(2), 78–99.
- Chopra, S., & Dexter, S. (2007). Free software and the political philosophy of the cyborg world. *SIGCAS Computing Society*, 37(2), 41–52.
- Christen, K. (2012). Does information really want to be free? Indigenous knowledge systems and the question of openness. *International Journal of Communication* 6, 2870–2893.
- Coch, L., & French, J.R. (1948). Overcoming resistance to change. *Human Relations*, 1(4), 512–534.
- Cohen, J.M., & Uphoff, N.T. (1980). Participation's place in rural development: Seeking clarity through specificity. *World Development*, 8(3), 213–235.
- Cole, G. (1944). *A century of co-operation*. London: G. Allen & Unwin for the Co-operative Union.
- Coleman, E.G. (2012). *Coding freedom: The ethics and aesthetics of hacking*. Princeton: Princeton University Press.
- Coleman, G. (2004). The political agnosticism of free and open source software and the inadvertent politics of contrast. *Anthropological Quarterly*, 77(3), 507–519.
- Coleman, G. (2009). Code is speech: Legal tinkering, expertise, and protest among free and open source software developers. *Cultural Anthropology*, 24(3), 420–454.
- Cook, T.E., & Morgan, P.M. (1971). *Participatory democracy*. San Francisco: Canfield Press.
- Cooke, B., & Kothari, U. (2001). *Participation: The new tyranny?* London: Zed Books.
- Cornwall, A. (2011). *The participation reader*. London, New York: Zed Books.
- Currie, M., Kelty, C., & Murillo, L.F.R. (2013). Free software trajectories: From organized publics to formal social enterprises? *Journal of Peer Production*, 1(3), online.
- Dachler, H.P., & Wilpert, B. (1978). Conceptual dimensions and boundaries of participation in organizations: A critical evaluation. *Administrative Science Quarterly*, 23(1), 1–39.
- Delwiche, A. (2013). *The participatory cultures handbook*. A. Delwiche & J. Henderson, Eds. New York: Routledge.
- Derber, C., & Schwartz, W. (1983). Toward a theory of worker participation. *Sociological Inquiry*, 53(1), 61–78.
- Derber, M. (1970). *The American idea of industrial democracy, 1865–1965*. Urbana, IL: University of Illinois Press.
- Desrosières, A. (1998). *The politics of large numbers: A history of statistical reasoning*. Cambridge, MA: Harvard University Press.
- Deuze, M. (2006). Participation, remediation, bricolage: Considering principal components of a digital culture. *The Information Society*, 22(2), 63–75.
- Didier, E. (2009). *En quoi consiste L'Amérique? Les statistiques, le new deal et la démocratie* (p. 317). Paris: Editions La Découverte.
- Ding, Y., Jacob, E.K., Zhang, Z., Foo, S., Yan, E., George, N.L., . . . (2009). Perspectives on social tagging. *Journal of the American Society for Information Science and Technology*, 60(12), 2388–2401.
- Dreyfus, H. (2001). *On the internet*. London, New York: Routledge.
- Du Gay, P. (2000). *In praise of bureaucracy? Weber, organization, ethics*. London, Thousand Oaks, CA: SAGE.
- Durkheim, E. (1915). *The elementary forms of the religious life, a study in religious sociology*. London, New York: G. Allen & Unwin; Macmillan.
- Durkheim, E. (1964). *The division of labor in society*. New York: Free Press of Glencoe.
- Earl, J., & Kimport, K. (2011). Digitally enabled social change: Activism in the internet age. J. Earl & K. Kimport (Eds.). Cambridge, MA: MIT Press.
- Epstein, S. (2008). The rise of "recruitmentology": Clinical research, racial knowledge, and the politics of inclusion and difference. *Social Studies of Science*, 38(5), 801–832.
- Etzioni, A. (1995). *New communitarian thinking: Persons, virtues, institutions, and communities*. Charlottesville, VA: University Press of Virginia.
- Fang, Y. (2009). Understanding sustained participation in open source software projects. *Journal of Management Information Systems*, 25(4), 9–50.
- Farrell, H. (2012). The consequences of the internet for politics. *Annual Review of Political Science*, 15(1), 35–52.

- Felstiner, A. (2012). The weakness of crowds. *Limn*, 1(2). <http://www.escholarship.org/uc/item/19n045tk>
- Fish, A. (2013). Participatory television: Convergence, crowdsourcing, and neoliberalism. *Communication, Culture, and Critique*, 6(3), 372–395.
- Fish, A., Murillo, L., Nguyen, L., Panofsky, A., & Kelty, C. (2011). Birds of the internet: Towards a field guide to participation and governance. *Journal of Cultural Economy*, 4(2), 157–187.
- Fish, A., & Srinivasan, R. (2011). Digital labor is the new killer app. *New Media & Society*, 14(1), 137–152.
- Fisher, E. (2012). How less alienation creates more exploitation? Audience labour on social network sites. *tripleC—Cognition, Communication, Co-operation*, 10(2), 171–183.
- Fiske, J. (2011). *Television culture* (2nd ed.). London, New York: Routledge.
- Follett, M. (1940). *Dynamic administration: The collected papers of Mary Parker Follett*. New York: Harper.
- Freeman, R., & Medoff, J.L. (1984). *What do unions do?* New York: Basic Books.
- Frieling, R. (2008). *The art of participation: 1950 to now*. San Francisco, New York: San Francisco Museum of Modern Art in association with Thames & Hudson.
- Fuchs, C. (2010). Web 2.0, prosumption, and surveillance. *Surveillance & Society*, 8(3), 288–309.
- Fung, A., & Wright, E.O. (2003). *Deepening democracy: Institutional innovations in empowered participatory governance*. New York: Verso.
- Geiger, D., Seedorf, S., Schulze, T., Nickerson, R. C., & Schader, M. (2011). Managing the crowd: Towards a taxonomy of crowdsourcing processes. *AMCIS 2011 Proceedings, All Submissions* (2011).
- Gibson, R.K., Römmele, A., & Ward, S. (2004). *Electronic democracy: Mobilisation, organisation and participation via new ICTs*. R.K. Gibson, A. Römmele, & S.J. Ward (Eds.). London, New York: Routledge.
- Gladwell, M. (2010). Small change: Why the revolution will not be tweeted. *The New Yorker* (Oct. 4) Online at: http://www.newyorker.com/reporting/2010/10/04/101004fa_fact_gladwell.
- Goldberg, G. (2010). Rethinking the public/virtual sphere: The problem with participation. *New Media & Society*, 13(5), 739–754.
- Graeber, D. (2004). *Fragments of an anarchist anthropology*. Chicago: Prickly Paradigm Press, Distributed by University of Chicago Press.
- Graeber, D. (2009). *Direct action: An ethnography*. Edinburgh, UK, Oakland, CA: AK Press.
- Graeber, D. (2013). *The democracy project: A history, a crisis, a movement* (1st ed.). New York: Spiegel & Grau.
- Gregory, J. (2003). Scandinavian approaches to participatory design. *International Journal of Engineering Education*, 19(1), 62–74.
- Griffen-Foley, B. (2004). From tit-bits to big brother: A century of audience participation in the media. *Media, Culture & Society*, 26(4), 533–548.
- Habermas, J. (1992). *The structural transformation of the public sphere: Inquiry into a category of bourgeois society* (New Ed.). London: Polity Press.
- Hacking, I. (1990). *The taming of chance* (1st ed., p. 277). Cambridge, UK: Cambridge University Press.
- Hayden, T. (1962). The Port Huron Statement. In A. Breines & W. Bloom (Eds.), *Takin' it to the streets* (3rd ed.). Oxford, UK: Oxford University Press (pp. 50–61).
- Hippel, E. von. (2005). *Democratizing innovation*. Cambridge, MA: MIT Press.
- Hirschman, A. (1970). *Exit, voice, and loyalty responses to decline in firms, organizations, and states*. Cambridge, MA: Harvard University Press.
- Hoofnagle, C.J. (2009). Beyond Google and evil: How policy makers, journalists and consumers should talk differently about Google and privacy. *First Monday*, 14(4–6), 2009.
- Igo, S. (2007). *The averaged American: Surveys, citizens, and the making of a mass public*. Cambridge, MA: Harvard University Press.
- Irani, L. (2012). Microworking the crowd. *Limn*, 1(2). <http://www.escholarship.org/uc/item/7vc0r3sh>
- Irwin, A., & Wynne, B. (1996). *Misunderstanding science*. Cambridge, UK: Cambridge University Press.
- Jacoby, S.M. (1983). Union-management cooperation in the United States: Lessons from the 1920s. *Industrial and Labor Relations Review*, 37.
- Jenkins, H. (1992). *Textual poachers: Television fans & participatory culture*. New York: Routledge.
- Jenkins, H. (2006). *Convergence culture: Where old and new media collide*. New York: New York University Press.
- Jenkins, H., Purushotma, R., Weigel, M., & Robison, A.J. (2007). *Confronting the challenges of participatory culture: Media education for the 21st century*. Chicago: Mellon Foundation.
- Joss, S., & Durant, J. (1995). *Public participation in science* (p. 148). London: Science Museum, NMSI Trading.
- Kang, H., & McAllister, M.P. (2011). Selling you and your clicks: Examining the audience commodification of Google. *tripleC—Cognition, Communication, Co-operation* 9(2). Available at: <http://triple-c.at/index.php/tripleC/article/viewArticle/255>
- Kaufman, A.S. (1960). Human nature and participatory democracy. In C. Friedrich (Ed.), *Responsibility*. New York: Atherton.
- Ke, W. (2009). Motivations in open source software communities: The mediating role of effort intensity and goal commitment. *International Journal of Electronic Commerce*, 13(4), 39–66.
- Kelty, C.M. (2013). From participation to power. In A. Delwiche & J. Henderson (Eds.), *Participatory cultures handbook* (pp. 22–32). London, New York: Routledge.
- Kensing, F., & Blomberg, J. (1998). Participatory design: Issues and concerns. *Computer Supported Cooperative Work (CSCW)*, 7(3), 167–185.
- Kreiss, D., Finn, M., & Turner, F. (2010). The limits of peer production: Some reminders from Max Weber for the Network Society. *New Media & Society*, 13(2), 243–259.
- Krishnamurthy, S. (2006). On the intrinsic and extrinsic motivation of free/libre/open source (FLOSS) developers. *Knowledge, Technology & Policy*, 18(4), 17–39.
- Lakhani, K. (2003). How open source software works: “Free” user-to-user assistance. *Research Policy*, 32(6), 923–943.
- Lakhani, K., & Wolf, R. (2005). Why hackers do what they do: Understanding motivation and effort in free/open source software projects (pp. 3–22). In J. Feller, B. Fitzgerald, S. Hissam, & K. Lakhani (Eds.) *Cambridge, MA: MIT Press*.
- Latour, B. (2005). *Making things public: Atmospheres of democracy*. Cambridge, MA, Karlsruhe, Germany: MIT Press, ZKM/Center for Art and Media in Karlsruhe.
- Lee, D.J. (1981). Skill, craft and class: A theoretical critique and a critical case. *Sociology*, 15(1), 56–78.
- Lessig, L. (2005). *Free culture: The nature and future of creativity* (p. 368). New York: Penguin.
- Lessig, L. (2008). *Remix: Making art and commerce thrive in the hybrid economy*. New York: Penguin.
- Lezaun, J. (2011). Offshore democracy: Launch and landfall of a socio-technical experiment. *Economy and Society*, 40(4), 553–581.
- Lichtenstein, N. (1993). *Industrial democracy in America: The ambiguous promise*. Washington, DC, Cambridge, UK, New York: Woodrow Wilson Center Press, Cambridge University Press.
- Lovink, G. (2007). *The art of free cooperation*. New York: Autonomedia.
- Lovink, G. (2011). *Networks without a cause: A critique of social media*. Cambridge, UK, Malden MA: Polity.
- Macpherson, C.B. (1980). Pluralism, individualism, and participation. *Economic and Industrial Democracy*, 1(1), 21–30.
- Marcolin, M., D’Andrea, V., & Hakken, D. (2012). Participatory maintenance-in-use. In *Proceedings of the 12th Participatory Design Conference on Exploratory Papers, Workshop Descriptions, Industry Cases* (Vol. 2) PDC ’12 (p. 57). New York: ACM Press.
- Marres, N. (2009). Testing powers of engagement: Green living experiments, the ontological turn and the undoability of involvement. *European Journal of Social Theory*, 12(1), 117–133.
- Marres, N. (2012). *Material participation: Technology, the environment and everyday publics*. Houndmills Basingstoke, Hampshire UK, New York: Palgrave Macmillan.

- Marx, K. (1964). *Economic and philosophic manuscripts of 1844*. New York: International Publishers.
- Mauss, M. (1990). *The gift: The form and reason for exchange in archaic societies*. New York: W.W. Norton.
- Mayo, E. (1933). *The human problems of an industrial civilization*. New York: Macmillan.
- McCartin, J. (1997). *Labor's great war: The struggle for industrial democracy and the origins of modern American labor relations, 1912–1921*. Chapel Hill, NC: University of North Carolina Press.
- Miller, J. (1987). *Democracy is in the streets: From Port Huron to the siege of Chicago*. Cambridge, MA: Harvard University Press.
- Montgomery, D. (1979). *Workers' control in America: Studies in the history of work, technology, and labor struggles*. Cambridge, UK, New York: Cambridge University Press.
- Morozov, E. (2013). *To save everything, click here: The folly of technological solutionism*. New York: Public Affairs.
- Mutz, D.C. (2006). *Hearing the other side: Deliberative versus participatory democracy*. *Journal of Communication* (Vol. 57). New York: Cambridge University Press.
- Nov, O., Naaman, M., & Ye, C. (2009). Analysis of participation in an online photo-sharing community: A multidimensional perspective. *Journal of the American Society for Information Science and Technology*, 61(3), 555–556.
- O'Hern, M. & Rindfleisch, A. (2010). Customer co-creation: A typology and research agenda, in Naresh K. Malhotra (ed.) *Review of marketing research* (Review of marketing research, volume 6), Emerald Group Publishing Limited, pp.84–106.
- Oudshoorn, N. (2003). *How users matter: The co-construction of users and technologies*. Cambridge, MA: MIT Press.
- Oz, A. (2012). Legitimacy and efficacy: The blackout of Wikipedia. *First Monday*, 17(12).
- Parfitt, T. (2004). The ambiguity of participation: A qualified defence of participatory development. *Third World Quarterly*, 25(3), 537–555.
- Pariser, E. (2011). *The filter bubble: What the internet is hiding from you*. New York: Penguin Press.
- Pateman, C. (1976). *Participation and democratic theory* (p. 122). Cambridge, UK: Cambridge University Press.
- Pateman, C. (2012). Participatory democracy revisited. *Perspectives on Politics*, 10(01), 7–19.
- Petersen, S.M. (2008). Loser generated content: From participation to exploitation. *First Monday*, 13(3).
- Postigo, H. (2011). Questioning the Web 2.0 discourse: Social roles, production, values, and the case of the human rights portal. *The Information Society*, 27(3), 181–193.
- Prainsack, B. (2011). Voting with their mice: Personal genome testing and the “participatory turn” in disease research. *Accountability in Research*, 18(3), 132–147.
- Rahnema, M. (1990). Participatory action research: The “last temptation of saint” development. *Alternatives: Global, Local, Political*, 15(2), 199–226. Thousand Oaks, CA: Sage Publications.
- Roethlisberger, F., & Mayo, E. (1949). *Management and morale*. Cambridge, MA: Harvard University Press.
- Rosenbaum, H., & Shachaf, P. (2010). A structuration approach to online communities of practice: The case of Q&A communities. *Journal of the American Society for Information Science and Technology*, 61(9), 1933–1944.
- Rowe, G. (2005). A typology of public engagement mechanisms. *Science, Technology & Human Values*, 30(2), 251–290.
- Schäfer, M. (2011). *Bastard culture!: How user participation transforms cultural production*. Amsterdam: Amsterdam University Press.
- Scholz, T. (2013). *Digital labor: The internet as playground and factory*. New York: Routledge.
- Schüll, N.D. (2012). The touch-point collective: Crowd contouring on the casino floor. *Limn*, 2. Retrieved from: <http://www.escholarship.org/uc/item/3sq2m8z2>
- Sennett, R. (2008). *The craftsman*. New Haven, CT: Yale University Press.
- Smith, J. (2005). The frenzy of the audible: Pleasure, authenticity, and recorded laughter. *Television & New Media*, 6(1), 23–47.
- Söderberg, J. (2002). Copyleft vs. copyright: A Marxist critique. *First Monday*, 7(3).
- Söderberg, J. (2008). *Hacking capitalism: The free and open source software movement*. New York: Routledge.
- Srinivasan, R. (2013). Bridges between cultural and digital worlds in revolutionary Egypt. *The Information Society*, 29(1), 49–60.
- Strauss, G. (2006). Worker participation: Some under-considered issues. *Industrial Relations*, 45(4), 778–803.
- Taylor, F. (1967). *The principles of scientific management*. New York: Norton.
- Taylor, C. (1994). *Multiculturalism: Examining the politics of recognition*. Princeton, NJ: Princeton University Press.
- Terranova, T. (2004). *Network culture: Politics for the information age*. London, Ann Arbor MI: Pluto Press.
- Tocqueville, A. (2000). *Democracy in America*. Chicago: University of Chicago Press.
- Viégas, F., Wattenberg, M., & McKeon, M. (2007). The hidden order of Wikipedia (pp. 445–454). In *Proceedings of the 2nd International Conference on Online Communities and Social Computing*.
- Walzer, M. (1983). *Spheres of justice: A defense of pluralism and equality*. New York: Basic Books.
- Wampler, B. (2012). When does participatory democracy deepen the quality of democracy? Lessons from Brazil. *Comparative Politics*, 41(1), 61–81.
- Wampler, B., & Avritzer, L. (2008). Participatory publics: Civil society and new institutions in democratic Brazil. *Comparative Politics*, 36(3), 291–312.
- Webb, S., & Webb, B. (1902). *Industrial democracy*. London, New York: Longmans Green.
- Weber, M. (1968). *Economy and society: An outline of interpretive sociology*. Berkeley, CA: University of California Press.
- Wellman, B., Haase, A.Q., Witte, J., & Hampton, K. (2001). Does the internet increase, decrease, or supplement social capital: Social networks, participation, and community commitment. *American Behavioral Scientist*, 45(3), 436–455.
- Wenger, E. (2000). *Communities of Practice and Social Learning Systems Organization*. 7(2), 225–246.
- Wiggins, A., & Crowston, K. (2011). From conservation to crowdsourcing: A typology of citizen science. In *2011 44th Hawaii International Conference on System Sciences* (pp. 1–10). IEEE.
- Woodworth, W. (1985). *Industrial democracy: Strategies for community revitalization*. Beverly Hills, CA: Sage Publications.
- Wynne, B. (1996). May the sheep safely graze? A reflexive view of the expert-lay knowledge divide. *Risk, Environment and Modernity: Towards a New Ecology*, 44–83.
- Wynne, B. (2007). Public participation in science and technology: Performing and obscuring a political–conceptual category mistake. *East Asian Science, Technology and Society: an International Journal*, 1(1), 99–110.
- Xu, C., Ma, B., Chen, X., & Ma, F. (2013). Social tagging in the scholarly world. *Journal of the American Society for Information Science and Technology*, 64(10), 2045–2057.
- Yi, K. (2012). Harnessing collective intelligence in social tagging using Delicious. *Journal of the American Society for Information Science and Technology*, 63(12), 2488–2502.