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A History of the Participatory Map

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What is the participatory map, and when did it emerge? In the online world, we're in the middle of a renaissance of popular cartography, enabled by big data and the comparative cheapness of distributing graphic information on the web. Some of these maps—including some maps enabled by platforms like Google Maps, Open Street Map, or Ushahidi—are compiled by many individuals, working atop a digital infrastructure that enables the contribution of specific place-names, topographical features, social data, or real-time observations (for instance, of police movements, natural disasters, sexual assault, ecological contamination, or political corruption), all collected into a single interface that makes for easy analysis (Hamilton-Page 2015; LEO Network 2015; Leson 2013; Meier 2011, 2012). Celebrated for their use in coordinating on-the-ground needs and volunteer support after the 2010 Haiti earthquake, these maps have become a powerful symbol for the way technology enables democracy (*Economist* 2009; Gangadharan 2013; Giridharadas 2010; Leson 2012; Marwaha 2008; Ulbricht 2012). Over the past decade, media outlets like the *New York Times* have urged us to believe that digital, participatory technologies—and in particular the Google Maps "mashups"—compose the newest chapter in the history of technologies that promise the power to radically transform government (Belson 2008; Brustein 2011; Lohr 2012a, 2012b, 2013; Sutter 2010; Pérez-Peña 2007; Sang-hun and Miller 2013).

Internet culture and development professionals both boast of having invented a piece of technology with the radical ability to destabilize power, with Internet enthusiasts dating the technology from the evolution of the mashup in 2004, while development analysts look back to paper maps of the 1990s that integrated the perspective of many villagers into one design (Batty et al. 2010; Tulloch 2007). Despite the importance of both of these horizons, an even longer genealogy is possible, one that locates participatory mapping as the descendant of an older school

of thought represented by twentieth-century urban planners and social movements that sought to incorporate the perspective of populations traditionally excluded from governance and use the maps, surveys, and hearings as their principal tools. Recognizing these connections can illuminate many of the roots of the purported power of many-to-many maps to overturn hierarchy and lead us to question how much the maps' radicalism consists in the technology itself, rather than the social movements in which such maps are embedded.

The term *participatory* first emerged from the 1930s to 1970s in the midst of movements for rethinking cities and housing. From early in the life of the urban planning profession, maps were already looked to as one tool among many for breaking down power hierarchies. Following the evolution of planners' techniques takes us from urban planning to development theory at the University of Sussex in the 1970s, where a critique developed about the usefulness of survey, hearing, and map compared to informal conversation, drawing, and game playing. Eventually, the insights of these debates were taken up by indigenous peoples' movements in the 1980s, where maps compiling the input of hundreds of individuals were first used by the Cree people to produce court-ready documents capable of protecting their land from developers. These first recognizably participatory maps also emerged in a climate of many tools, embedded in global social movements where writers and activists stressed a variety of tools that social activists could use, including informal conversation, graphic rather than literate instruction, attention to gender and age hierarchies, effacing the role of the expert, the cheap dissemination of information, and international solidarity between indigenous movements, workers' movements, trade unions, and other groups. Arguably, the Cree movement maps and the many participatory maps that followed were only as socially radical as the entire program of democratic information exchange that surrounded them.

The history of the participatory map gives us a point of comparison for judging the success or failure of mapping technologies today. As a comparison of online maps and their historical precursors will show, many ostensibly "democratic" or "participatory" (or radical or revolutionary) movements regarding the map still problematically rely upon the agency of a small elite. A longer history of the subject offers a less magical, if more instructive, lesson about what participatory maps look like when they are embedded in social movements.

Participatory Democracy's Search for New Techniques

It has long been accepted that participatory democracy has a longer history than the Internet, one that has thrived on the possibility of connecting with strangers

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across gender, race, and class to forge new possibilities for the public. There is a rich historiography on participatory and democratic movements in the twentieth century, for instance, Jeremi Suri's work on global protest, Mark Kurlansky's work on media and protest in 1968, and studies in Gandhian activism, nonviolence, and protest. These studies tend to emphasize the twentieth-century birth of a culture of out-of-doors protest, expanding the rights of minorities and the poor through an unflinching, media-aware insistence on civil and human rights.

From the 1930s, one strand of activism concerning participatory democracy took the form of an intellectual (and sometimes social) movement on involving community members in local planning and development decision making. Debates over what participatory urban planning might look like began with urban activists who engineered new techniques like the "survey" and the "hearing" to enable collaborative responses to city resource problems.

In the 1960s and 1970s the success of the survey and the hearing was debated in terms of privilege and exclusion by community organizers. Meanwhile, union organizers and literacy teachers in India and elsewhere applied the tools of the survey and the hearing to decentralized planning of village crops and water management and connected with other organizers from around the world at conferences and regional meetings, building a global network.

By the end of the 1970s, debates over privilege and exclusion had given way to a search for new techniques. Researchers at the University of Sussex began to use the walking tour to look more closely at specifically geographic and local structures of information gathering and decision making. In Canada, a British geographer and a Native American tribe created a collaborative, many-authored cartography that became a key tool in protecting the tribe's land from mining encroachments. Thereafter, poor and indigenous communities around the world began to use the technique for their own purposes (Feldman 2002).

This multiorigin story of the participatory map opens up a different history of bureaucracy than those that originate with use of paper during the reform of civil service since the French Revolution (Guldi 2012; Kafka 2012; Ogborn 2007; Vincent 2011; Vismann 2008). More recently, scholars have emphasized how decentralized twentieth-century bureaucratic technologies were and how social movements increasingly turned to data—including microfilm, the Xerox, the government computer, and the bulletin board system of early networked computers—as a mode of engagement with political aims (Gitelman 2014; Medina 2011; Silverman 2015; Turner 2006). These studies point to how centuries-long engagements with ideas about open government both preceded and shaped the founding cultures and techniques of information sharing on the Internet.

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1   None of these scholars, however, has offered a global account of the participa-
2   tory movements in which geography was the key subject of analysis, although
3   there is a long history of political engagement with the techniques of sharing
4   maps. From the 1970s, participatory maps were harnessed by poor and indigenous
5   peoples in India, Africa, and North and South America to advocate for rights to
6   land and water. From the 1980s, individual members of the mapping movement
7   have reported on their own histories (Chambers 1994; Tulloch 2007). This story
8   necessarily takes us to communities outside of the information centers of Europe
9   and North America.
10   We need a critical history of the digital map that foregrounds the ways in
11   which the map operates to facilitate a public discussion of relationships to land
12   and water, questions of rights with which the survival of poor communities and
13   indigenous peoples are intimately bound. The prehistory of crowdsourced maps
14   from the "survey" and "hearing" to the global participatory mapping movement of
15   the 1980s and 1990s puts the promise of reform in a deeper perspective.

16
17   **The Birth of Participation: The Survey and the Hearing, 1937–1968**
18
19   The story of the search for ways to use data to transform government begins in
20   Britain on the eve of the Second World War. British cartographers influenced by
21   the writing of French radical Frederic Le Play organized mass mapping experi-
22   ments as a tool for synthesizing public knowledge about unemployment and mar-
23   ket opportunities (Beaver 1962; Evans 1986; Linehan 2003; Matless 1999; Rycroft
24   and Cosgrove 1995). From 1937 forward, the Mass Observation movement tar-
25   geted inequalities in home and workplace, using the format of an open-ended
26   survey to coax Britain into recognizing its own internal hierarchies (Calder and
27   Sheridan 1985; Hinton 2010; Hubble 2006; Mercer 1989; Summerfield 1985). The
28   labor of many was chosen to augment the data intended for expert use. The last-
29   ing legacy of experiments such as these was two new tools: the survey and the
30   hearing, both of them deployed to empower the poor and overturn existing power
31   structures (Beaufoy 1997; Geddes 1909; Matless 1999; Pepler 1955).
32   One of the earliest advocates of the urban survey, Patrick Geddes (1909), con-
33   ceived of the survey and the hearing as ways to remedy class bias (Goist 1974).
34   As early as 1945, the methods had traveled to America, where the Tennessee
35   Valley Authority (TVA) was designing hearings so that black communities could
36   formally protest programs of forced removal (Augur 1945). By 1951 Geddes-style
37   hearings on urban planning were being organized in miners' neighborhoods in
38   Lancashire (Presthus 1951). In the same year, Geddes-style surveys and hearings

also factored into the design of the Michael Reese Hospital on Chicago's racially embattled South Side with the intent of better serving the 85 percent black population of the neighborhood.[1]

Observers across the social sciences concurred that participatory planning implied a new direction in the engineering of democracy. In 1947 Nicholas J. Demerath of the University of North Carolina explained to sociologists reading the professional journal *Social Forces* that urban planning had been transformed by the new civics of Geddes, Ebenezer Howard, Henry Wright, and Lewis Mumford. They preached, alongside the rehabilitation of slums into safe neighborhoods, a new directive of "community participation in each phase of the planning process in the determination of goals as well as in plan implementation" (Demerath 1947: 63).

It was not until the 1960s that early experimental strategies of participatory urban planning were formalized into a professional movement supported by a political mandate from above.[2] In the United States, the Economic Opportunity Act of 1964 urged the state programs it funded to seek "maximum feasible participation" in their enrollments. In 1965 the Planning Advisory Group in the United Kingdom handed down a directive calling for public participation in plans issued under the Town and Country Planning Act of 1947 (Long 1976: 70). "Participation" had been mandated by the state, but it was up to the people to decide exactly what that meant. New methods of consulting the people, contended Tracy B. Augur of the TVA, were creating a historical revolution in citizens' control of land. Participation had even greater aims than the civil rights movement: rather than contain itself to issues of racial discrimination, the participatory movement intended to dissolve all the privileges that historically structured access to state and market.

The Rise and Fall of Participation in the West, 1969–1978

In 1969 the burgeoning movement at last got its first formal manifesto. Appropriately, the document came from below—from an organizer in the field, not from an academic—and it was published in the annals of urban planning. The essay in question, "A Ladder of Citizen Participation," was written by Sherry R.

1. The planning staff of Michael Reese Hospital, working under Geddes's inspiration on the South Side of Chicago in the late 1940s, put themselves in "the role of catalyst or 'irritant,'" working to arouse conversations about housing, health, and racial discrimination in city offices (Blucher 1951: 352–53, 355, 356).

2 For the history of the word *participation* and a comparison to the earlier language of *grass roots.*, see Neuse 1983.

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Citizen control

8

Delegated power

7

Partnership

6

Placation

5

Consultation

4

Informing

3

Therapy

2

Manipulation

1

Degrees
of
citizen power

Degrees
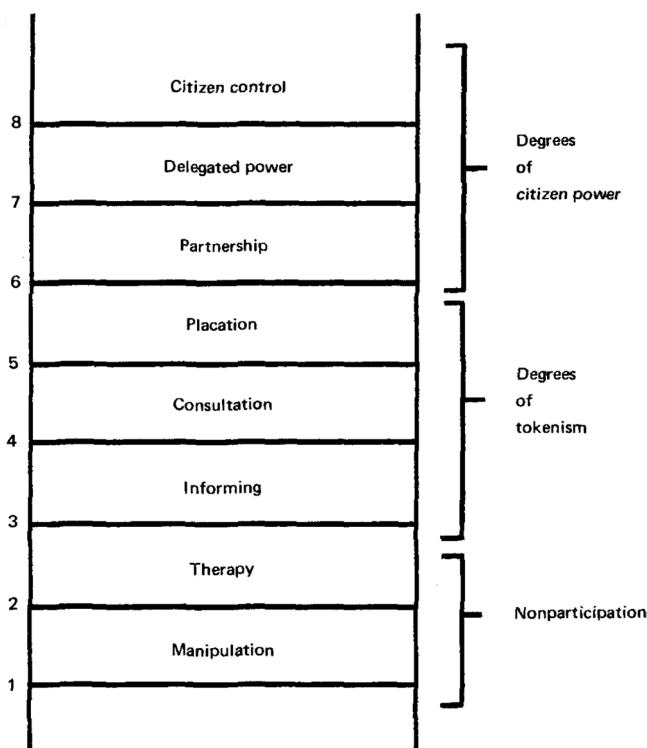of
tokenism

Nonparticipation

Figure 1 Sherry R. Arnstein's "ladder of citizen participation" (1969: 217)

Arnstein, a social worker in Oakland, California, and published in the *Journal of the American Institute of Planners*. Arnstein argued that participatory processes needed to transfer authority and decision making from expert elites to citizens, workers, or neighborhood councils. "Participation without redistribution of power," she explained, "is an empty and frustrating process for the powerless" (Arnstein 1969: 218).

Bound up with Arnstein's manifesto was a rejection of previous tools of urban planning, including the survey and the hearing. Here Arnstein went further than Geddes and his followers had: the ladder in her article's title referred to a visual aid, paired with the text, which showed the possible levels of authority and democratization in the planning process (see fig. 1). It suggested a hierarchy of inclusion practices from "manipulation" and "therapy" up to "delegated power" and "citizen control." The survey and the hearing ideally lent themselves to the sixth rung of Arnstein's ladder, "partnership," where experts and neighbors would collaborate in creating a city plan.

Arnstein's theory offered a critical view of government that implicitly drew upon the experience of generations of poor people whose attempts at self-management had been denounced by the very reformers seeking to better their condition. In the late nineteenth century during the era of the Charity Organization Society, women reformers traveled the slums of New York and London, going door-to-door to survey working families on their spending and eating habits, only to denounce the poor in their reports as collectively incompetent (McKibbin 1990: 167–97). Arnstein's (1969: 222–23) examples of failed meetings included meaningless "advisory groups" created under the US Department of Housing and Urban Development in Philadelphia and an empty "citizen veto" installed by the mayor of Richmond, California. For Arnstein, the survey and the hearing were staged in contexts where experts had already made decisions contrary to citizens'

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desires, and they thus belonged on the bottom of the ladder, in the categories
defined as "manipulation" or "informing."

A new generation of planners, jolted by Arnstein's denunciation, turned
back to the drawing board. Academics in urban planning departments filled the
journals of the 1970s with a literature on how personhood and collectivity could
be mobilized to create a truly participatory city. Capitalizing upon wider theories
of civic society, the public sphere, and privilege, they offered a new synthesis of
ideas about inclusion (Bruton 1980; Damer and Hague 1971; Fagence 1977: 1–14;
Hague and McCourt 1974; Johnson 1984; Long 1976; Reynolds 1969). No planner
was more central to this new wave of theory than John Friedmann, a student at the
University of Chicago taught by both left-wing antiracist Rexford Tugwell, TVA
director and sociologist, and right-wing economist Milton Friedman. Friedmann's
first employment out of school was with the TVA, where he witnessed, firsthand,
the ineffectiveness of high-minded consultations with black communities subject
to relocation. Drawing upon both the antiracism of Tugwell and the libertarian
individualism of Friedman, Friedmann (1973: 77–78) proposed a new vision for
participatory processes in which open deliberations styled on "the old-fashioned
New England town meeting" would generate moral visions of future cities. He
believed that a new age of "transactive planning" would grow from the grass roots
and called for a diminished role for his own profession. Urban planners would no
longer create and analyze plans; instead, they would facilitate the visions of those
whom the plans would affect. "The process of societal guidance," he wrote, "is
too important to be left entirely to experts" (ibid.: xvii).

Despite a growing number of academic sociologists and geographers writing
critically about urban planning and expertise (P. Hall 1980; Harvey 2009 [1973];
Massey and Catalano 1978; Massey and Meegan 1979), theory did little to
change practice. Bureaucrats preferred to pursue "participation" in the benign
form of hearings, polls, and citizens' boards. And many institutions contrived
to silence the voices of the least privileged, scheduling hearings during the day
when working people could not attend them. In Britain, sporadic nods to the
new model appeared in projects such as the London Docklands scheme, where
planners scheduled meetings in the community. Yet locals never achieved the
political power necessary to redistribute resources, leaving behind, according to
one planner, "a legacy of frustration and alienation" (Johnson 1984: 8; Long 1976:
70; Taylor 1973). Participatory planning, in other words, was already dead by
1978 in both the United Kingdom and the United States. Even earlier, in 1972,
one group reacting to public pronouncements of a new age in democracy titled its
report "The Participation Swindle" (cited in Long 1976: 83, 133).

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Participation in Social Movement Strategy in the Global South in the 1970s

Despite its ill-founded start in the United States and the United Kingdom, participation had an altogether different career in the global South, where there was a high demand to replace colonial structures with new institutions and organizational forms. Starting in 1972, a dozen Asian scholars began meeting at the Chinese University of Hong Kong. They created a new group made up of organizers of worker cooperatives and women's groups, networks of people eager to compare methods for creating more avenues for equal participation. Through the 1970s, members of the Asian group joined up with organizers from around the world, meeting in Canada, Yugoslavia, Venezuela, the Philippines, Korea, Australia, and the Bahamas. Groups were united by their commitment to overturning the rule of experts and investigating not merely the theory but also the practice of participation (Ellis 1983; Couillard 1980; de Vries 1980; Divassón and Martínez 1980; International Council for Adult Education and Public Enterprises Centre for Continuing Education 1979a, 1979b; Tandon 1979). They were influenced by the Chilean education reformer Paulo Freire and were increasingly aware of how particular kinds of knowledge, including literacy itself, were used to dominate colonial populations.[3] They too quoted Arnstein and began to theorize a new kind of government: one where, as one activist wrote, "work on the drawing board becomes work on the settlement" (Lankatilleke and Jayaratne 1988: 3).

Organizers, many of whom had begun their careers in the adult education movement, started to expand their concerns to the structure of government itself. In Asia, the doctrine of participation was developed by a network of conferences, from which emerged a technology and a methodology that would replace the hearing and survey as a formula for participatory governance. Broadly, they targeted many kinds of imperialism and coercion, formulating participation as the key to a broad-scale, grassroots movement of liberal reform. At a conference at the University of Sussex, one activist reported on his work in a village in Bangladesh in 1974–75: he had used participatory surveys to create a report on exploitation of the rural poor that emphasized the many avenues through which the poor were kept in place, including "tenancy, labour, moneylending, the market, lineage status, patron-client dyads, the co-operative, the systems of access to public resources

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3. Freire, the former minister of education in Brazil, whose *Pedagogy of the Oppressed*—published in Portuguese in 1968 and translated into English and French in 1970—formulated a case for liberatory pedagogy at the village level in the making of larger political movements, warning against Western-style hierarchies and encouraging teachers to create a "distance between the teacher and the taught" (Freire 2005 [1968]: 76).

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and justice, and straight-forward coercion" (G. Wood 1980: 4). In these settings, collecting information about injustice was understood as key to future action. Among those who composed the movement, intercontinental travel and frequent publication—much of it buoyed by the United Nations (UN) Food and Agriculture Organization (FAO) and the UN Educational, Scientific, and Cultural Organization (UNESCO)—helped to forge a new consensus, a faith in the power of dialogue and deliberation to transform society. Rajesh Tandon's (1973: 3) group the Society for Participatory Research in Asia (PRIA), headquartered in New Delhi, presented participatory methods as a tool for undoing "the dominant form of knowledge produced and articulated throughout the history from the point of view of the rulers, the Kings, the Brahmins." "In this new approach," wrote participatory organizers of their work in Sri Lanka, "the community becomes the decision makers while the officials support the process" (Lankatilleke 1988: 3).

Although they read Arnstein and Freire, most of the participants were interested less in theory than in the process itself. Drawing on Freirean methods, participatory organizers shaped meetings so as to insure that women, the elderly, and minorities had a voice. They concentrated their energies on quieting men who tried to interfere with women's consensus or on adults who tried to tell children what to think (Bouyer 1995; Chambers 1991; "Not Only the Better Off but Also the Worse Off" 1993; Tandon 1979).[4] Trainers emphasized a mind-set of humility as the base for dealing with data. Empathy and modesty would take the place of science as the method of the modern sociologist. Theirs was a philosophy opposed to expertise, emphasizing, as one activist put it, a "loss of complete control by the researcher" (Tandon 1979: 5). New lists of proper "tactics" were printed up and circulated, mirroring the training of sociologists of yore, but the new tactics emphasized a methodology of empathy. Appropriate practices included "being unimportant" and "listening" (Chambers 1979: 12). One set of mimeographed instructions drove home the point in all caps: "DON'T LECTURE!—FOR GOD'S SAKE!!" and "DON'T INTERRUPT" (Mascarenhas 1990a: 5).

Like Friedmann and other Western theorists of participatory planning, participatory advocates in Asia shared an understanding of history that formulated the uses of information to structure government. But ideas about overturning Western pedagogy and the hierarchy of experts—while often implemented at the planning stages—found deaf ears among leaders in local and national government alike.

4. As Chambers (1991) noted in his dictation as he observed Sheelu Francis, another organizer, working with women: "The women[']s group wiped out their original work and are now being dominated by one man who is telling them exactly what to do and this has undermined their confidence. . . . This is a classic case of male domination inhibiting the creativity of women."

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On the international scale, however, it was a different story. The budding movement of educators in developing countries would resonate with the questions of many bureaucrats in the UN, who had seen patterns of exclusion reduplicated firsthand and were eager to appropriate new strategies for democratizing their global work.[5]

Participation and the Rise of the Walking Tour in Development Economics, 1969–1994

The participatory movement found especially energetic allies among British theorists of development with ties to radicalism who were acculturated from generations of British liberalism to rethinking the use of data. At the newly founded University of Sussex, economist Dudley Seers argued that the practice of foreign aid, with its linkage to charity and to Western investors, did little to build up local industries at home. He and his colleagues espoused a vision of economic development grounded in indigenous technology and housing for all (Seers 1969, 1978; Seers and Faber 1972). This was a vision of development supported by the UN and the FAO, but it was increasingly at odds with the large-scale industrial farming and infrastructure development being proposed at the World Bank under Robert McNamara. Above all, the Sussex vision gave preference to social and cultural solutions over econometric ones, and this bent made Sussex a home for those rethinking technology, data, and the role of participation in development (Clark 1981; Jolly 1989; Nafziger 2006; Reid 1973).

Seers and his colleagues embraced the hope that informal governance and small-scale technology could decentralize wealth and so solve systematic economic exclusion. The appropriate technology movement was structured around the notion that various simple technologies could help developing nations retool their economies for global distribution. In the 1960s, Ernst F. Schumacher translated these conversations for engineering departments in the West (Rybczynski 1980; Schumacher 1965, 1993; Wade 1975). In Schumacher's vision, the engineers of Britain and America would increasingly spend their time visiting poor villages, helping to inaugurate a second agrarian and industrial revolution, with new waterwheels and solar panels form fitted to the huts of Africa and India. Many of the University of Sussex faculty embraced this vision, building upon Schumacher's ideas in the Sussex manifesto of 1968 (Ely and Bell 2009; Shah 2009). But in the

5. To the best of my knowledge this movement has never previously been covered by historians, although a wide range of retrospective accounts of the movement have been published for smaller audiences (Beebe 2001; Chambers 1994, 2006; B. Hall 1999; Röseberg 1996; Tandon, n.d.).

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eyes Robert Chambers, Seers's younger colleague, this transfer of ideas was not radical enough.

As Chambers understood it, power and hierarchy were bound up with technologies of information and representation, and so the appropriation of new irrigation technologies was beside the point. Chambers's critique of information took the form of an indictment of data and the institutions that administered them. Surveys and surveying knowledge consumed the bulk of researchers' time, to great disadvantage (Chambers 1983). Chambers reasoned that a development program truly committed to raising up the developing world would reject the social science survey and journal article in favor of direct action.

If Chambers was right, then the entire expert-run matrix descended from hearing and survey, structured in departments and journals of economics, rural sociology, and development, should be regarded as a failure. Expertise as instantiated in the academy produced paper technologies in the form of data banks and professional journals that only further isolated developed-world experts from developing-world populations. Professional research for the purposes of advising governments was a dead end: it resulted in funds diverted from the people who needed them. Whatever the promises of development economics to lift up economies by building roads and dams, the technologies of information that those practices relied upon were broken.

At Sussex, the reform of development became a catechism, and the participatory movements of the global South began to attract new attention. The problem thus became one of finding a technology that would help to change things, and Chambers began to contemplate the power of drawings like those that members of the participatory movement had made in their literacy classes. These pedagogic cartoons were receiving new scholarly endorsement, likened in the annals of the Sussex conferences to Venn diagrams or maps—tools for conveying rich information from the many to the many.[6]

By the 1960s, many in the appropriate technology movement began to focus upon limits to Western ways of knowing and teaching and suggested more universal representations appropriate to global learners. Sussex staff began to offer new trainings for participatory leaders on making diagrams and drawings, showing how visual aids, used well, could become tools for intermediation. Chambers (1979: 5) and others started to write about the importance of walking with locals, arguing

6. Presenting to one of the first assemblies of organizers of participation at Sussex in 1979, Gordon Conway argued that small farmers only have a chance in development if they become organized as a political force and that his experience had suggested the use of diagrams "in a readily understandable visual form" to simplify "often fairly complex information" (Youth for Action 1989).

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that it was necessary to correct biased opinions made from traveling only good roads in rich districts. Sussex organizers promoted community walks as methods designed specifically "to help 'outsiders' see at close range several items of interest and relevance which they would otherwise miss" (Mascarenhas 1990b: 1). Objects of attention might include "traditional indigenous technologies" and medicinal plants and fodders (ibid.: 3). The community walk for gathering data was an appropriate technology, meant to align the outsider's worldview with that of the local.

In the community walk, activists had at last located a technique for managing information that overcame the hierarchy between experts and the people. Walking tours allowed a community to collect for itself information about a local territory, its opportunities and challenges. Combined with Freirean organizing, walking tours could activate conversations about best farming practices and channel collective desires back to governments. Importantly, information would arise from and be channeled by the people, not by the expert. Expertise would be reduced to the talents of the organizer or literacy teacher, mediating between local will and government.

The Sussex methods—replacing surveys with community dialogue, implementing diagrams as tools for collective discussion, and using transect walks to engage the community about the local landscape—offered a modern, reformed alternative to surveys, hearings, and journal articles. These alternatives were disseminated around the world through international conferences like those that unified the participatory movement and the translation of movement materials into new languages. The University of Sussex held a conference on the Sussex tool kit (now under the name Rapid Rural Appraisal, or RRA) in 1979. It organized another in 1980, and conferences on the tool kit soon began to be held around the world.[7] By the 1990s, there were legions of textbooks and organizers trained by Chambers circulating around India and other parts of the developing world (Bouyer 1995; Kumar 1993; Mukherjee 2002: chap. 5; Narayan and Srinivasan 1994; Narayanasamy and Boraian 1997).[8]

7. Papers from the 1979 and 1980 RRA conferences are at the Institute of Development Studies (IDS) Library. In 1985 there was an international RRA conference at Khon Kaen University, in Malaysia, followed by a 1991 conference hosted by the Aga Khan Foundation of New Delhi on RRA and its auxiliary methodology, participatory rapid appraisal (PRA), held in London (*Proceedings of the 1985 International Conference on Rapid Rural Appraisal* 1987; Aga Khan Foundation 1991).

8. Methods for walking in communities appeared in the 1960s in the hands of French activists who emphasized looking at the landscape as a means of understanding collective experience (Bouyer 1995). By 2006 Chambers's student Neela Mukherjee (2002: chap. 5) had published a textbook in which she described walking territory as a key to participatory learning for those seeking greater control over food sovereignty and their land. Other textbooks collecting the widespread, successful implementation of RRA have been compiled, notably Narayanasamy 2009.

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The Cree Experience

Critical of expert management as these movements were, none of them before the late 1970s had yet begun to retool the map. The map was, after all, one of the foremost objects of colonial government, having been a tool of centralized administration and colonial rule since the origins of the cadastral map in sixteenth-century Europe. By the seventeenth century, European maps were helping settlers lay claim to the lands of other peoples around the globe. By the nineteenth century, expert civil engineers and urban planners were using maps to evict poor families from neighborhoods known to house working-class radicals (Kain 1992; Osborne and Rose 1999; Weaver 2003). In 1980, who would have imagined the map as a tool used to make a radical claim on the state by those traditionally excluded from participation?

The Native Americans of North America did. And the fact that it was they is striking. Of all of the groups of peoples that had been evicted, displaced, or indebted into leaving their land, the experiences of native tribes in North America were extreme: they lost their land, repeatedly, in events characterized by force, fraud, and the regular reversal of legal contracts. Far from causing them to give up on maps, these experiences made them hyperaware of the power of the map. From the early 1970s, the tribes of Alberta had noticed overdevelopment and pollution from expanding mining works encroaching onto their territory (Brice-Bennett 1977; Brody 1982: xxii; Milton Freeman Research Limited 1976; Robinson, Garvin, and Hodgson 1994). They began to look for a way to ask the Canadian government to enforce their property rights to exclude miners from their territory. The promise of the map was that it had cache in mandating adherence to property law in government courts.

Creating a map of native holdings undocumented by the state was no straightforward task. It depended on organizing families across tribes and sorting through oral history and hunting customs to find, document, and illustrate traditions of marking the land that would stand up in court as the native equivalent of surveying. After months of conversations, the natives began to recognize their "hunting lines," interwoven across the whole of the territory, as a possible source of evidence about the tribes' long occupation and government grants to territory. These hunting lines had been preserved in oral tradition and rehearsed through seasonal hunting rituals, one family to a hunting line, the exact territory of each line known to each family. Hugh Brody, a British geographer then embedded with the tribe to study their traditional sense of space, began encouraging family members to draw out hunting tracks and traditional place-names on maps. To his shock and delight,

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the tracks were rich with topographical information and never overlapped—
incontestable evidence, he understood, of a native understanding of strict fam-
ily rights to exclude others from property, of a kind that would stand up in court
(Brody 1982: 146–77). All they had to do was collect these traces on a single map.

The origin of mapmaking was collaborative, with the initiative to mobilize
against development coming from the families, while the suggestion of using a
map to create knowledge appears to have been provided by Brody. Throughout,
the process of mapmaking was democratic, following the pattern prescribed by
Freirean organizers for participatory meetings. "The majority of the men and
many of the women in seven of the region's nine reserves drew maps of their land
use," Brody later remembered (ibid.: 149). The maps they created made a rich,
500-person-detailed case that the natives—far from having died out—were still
inhabiting land that their ancestors had inhabited continuously for generations.
They documented and denounced generations of industrial encroachment onto
traditional hunting and trapping lands (ibid.: xxii). In 1977 the Cree delivered to
the Canadian government maps of animal species, one at a time, each detailing
hunting location and each hunter's activities.

Collaborative maps had become an indigenous tool for facing the legal contes-
tation of native land. Faced with these maps, judges tended to rule in favor of the
tribes' sovereignty and against logging and mining companies (Robinson, Garvin,
and Hodgson 1994; *William v. British Columbia* (2012), 324 B.C.A.C. 214 (Can.);
555 W.A.C. 214). A map, made through a communal, participatory process, the Cree
tribes found, was a document that could alter the outcome of court cases. At last, par-
ticipatory methods had settled on a tool that could both synthesize grassroots conver-
sations and use those conversations to overturn colonial alignments of power.

Map-Driven Movements for Control over Cities and Land

The Cree experience showed that maps could create a powerful reversal of colo-
nial hierarchies, and within a few years activists affiliated with the participatory
movement deployed participatory maps around the developing world to analyze
the administration of their territories and argue for adjustments suited to their
needs. Participatory organizers in Bombay made maps of local squatter settle-
ments and argued with the city about formally recognizing occupation (Society
for Participatory Research in Asia 1982: 16–18). In Thailand, indigenous people
used foam-board maps to lobby for control over their ancestral territory (Sharp
1998). In Gujarat and Ethiopia, indigenous communities came up with coopera-
tive systems for patrolling their woodlands and communally harvesting wood

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(Prathan, Arul, and Poffenberger 1987: 19; Scoones and McCracken 1989).[9] Indian nongovernmental organizations (NGOs) worked with poor farmers on the participatory management of watersheds. Maps documented the exhaustion of local water aquifers and pointed out where hand pumps needed to be repaired (Lightfoot et al. 1989; Mascarenhas 1996; Youth for Action 1989: 8). A map-driven movement for local control had emerged.

In an era when the Ford Foundation was pushing improved varieties of rice inappropriate to the seasonal fluxes of the Indian climate (Cullather 2010; Patel 2013), peasants used participatory maps to take back the decision matrix of crops and inputs from the experts. Farmers would explore village-directed development strategies where ideas came from the people rather than from institutional expertise. In Hyderabad in the 1980s, local government agriculture and credit authorities were emphasizing high-yielding grains of rice. Participatory meetings helped villages come to a consensus about the importance of traditional fodders, mean of preventing soil degradation, the administration of wells, and other local issues of agrarian policy(Aga Khan Foundation 1991; Chambers 1990; Government of India 1995; Youth for Action 1989: appendix, 3–4).

Alongside helping activists to influence decisions, participatory maps and processes often led to land tenure and property renegotiation. Indigenous peoples in Canada used participatory mapping to plan their own sewer system (Society for Participatory Research in Asia 1982: 16–18). In Calcutta, slum dwellers organized drain-cleaning brigades and kicked out corrupt garbage-collection contractors (Kar 1997). Asked in the participatory process what their goals were, most communities insisted above all else that "there should be minimum disruption to the existing settlement pattern—relocation only if it is absolutely necessary" (ibid.).

The activists who composed the participatory movement broadened their constituency each year, reaching out to new groups ostracized because of gender, race, or class. By 1982 participatory techniques were being deployed among peasants and landless laborers across North America, South America, Asia, and Europe (Society for Participatory Research in Asia 1982). Conversations about the nature of the village and the territory changed as new voices were included in the conversation (Mascarenhas 1991: 17).[10] Participatory maps and stories about their

9. In 1989 Ian Scoones and Jennifer A. McCracken (1989) reported on the use of PRA to devise a tree management plan in Wollo, Ethiopia.

10. "In one recent exercise while the village was being mapped by women," recalled James Mascarenhas (1991: 16), "a discussion on malnutrition was initiated, and the symptoms described. After this the women began to point out and mark on the map the houses which had children suffering from malnutrition."

use were becoming a vehicle of global consciousness of poor people united in a struggle against hierarchical management.

As the Sussex school had understood, a movement centered on the poor requires particular tools. It needs techniques for the collection of data about territory, as well as the means of representing that information to the people themselves, even where materials are scarce. Mapping organizers therefore delved into the search for technologies appropriate to their undertaking. Conversations about appropriate technology in development shifted the search for maps from the high-tech maps used by indigenous people in Canada to lower technologies. Geographic information systems (GIS) technology was rarely embraced by participatory organizers at PRIA or Sussex, who understood the difficulty of using GIS in developing countries with little electric infrastructure. They believed that maps needed to be a truly appropriate technology, cheap and flexible enough for communities in the poorest parts of the developing world to undertake them.[11] In search of ways to bring the masses into mapmaking, they created simple but innovative technologies, often building off of existing cultural practices and reorienting traditional crafts toward new ends.

In the 1980s, Indian organizers developed "rangoli mapping," creating maps with the colored rice powder traditionally used for making apotropaic threshold paintings during Divali and other festivals (Mascarenhas and Prem Kumar 1991: 1–4; Youth for Action 1989).[12] The technology of participatory maps from the 1970s to 1990s was, for most of its users, nothing more than some pieces of paper, some markers or chalk, a stick, a few training manuals, and perhaps a board game. They had realized that even cheap materials could be retooled for a process that stressed new habits of mind, suited to the inclusion of persons formerly excluded from the institutions of rule.

Participatory organizers also experimented with techniques that would facilitate conversations about population growth, wages, climate, and political action. Some thought that aerial mapping could start dialogues about the larger ecosystem (Abel and Stocking 1979; Rhoades 1982). Participatory methods could even be

11. By the late 1990s, a computer-enabled faction of the participatory movement began to experiment with participatory GIS (PGIS). The use of GIS remains contested within participatory conversations (Chambers 2006; Abbot et al. 1998).

12. Rangoli was repurposed here for "learning with farmers," talking about land and water resources and opening up a conversation within the community. Rangoli powder was used on the ground, the outline drawn by the village *sarpanch*, (village head) and then details—like the location of wells—were filled in by other residents. The entire map was then transferred to paper, and the villagers split up to walk a transect through the village. (Youth for Action 1989: 3; Mascarenhas 1990b: 1-4; 9).

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used over the scale of large swaths of communities, drawing together regions into conversations about their shared inhabitation of land. In 1992, for instance, 130 Nepalese villages participated in a large-scale land-use survey (Chambers 2003). Others experimented with asking villagers to draw time maps, designed to show the village fifty years in the past and fifty years in the future (Cormack 1993; Jones 1994; Mascarenhas and Prem Kumar 1991: 2). These techniques and the collective power and action they helped to create resulted in structural change: when the maps were applied to a clear target, they tended to succeed in political reforms.

In cases that targeted legislation against corporate polluters, the maps were extremely successful. In Tamil Nadu, participatory maps allowed neighbors to identify a local tannery that was polluting water to the detriment of fish populations. For African Americans in Louisiana, maps helped a poor black community suffering from high rates of cancer to sue the chemical company next door (Allen 1999). Maps helped some communities to self-organize around small-scale programs like preschools, well maintenance, or street lighting (Francis 1994; Kar 1997). Maps protected native peoples' lands in Madagascar, the Himalayas, and the Philippines (Corbett 2009). The Metis in the Alberta area around Fort McMurray began to use GIS to protect the area from tar sands developers (Robinson, Garvin, and Hodgson 1994).[13]

What's more, local peoples presented with a framework in which it was assumed that they had control over their futures were coming up with solutions, and organizers and activists were taking note. This was not the first time that active political cooperation resulted from an atmosphere where individuals felt they had control. Cooperation for a better future was, according to John Stuart Mill, the social gift conveyed by the "magic of property" to European populations in the course of conditions when hardworking individuals could expect payoff in the form of future money as a form of stability and control. That theory of a connection between land and security was realized wherever participation arose. In the participatory workshops of Canada and Southeast Asia, a virtuous circle was being woven where land, self-management, money, and security from displacement came together to produce community and firmer ties to land.

What the participatory organizers of the 1980s and 1990s discovered was that all persons, including persons with no property or rank whatsoever, felt committed

13. The struggle of the Beaver Lake Cree Nation against neighboring tar sands developers is ongoing and poorly documented, but there is evidence that the movement's legal successes depends upon continued, GIS-enabled mapping of indigenous territory (Robinson, Garvin, and Hodgson 1994).

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1 to the conditions of their future and were more than capable of creating institu-
2 tions for improving their environment. "People in rural areas," wrote James Mas-
3 carenhas (1991: 17), organizer of poor farmers in Mysore, "are extremely skillful
4 managers forced to live as they are under extremely marginal and vulnerable
5 conditions." Years of irrigating farms with the help of participatory communities
6 had convinced Mascarenhas that deep conversations about population, political
7 economy, and ecological threat were possible, even among peoples isolated from
8 expert conversations. Participatory organizers began to look ahead to how the map
9 could amplify grassroots consciousness of the ways that imperialism, monopoly
10 capitalism, and expert rule had impoverished their ecosystem and their culture
11 and where there might be room for large-scale political change.

The Critique of Power Disappears

After 1990, even in the global South participation was largely defined and con-
trolled by a new set of actors drawn from development nonprofits and funded by
organs of international government like the UN and the World Bank (Herlihy
and Knapp 2003; Tulloch 2007; Weiner and Harris 2003).[14] When these powerful
actors turned toward participatory maps, rumors of global success shaped enthu-
siastic expectations. The new participatory map advocates, few of whom fit the
category of citizen-participants as defined by Arnstein, were impressed with
the record to date and enthusiastic about what participatory methods could do if
they were funded more broadly and wedded to up-to-date advances in technology.

Despite enthusiasm, there were implicit weaknesses in the new crowdsourced
mapping movement that made it vulnerable to external events. Participation had
been widely adopted by institutions, governments, and NGOs as a means of cheap
development without commitment of resources from above. The new participatory
mapping was stripped of the radical, postcolonial critique of power and the grass-
roots Freirean methodologies, severely limiting the democratic potential. Maps
alone, as a technology stripped of support, could not create the village dialogue
dreamed of (and in many cases realized) by organizers in the 1970s. That dream
had rested on the inclusion of adult literacy programs, paid organizers, and legisla-
tive support for worker cooperatives.

As these supports began to vanish, it became apparent that participatory tools
have limits. Critiques began to spread. Participatory initiatives from the 1960s
were reexamined for evidence of having helped contribute to anticolonial strug-

14. Anthropologists used participatory maps in the 1990s to work with indigenous communities
in Latin America (Herlihy and Knapp 2003; Tulloch 2007; Weiner and Harris 2003).

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gles in Côte d'Ivoire and other parts of French Africa. When they were found wanting, the movements were accused of being "populisme bureaucratique" (bureaucratic populism) (or "la réduction du peuple à l'exploitation dont il est victime" [the reduction of a people to its own exploitation]) (Chauveau 1994; Hussein 1996; Olivier de Sardan 1990). By the 2000s, American academics had begun to target the work of participatory organizers in the Delhi slums. "What seemed to be local activism turns out to be a World Bank policy implemented through the conditionality of international aid," wrote Ananya Roy (2005: 154). By accepting World Bank funding in a nation where most change came from locally organized political parties, she proposed, participatory organizers were undermining their own agenda of local control (ibid.; Roy 2009).[15] Roy was right about the fragility of the influence exercised by the participatory movement over other hierarchies. Urban planners, trained in the West, had continued using the language of participation to boost their own credibility (Hamdi 1991; Hamdi and Goethert 1997). A program in Calcutta claimed to introduce "participatory" organizing, but its version of "participation" was just a survey (Kar 1997). In Córdoba, Argentina, in 2012, a World Bank report urged "participatory mapping," which turned out to mean top-down dissemination of maps where flood-control measures would be implemented. There was no question in the designers' minds of using these maps as tools for organizing self-building or self-government, let alone the reform of elite monopolies or national government (Jha, Bloch, and Lamond 2012).

Participatory Maps Online

When participatory maps were designed for online interaction, a new era of enthusiasm for the technology was born. Without a doubt, something is new about the creation of a mass, informal, and voluntary resurvey of the city for evolving community- and individual-driven ends. Crowdsourced maps are methods of generating Internet content from disparate groups of individuals. In 2004 the open-source platform Open Street Map appeared, followed by Google Maps soon thereafter, in 2005 (Batty et al. 2010). These crowdsourced maps differed from similar efforts such as mashups, which are not necessarily crowdsourced but transpose inputs onto common geographical layers. For instance, crime maps combine data sets from police departments with Google Maps (Coleman, Georgiadou, and Labonte 2009; Murugesan 2007: 36–37). Crowdsourced maps differed too from "open city" projects that encourage city governments to make their data available

15. For a critique of Roy, see Buckley 2011.

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1 to analysts outside of government for the purposes of remixing and reanalyzing.
2 All of these formats, insofar as they relate to places, depended upon the existence
3 of platforms geared toward the geographical realities of cities, slums, and rain
4 forests, so-called spatial data infrastructures (SDI) that coordinate many inputs
5 from specified geographical coordinates into one graphic interface (Nebert 2004).
6 Google Maps was not the first online map and certainly not the first computa-
7 tional map—MapQuest began issuing street maps on the Internet in 1996, and
8 GIS dates from the 1970s (Crampton 1998). It was the addition of an open applica-
9 tion program interface (API) to Google Maps and Open Street Map in 2004-5 that
10 made possible new horizons of collaboration.

11 The arrival of the online crowdsourced maps in 2005 opened up a world of
12 working collaboratively on data with distant contacts or strangers. Unlike the
13 tools of the early 2000s—chat rooms, forums, wikis, blogs, and podcasts—
14 crowdsourced maps actually analyzed the data given to them, sorting social infor-
15 mation into local, regional, and global patterns. The maps do not merely collect
16 information, as a "memory hole" like WikiLeaks does; rather, the maps show the
17 community back to itself, revealing hot spots of local corruption and pollution,
18 giving activists the tools to target particular places with investigation or protest.

19 It was atop this new, digital infrastructure that a new wave of enthusiasm,
20 linked to broadened citizen participation in the life of cities, emerged. By 2008
21 crowdsourced maps attracted an enthusiastic coterie of designers and entrepre-
22 neurs, who designed a many-to-many mapping interface for everything from
23 divining the most bikeable routes of a city to locating street trees that bear edible
24 fruit (Berg 2012; Kozlowski 2012; Malhortra 2012; McKone 2010; Owen Driggs
25 2013). Mainstream media celebrated these applications. Stories lauding the suc-
26 cess of the crowdsourced map surged after the 2010 earthquake in Haiti, as the
27 application Ushahidi was deployed to source geographically tabulated information
28 about the wounded and their needs (*Economist* 2009; Gangadharan 2013; Girid-
29 haradas 2010; Leson 2012; Marwaha 2008; Ulbricht 2012). Soon other stories
30 were documenting how students at the Harvard School of Public Health were
31 surveying slum dwellers in Bombay about the best location for new public toilets
32 (Loewenberg 2012).

33 As map designers promised that participation in their maps would better the
34 city, their advocates held up the hope that the new technology would lead directly
35 to the democratic reform of government. In the popular contemporary account
36 represented by the *New York Times* and the *Economist*, online participatory maps
37 provided evidence that elites were working together to eliminate "inefficiency"
38

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1   and "waste" from government by applying the newest technology to city govern-
2   ment. The start-ups, their volunteers, and the mainstream media called for open
3   data and "transparency" as the magic solution that could banish corruption for
4   good.
5   Yet the technology of the crowdsourced map, designed far away from the vil-
6   lages, indigenous movements, urban activists, and other movements that originally
7   gave rise to a new philosophy of mapping, did little to facilitate participation at the
8   project design stage or widespread sharing of histories, past research, or resources.
9   Internet elites did not necessarily advocate on behalf of the disenfranchised, and
10   their positions in relationships to the communities they claim to be helping raise
11   important questions.
12   The limits of political inclusion were born out in the form of interfaces for
13   online participation whose design limited the political purposes to which they
14   could be applied. It is almost impossible, in Google Maps, to find someone else's
15   map of the same place or political agenda. The interface does not facilitate mix-
16   ing layers of data, sharing social inputs to be remixed, or sharing historical data.
17   There is no crowdsourcing application that allows people to find and highlight
18   political ideas about land use or compare ideas about possible futures of their
19   neighborhood.
20   Most of the crowdsourced mapping advocates of today have not learned from
21   the successes and failures of participatory technologies in movements of the past.
22   They do not intentionally pair the technology with on-the-ground political work
23   that supports education and grassroots organizing. The persistent problem of the
24   social has no crowdsourced app, but it does have a history, one that has been shown
25   here to be bound up with the promise of integrating groups traditionally excluded
26   from economic and political processes because of gender, race, and class.
27
28   **Assessing the Significance of the Participatory Map**
29
30   Control over resources—both the map and ultimately the land and water rep-
31   resented by the map—is, as Arnstein suggested, the key to true participation.
32   Chambers's instructional guides and mapping workshops in the 1980s enshrined
33   community control as an emblem of participatory mapping. In many parts of
34   India today, organizers trained as participatory mapping facilitators work along-
35   side NGOs, inaugurating conversations between villagers about the ecosystem,
36   local government, and their reform. The history of crowdsourcing clearly shows
37   that to change power structures and destabilize privileges based upon gender,
38   race, and class requires much more than the simple replication of a tool.

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1　　　Yet the overall results of this period of innovation are mixed. Crowdsourc-
2　ing was not the clear solution to social exclusion often portrayed by enthusiasts.
3　But where participatory practices were paired with a strong critique of power,
4　encompassing not merely gender, race, and class but also the ownership of land
5　and water, they succeeded in altering the balance of privilege. The same surveys,
6　hearings, and community development protocols used in the global North to little
7　end, when applied by organizers in the global South with explicit intentions of
8　breaking down power over land and water and in tandem with grassroots organiz-
9　ing and popular education initiatives, were highly successful.

10　　　In general, the story of participatory mapping was stamped, like many social
11　liberation stories, by continuous work within the structures of power for further
12　reform and integration of subjects historically excluded from power. The work
13　done by participatory mapping movements before the rise of the Internet was, to
14　a degree, directed by college-educated elites. It may be objected that Chambers,
15　Brody, and other mappers who worked with indigenous people and the poor to
16　make maps were elites and that they inaugurated maps themselves, and therefore
17　the maps were not truly bottom-up. It is true that none of these movements arise
18　from what Karl Marx called the "lumpen proletariat," but according to Craig J.
19　Calhoun (2012), neither did the classical new social movements of radicals in the
20　nineteenth century; all of them, from Edmund Burke to Thomas Paine to Thomas
21　Wooler, were launched by individuals of relative privilege. The same goes for
22　Mohandas Gandhi himself and most of the leaders of the civil rights movement,
23　with important exceptions like Fanny Lou Hamer (Guha 2014; Reed 1993). "Bot-
24　tom up" and radical participatory democracy are often an aspiration. But aspira-
25　tion can be complemented by solidarity, and produce results, as it did for human
26　rights and civil rights movements around the world, or it can remain in the realm
27　of theory, as it did for the urban planners of the 1970s.

28　　　These reflections should give us room to judge the successes and failures of
29　mapping in the age of the Internet. Have the crowdsourced maps of today been
30　tools for further extending bottom-up connections? Or have they been, like so
31　many endeavors, an aspirational revolution only?

32　　　The crowdsourced maps of today replicate many of the exclusions of class and
33　race historically present in mapping communities. Failure, in this case, comes
34　in the form of preaching "transparency," "open data," and building more maps
35　without serious commitments to ensuring that the poor, indigenous peoples, and
36　other subjects whose relationship to territory and information has been histori-
37　cally endangered have control over these maps and, more importantly, have con-
38　trol over resources and the decisions that affect their lives.

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