Participatory Mapping

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Abstract

Participatory and community mapping has emerged as a key tool for identifying and communicating development needs and been further recognized as a means to support social change. Drawing upon a broad assessment of the literature, more than two decades of experience with mapping initiatives from three continents, and covering a diverse array of applications and issues, this chapter explores both the application of participatory and community mapping and the range of impacts experienced. In so doing, the chapter explores the potential effectiveness for participatory and community mapping to effect positive change. At the same time, we will critically review the assumptions about social change and empowerment, highlighting challenges and limitations to their meaningful usage. This chapter provides practitioners and academics with an overview of participatory and community mapping uses, processes, and impacts and their role as a tool of communication for development and social change.

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Introduction

The past 25 years have witnessed a rapid increase of participatory mapping initiatives throughout the world (Brown and Kyttä 2014; Cochrane et al. 2014). Robert Chambers wrote that participatory mapping has spread "like a pandemic with many variants and applications" (2006, p. 1). It has become a vibrant area of practice and a well-used research method and is increasingly seen as an area of study in its own right.

Participatory mapping is a mapmaking process that strives to make visible the relationship between a place and local communities through the use of cartography (Aberley 1999; Flavelle 2002). Participatory maps provide a unique visual representation of what a community perceives as their place and identify features of significance within it – both physical and sociocultural (Bird 1995; Tobias 2000). Furthermore, the process of participatory mapping recognizes the intrinsic value of crafting an inclusive environment where all voices have the space to be expressed (Rambaldi et al. 2006).

Participatory mapping employs a range of tools. These include sketch mapping, transect mapping, and participatory three-dimensional modeling. More recently, participatory mapping initiatives have begun to use geographic information technologies including Global Positioning Systems (GPS), aerial photos and remote-sensed images (from satellites), geographic information systems (GIS), and the geospatial web (IFAD 2009; Johnson 2017).

Drawing upon a broad assessment of the literature and informed by more than two decades of experience with mapping initiatives from three continents, this chapter explores both the application of participatory and community mapping and the range of impacts experienced. In so doing, we examine the potential effectiveness of participatory mapping to effect positive change. At the same time, we critically review assumptions made about empowerment and social change, highlighting challenges and limitations to the meaningful usage of these terms in the context of participatory mapping practice. This chapter provides both practitioners and academics with an overview of participatory mapping practice – its uses, processes, and impacts in relation to their role as a tool of communication for development.

Participatory Mapping: Context, Impacts, and Limits

Participatory mapping is a process in which community members, writ large, contribute their own experiences, relationships, information, and ideas about a place to the creation of a map. The practice is usually conducted in an inclusive, or

participatory, way. Many examples of participatory mapping initiatives emphasize the process of mapmaking as a transformative agent of change, while others focus upon the product and its use. In this chapter, we utilize the terminology of participatory mapping but in doing so recognize that a diversity of nomenclature and practices have emerged that also fall within the sphere of its practice. Other terms used include community mapping, asset mapping, participatory GIS, bottom-up GIS, community information systems, community-integrated GIS, counter-mapping, cultural mapping, indigenous mapping, participatory 3D mapping, and public participation GIS.

Participatory mapping projects often assume an advocacy role and actively seek recognition for community interests through identifying boundaries, traditional land uses, and place-based issues (Alcorn 2000; Chapin et al. 2005; Hazen and Harris 2007). In this form, participatory maps can play an important role in supporting diverse interests, such as those held by farmers, indigenous peoples, the homeless, recreation groups, youth, and seniors (Bryan 2011; Rocheleau 2005). Mapping initiatives can also challenge dominant worldviews, provide counter-narratives, and be used as a tool of resistance (Cooke 2003; Ghose 2001). The processes and outcomes of participatory mapping are viewed as being more inclusive and democratic and thus have commonly been adopted as a means to facilitate individual empowerment and societal change (Corbett 2003; Lydon 2002; Sieber 2006).

Acknowledgment needs to be given to the role of intermediaries in the practice of participatory mapping; often researchers, governments, NGOs, and community groups play a crucial role as interlocutors, trainers, advocates, and facilitators in participatory mapping initiatives (Alcorn 2000; IFAD 2009). Additionally, participatory mapping can be initiated by outsider groups, and the maps produced will contribute to an outsider's agenda, such as contributing to research, assisting in collaborative spatial planning exercises, ameliorating land and resource conflicts, or assessing local development potential. The levels of community involvement and control over the mapping process vary considerably between projects (Cochrane et al. 2014).

As both a multidisciplinary practice and area of research, the aims and specific objectives, as well as how outcomes are articulated, of participatory mapping initiatives vary significantly. This variation ranges from a focus on the process of participation through to the end use to which these maps are put, which in turn is influenced by the actors that will view and make decisions related to the content of these maps.

A broad body of literature has noted that participatory mapping has been an effective mechanism in amplifying the voice of community concerns. It has also been effective for highlighting and engaging in dialogue on a diverse set of community-relevant issues and themes. Initiatives have contributed to advancing land and resource rights (Stocks 2003) and indigenous title and claims (Parker 2006; Peluso 1995), supporting the revival and recovery of indigenous knowledge (Wilson 2004), improving mobility for individuals living with disabilities and mental health issues (Corbett and Cochrane 2017; Townley et al. 2009), and enhancing spatial information during humanitarian crises (Camponovo and Freundschuh 2014;

Harvey 2012; Shekhar et al. 2012). Maps produced through participatory mapping initiatives have been utilized as a communication tool, ranging from climate change issues (Piccolella 2013) to zoning decisions (Zhang et al. 2013) and disease exposure (Keith and Brophy 2004). These examples demonstrate the potential of participatory mapping to contribute to social justice issues and positive societal change. It is often the examples such as those mentioned above that further inspire others to integrate mapmaking into their development activities and processes, with the understanding that they will serve as a pathway to transformational change.

Yet, participatory mapping is not exclusively utilized as a tool to empower individuals and communities. At times, these processes have been used purely to extract information from participants, especially in the realm of academia where participatory mapping is an often-used data acquisition method. Furthermore, they have been adopted as a means to coerce public support, with an understanding that people may be less likely to oppose decisions if they have been involved (even superficially) in the process (Yearley et al. 2003). In other instances, engagement in participatory mapping processes can be cursory or even be used manipulatively (McCall 2004). Mapping processes can also lead to unintended consequences; they can exacerbate conflict, influence land use and ownership, and facilitate the expansion of state control (Anau et al. 2003; Bryan 2011; Corbett 2003; Fox et al. 2003; Pramono et al. 2006; Wright et al. 2009). More fundamentally, there are critiques that these approaches are often not as participatory nor inclusive as claimed (Chapin et al. 2005; Lasker and Weiss 2003).

While online participatory mapping, or geospatial web, technologies have broadened participation in certain contexts, these changes do not equate with equal opportunity and access. Marginalization in many cases is systemically entrenched with continued exclusion. This may manifest itself with the exclusion of individuals of low socioeconomic status, groups living in remote or inner-city areas, indigenous communities, recent migrants, the homeless, people with disabilities or experiencing mental illness, and senior citizens (Beischer et al. 2015; Cochrane et al. 2014). Currently, challenges related to the digital divide reflect caution raised by Harley (1990, pp. 3–4) when commenting on the early development of GIS technologies: "technological progress does not automatically translate into maps that are more relevant in a society."

There are also fundamental challenges with participatory mapping. Based on a review of academic publications, issues of social justice rarely feature in projects related to online mapping and crowdsourcing geographic information (Cochrane et al. 2017). Cochrane et al.'s meta-analysis found that, within the academic literature on participatory mapping since 2005, the practice and analytical findings of participatory mapping have tended toward being overtly technical, despite recognition of the political nature of maps and repeated calls to integrate social, economic, and political components. Limited progress has been made since these issues were first highlighted in the 1990s (Cochrane et al. 2017). Many practitioners, on the other hand, are engaging issues of social justice, but these activities are not well represented in the literature (Brown and Kyttä 2014).

Power and Empowerment

What gets included and excluded on a map, how it is represented, and why a map is made, are all questions linked to power. As Poole (1994, p. 1) notes, maps have always been "both symbols and instruments of power." Harley (1990, p. 16) argued that mapmaking is "never merely the drawing of maps: it is the making of worlds." The most influential forms of mapmaking in modern history were means to express and exert control. Control over territory was claimed with a map. Taxes were levied with the support of maps. Ruling elite understood the power of maps, and in some cases, mapmaking that challenged official versions was viewed as an act of treason. In the past, mapmaking was primarily undertaken by ruling elite because the task required cartographic proficiency, as well as being time and resource intensive. Maps expressed a "top-down, authoritarian, centrist paradigm" and were produced by experts (Goodchild 2007, p. 29). The emergence of new technologies – from geographic information systems (GIS) to the geospatial web and geo-social media – has enabled more people to engage in mapmaking (Ghose 2001; Harris and Weiner 1998). As these technologies become more accessible, affordable, and user-friendly, new forms of participatory mapping practice are emerging. As a direct result of this shift, the power expressed by and within maps is constantly being challenged (Crampton and Krygier 2005; Wright et al. 2009).

Participatory mapmaking is often claimed to be an empowering process (Bryan 2011; Cochrane et al. 2014; Elwood 2002; Kesby 2005). Increasingly, the literature on this topic has employed empowerment as a simplistic phrase for expressing success or social change, but the majority of these initiatives do not define or measure empowerment (Corbett et al. 2016). While empowering and marginalizing processes are occurring (Harris and Weiner 1998), we know little about the extent and duration of these changes. Participatory and community mapping initiatives have the potential to be empowering; however, with a lack of measurement, we are currently unable to outline how these processes occur, for whom, and for how long, beyond anecdotal experiences.

Understanding Impact

From the literature and practical experience, we know that the outcomes of some mapping initiatives are more instrumental in contributing to social change than others. Cochrane et al. (2014) outline best practices categorized by the stage of the mapmaking initiative. They define three core stages in the participatory mapping process – pre-process, in-process, and post-process. For the pre-process, or dialogue and idea development phase, success includes having clear objectives, ensuring maps are socioculturally and politically contextualized, verifying that the capacity for participation exists, having processes to engage with disagreements, communicating realistic expectations, having champions to promote the initiative, and having clear and transparent communication.

While a mapping initiative is in-process, Cochrane et al. (2014) highlight the importance of feedback mechanisms regarding usability and inclusivity, of celebrating small successes, and of ongoing engagement and the value of quality checks on data accuracy. These design- and process-related features are critical to success, but other factors are less visible and are unpredictable.

Cochrane et al. (2014) further note that impacts are most likely to fall in the post-process phase. The common factors that contribute to impact include participation, empowerment, and ownership. The role of participation in the post-process phase encourages ongoing public awareness raising, which translates into continued use and development of the map (Ganapati 2011). Specifically, with regard to online maps, which may experience enthusiastic participation while in-process, the post-process period may see interaction decline or stop entirely. Some projects have a timeframe or are designed for a specific purpose and period; for those that are ongoing, participation is a critical factor for success. Enabling continued engagement may require creativity, such as using social media and contests, while ensuring that participants see that their interaction is contributing to an objective.

Linked with a feeling of contribution, or of personal benefit, the ability for a project to empower those that engage with it will contribute to its post-process success. Empowerment in this form may be building capacity so that maps and mapmaking can become a feature of the community, whereby maps are revised and reinvented with time (Fox et al. 2008). The complexity both of projects and empowerment, however, makes this task a challenging one.

As Perkins (2008, p. 154) notes "Community empowerment is complex. Projects have different goals...The same project may carry different meanings for different members, who are likely to engage in different ways with the mapping" (Perkins 2008, p. 154).

Ownership of the map and the information that it represents also affect post-process impact. In some cases, the ownership can restrict accessibility and availability of the information and map, which is an outcome that can be purposeful or unintentional. Communities, in some cases, may not have access to information and maps due to ownership by consultants, researchers, or nongovernmental organizations (McCall and Minang 2005). On the other hand, participatory maps that are public, easily accessible, readily available and offer ongoing engagement opportunities can support a larger audience in the post-process period. Regardless of the arrangement and reasons for it, ownership will greatly affect the post-process phase.

Other key factors that contribute to variation in outcomes relate to motivation, organizational capacity, and leadership (Corbett and Cochrane 2017). The less visible factors include issues related to trust in the process, which relates to the person, people, or organization managing the initiative as well as the histories between the various actors. A lack of trust may materialize if the individuals involved have past connections that might be suggestive of bias. Other factors that are beyond strong technical design include the ways in which people interact, the ways in which their contributions are expressed and responded to, and the sociocultural or political incentives that influence actor motivations. Similarly, unpredictable events may alter the impact of a mapmaking process or the impact of a participatory-

produced map. An example of this is broad-based re-problematizing of the issue being discussed, spurring widespread engagement and interest, which may translate into political responsiveness. Alternatively, interest may wane due to external forces or the rise of public attention to different issues. As a result, technical design and ideal processes are critical but do not necessarily result in positive cultural, political, economic, legal, or societal changes.

Conclusion

Participatory mapping has been widely utilized, especially in development contexts, as a means to challenge ideas, priorities, and power. These initiatives have contributed to positive social change in a diverse array of spheres, from land rights to language revitalization. However, even with ideal technical design and processes, participatory mapping does not always result in positive outcomes. Sometimes projects fail, and other times there are notable negative impacts. To date the focus of research has been upon the technical and process aspects of mapping, with little measurement and few evaluations occurring on the medium- and long-term impacts. This chapter has highlighted both the potential and the problems of participatory mapping so that academics and practitioners can be better informed of their uses, processes, and impacts. This overview aims to support more informed decision-making about what options might be most suitable and appropriate when considering a range of different tools of communication for development and social change.

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