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The Geoweb and Everyday Life: An Analysis of Spatial Tactics and Volunteered Geographic Information

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Abstract

In this paper, we discuss GeoWeb technologies, specifically those created via volunteered geographic information (VGI) as a means of analyzing the political contours of mapmaking. Our paper is structured around two case studies of VGI projects that allow for consideration for the political efficacy (and potential drawbacks) of these geospatial technologies. We use de Certeau's constructs of strategies and tactics as a conceptual framing, which allows for a political reading of geographic data couched in the context of everyday life, as well as opening up inquiry into the politics of making, accessing and interpreting spatial data. We conclude by suggesting provocations for future research on the GeoWeb and VGI at the intersection of geography and information science.

Keywords

Geoweb, Volunteered Geographic Information, Critical Information Studies

Disciplines

Communication | Social and Behavioral Sciences

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Contents

Introduction

The term GeoWeb refers broadly to a set of geospatial technologies and geographic information available on the Web (Herring, 1994), such as Google Earth and MapQuest, where location–based tools, geospatial data and content can be generated and shared by anyone with an Internet connection (Roche, *et al.*, 2011). The study of the GeoWeb and volunteered geographic information (VGI) matters for a range of academic inquiries: By opening their platforms to an infinite user base, the GeoWeb invites questions of political participation, labor ethics, privacy concerns and archival logistics (Elwood, *et al.*, 2013). Drawing together online technologies and geography, user–generated content provides insight into processes of place–making, of ascribing both social and spatial relationships to a given set of physical coordinates (Massey, 2005). Moreover, questions of citizen participation in the production of data have taken on an urgency and import in the wake of 2013's disclosures about mass government surveillance in the U.S. and abroad (Greenwald, 2013; *Internet Monitor*, 2013). In this sense, GeoWeb projects present a convergence of technological, cultural and political questions surrounding maps, online platforms and relationships to space.

We proceed by offering a brief introduction of GeoWeb as a set of participatory mapping platforms, followed by an analysis of case studies that illustrate the political contours of VGI participation. First, we examine Hollaback!, which cartographically documents women's experiences of street harassment. Our reading of Hollaback! points to a longstanding tension in cultural geography, where characterizations of maps as objective and impartial representations of space have been fundamentally challenged by critical theory and post–colonial studies (see Crampton, 2001; Kitchin and Dodge, 2006; Monmonier, 2010). Hollaback!'s mission is predicated on subjective experiences of space, which, rather than undermining the legitimacy of maps, points to its potential as a communicative medium of socio–political change. Our second case study considers competing maps depicting protest actions of the political movement Occupy. In setting up a comparison between maps that are similar in form but radically opposed in ideology, we further develop question of legitimacy and uncertainty in VGI practice (see Elwood, *et al.*, 2013). Throughout our analysis, we return to de Certeau's (1984) construct of tactics (introduced in depth below) as a lens for unpacking the political stakes of creating, adapting and interpreting maps in everyday life. We conclude by specifying a research program from the information science perspective that accounts for both the political stakes of VGI and the long–term consequences for archiving and preserving the GeoWeb.

Context: GeoWeb technologies in brief

Before turning to some of the social and political issues surrounding VGI, we briefly introduce the technological components that separate GeoWeb technologies from more traditional mapmaking tools. We first discuss the differences in technical functionality between traditional mapping technology and the GeoWeb, and then link the GeoWeb and VGI to a set of broader technological shifts in user–generated content.

Whether operated by public or private sector, most Web–based mapping applications share underlying technological infrastructures built on Asynchronous JavaScript and XML (AJAX) to provide seamless pan and zoom functionality to traverse base maps. VGI renders these mapping features publicly configurable (as opposed to technologies that were merely accessible), allowing ordinary users to alter previously safeguarded maps. For example, Google Maps originally generated its U.S. base map from the U.S. Census Bureau Topologically Integrated Geographic Encoding and Referencing (TIGER) files and satellite imagery from the U.S. Geological Survey. On one level, VGI can be seen as a destabilization of data that had previously been the domain of trained professionals. At the same time, because GeoWeb projects are typically overlaid on geospatial data produced by industry or the government, VGI maps retain a sense of credibility that might otherwise elicit significant skepticism.

In terms of relationships between people, technology and data, VGI can be situated within a broader shift in the mechanisms of media production from the few to the many, what Jenkins (2006) has dubbed convergence culture. Convergence culture has shaken up existing socio–technical practices in the music (Baym, 2007; Sinnreich, 2010), publishing (Deuze, 2008) and television (Jenkins, 2006) industries; Within information science, convergence culture can be linked to projects of folksonomies (Andreano, 2007; Schwartz, 2008) and tagging (Marshall, 2009; Naaman, *et al.*, 2004), where traditional mechanisms of organizing and describing content are supplemented or even substituted with user–generated metadata. The increasing accessibility and popularity of VGI has had ramifications in conventional notions of mapmaking and geography, for example, the ways that configurable online maps invite questions of political subjectivity and

legitimate versus illegitimate participation (see Parks, 2009). Indeed, VGI is increasingly being considered for use in more mainstream geospatial data application fields, such as emergency response and disaster management, where the ability to accumulate and assess nearly real–time geospatial data and local knowledge of place can be critical for mounting relief efforts (Graham and Zook, 2011; Zook and Graham, 2007). More broadly than crisis informatics, both academic researchers and professionals have explored how this user–generated content on GeoWeb platforms should be utilized to help answer long–standing research questions requiring empirical evidence at a grand scale (Haklay, *et al.*, 2008). Our interests in VGI are not empirical, but conceptual: how can examples of VGI help us understand processes of place making? What are the politics of individual (rather than institutionally) making data?

To some extent, we share a conceptual interest (and structural approach) with earlier investigations of GeoWeb projects and their politics (Elwood and Leszcynski, 2011). We seek to contribute to this growing area of study through a conceptual analysis of the politics of place (and data) making via the GeoWeb, we describe two case studies of maps developed with VGI, framing their politics and processes through a de Certeauian (1984) lens of strategies and tactics with consideration for long term curation and preservation.

Context: Theoretical frameworks

We frame our analysis of GeoWeb technologies as tools of potential empowerment using de Certeau's (1984) description of spatial practices of urban environments. In his analysis of everyday Parisian life, de Certeau rejected panoptic, static or bird's eye constructions of space, preferring instead to think in terms of "operations," or how people navigate cities in terms of everyday routines and habits [1]. De Certeau here advocated a transgressive, pluralistc reading of space that recognizes and then sets aside official mappings of a city in order to see the different ways that everyday people think of and utilize their neighborhoods. This tension between individual and institutional readings of space corresponds to de Certeau's division of strategies and tactics. De Certeau defined strategies as "the calculation (or manipulation) of power relationships — an effort to delimit one's own place in a world bewitched by the invisible powers of the other" [2], where tactics refer to "a calculated action determined by the absence of a proper locus" [3]. In other words, strategies are the ways institutions define, organize and name an individual's surroundings and available resources, even as individuals are able (with carrying degrees of agency) to wrest control of a situation through tactics, which arise from impromptu, decentralized opportunism. These moments of temporary disruption, of deliberately ignoring authoritative instructions for the use of hegemonically controlled space and resources, are moments of individual tactics that subvert institutional strategies. Putting these concepts in the context of VGI, GeoWeb technologies allow for tactical annotations and reworkings of traditionally strategic cartographies given the linkage between virtual and material spaces through augmented realities.

Research questions

In the context of theorizing space, de Certeau (1984) is most often invoked as a reorienting of space from above to below, from a bird's eye view to street–level understandings of city space. In this paper, we focus specifically on street–level politics of mapping, analyzing GeoWeb tools in terms of their tactical efficacy, where maps should be thought of less as representations of space and more as relationships to space. As such, key questions guiding this work include:

- How do VGI projects embed tactical objectives of activist politics? And in turn, how can a tactical reading of VGI reveal processes of place–making?
- What are the implications of recognizing the tactical layers of VGI maps for critical GIS? For critical information theory, particularly in the context of long–term archiving?

To address these questions, we turn to a series of case studies. By considering how different GeoWeb projects have encountered and managed issues of interpersonal politics, ethics and privacy, our analysis offers concretely grounded analysis of existing technologies as a means of guiding both development and scholarship for future GeoWeb technologies.

Before continuing, we note a caveat regarding our own rhetorical argumentation; throughout our analysis, we have set up a distinction between individual and institutional cartographic projects in order to highlight differences between tactical and strategic representations of space. Yet this binary runs the risk of reductively obscuring gradations of organizational forms that generate spatial data, with volunteer–based efforts like Hollaback! on one end of the spectrum and state–driven efforts like the Census in the middle where citizen participation is more pulled than pushed. In between these two poles exist a range of GeoWeb arrangements that vary widely in their technical sophistication, organizational structure and affiliations with government and industry. We have focused on political ideologies driving and embedded in VGI projects as indicative of their tactical efficacy, yet these factors do not exist in isolation from relationships (however indirect) to legal, corporate and state entities.

Case studies

As noted earlier, VGI represents one facet of a larger shift from institutional to individual production that sometimes is referred to as convergence culture (Jenkins, 2006). GeoWeb technologies in general and VGI in particular are frequently associated with democratic values of participation (Elwood and Leszcynski, 2011). The political paradigm undergirding this assumption could be summarized with the claim, "by allowing open access to cartographic tools, maps will be more inclusive and representative." Rather than pointing to this kind of subjectivity as inherently problematic, we argue that there are instances in which subjective, non–inclusive representations of space offer a powerful, tactical tool, yet the politics of participation need to be examined closely rather than assumed.

In defense of subjectivity: An analysis of Hollaback!

Although participatory media conveys a sense of democracy, in that anyone who has access to increasingly basic technologies can help create and improve GeoWeb efforts, scholars have noted the limits to the democratic access that emerge through actual use (van Kranenburg, 2008). For example, Stephens (2013) has pointed out that the OpenStreetMap in Germany reflects a user base that predominantly consists of men, resulting in landmarks dominated by conventionally masculine interests. For example, Stephens noted that a variety of terms are approved for different kinds of bars, pubs and night clubs, but far less granularity is approved for locations related to, following Stephens' example, childcare. This is one instance in which unequal participation persists in spite of technically "open" platforms of participation, which in this case led to distorted depictions of space.

Stephens (2013) has advocated GeoWeb platforms that have full, or at least more, parity in terms of who participates in mapping projects, yet it is worth noting that there are instances in which one–sided maps of space are useful, as in the Hollaback! project [4], which enables women to report instances of street harassment. Users of the site document instances of unwanted attention, aggression or sexual assault (whether verbal or physical), combining a description of the occurrence with a geo–tagged location. The site also provides social support and resources for women who want to pursue legal action or policy changes. In terms of participation, Hollaback! is decidedly one–sided and undemocratic, factors that are necessary for meeting the site's objectives of documenting everyday incidents that are frequently ignored or written off as unimportant, and also generating a map that can be used to carve out safer routes through city space. As such, Hollaback! represents an instance in which inclusion is skewed towards a particular group [5] in order to counterbalance (or at least document) inequalities of power. The key difference between Stephens' discussion of OpenStreetMap and Hollaback! (as a feminist project) centers on recognizing when parity is desirable in creating representations of space and when it may, in fact, be harmful. The tactical efficacy of Hollaback! functions in dialogue with cartographic representations structured around patriarchal values and strategies. Stephens demonstrated that just because a platform has very low barriers of entry does not mean that participation will be democratic; Hollaback! demonstrates the advantages of VGI not in terms of even distribution of power, but rather of deliberately creating a one–sided view of space in order to counteract existing prejudices or injustices.

Figure 1: A screenshot of Hollaback!'s map of Los Angeles. Users can document instances of street harassment, noting the date, time and place of the incident, as well as providing details on their experiences. Hollaback! has gained an international base of users, and raises interesting questions of participation (in that it represents an instance of a one–sided depiction of space as a response to historical inequalities of power) as well as privacy.

Whose coordinates win? Competing maps of Occupy

With the Hollaback! example we outlined instances where participation yields important benefits in legibility and documenting historically marginalized experiences of space. At the same time, it's important to acknowledge instances in which it might be preferable to be left off maps altogether. For example, we might consider different kinds of mapping practices related to protest movements like Occupy Wall Street. Begun in the late summer of 2011, the Occupy movement quickly spread around the globe as a multi–faceted, highly diffuse set of encampments that surfaced in over 324 sites in the U.S. alone (Caren and Gaby, 2011). From the protesters' perspective, mapping out where Occupy had spread offered a means of building solidarity and helping to coordinate collective action. At the same time, identical technologies (and perhaps even the very same maps) lent themselves to other kinds of monitoring — from counter–protestors, the media and local authorities.

Figure 2: On the left, Occupy's map of local actions and collectives. On the right, a map from OWS that links news stories of arrests and harassment to various Occupy–related actions. Both maps relied on VGI data to link information to a set of geographic coordinates.

As an illustration of these tensions, the Web site OWSexposed [6] maintained a state–by–state map of U.S.–based Occupy protests, with links to news stories of crime and arrests allegedly linked to the movement. Looking only at its technical features and not content, this map offers kinds of spatially organized data similar to Occupy's own map [7] facilitating communication between activists. In de Certeauian terms, these maps demonstrate competing tactical cartographies — both are street–level documentations of actions and spaces, but the processes of meaning making, of noting the placeness of these spaces, diverged critically in their political ideologies. For Occupy protestors, VGI maps offered important tools of organizing actions and facilitating participation; for OWS Exposed, the exact same technologies were useful in pointing to instances in which Occupy protestors broke the law or engaged in dangerous behaviors. Given that the technologies and content are so similar in these competing maps, careful attention to political motivation is required to disambiguate these maps. The stakes of this kind of disambiguation resonate with cloaked Web sites, or sites "published by individuals or groups who conceal authorship in order to deliberately disguise a hidden political agenda" (Daniels, n.d.). For example, at first glance, the site www.teenbreaks.com (http://www.teenbreaks.com/) appears to be a Web site offering information on reproductive health, but on closer inspection, the site's creators have a decidedly anti–choice ideological stance. Similar to the comparison between Occupy and Occupy Exposed, the ideological valences of online (cartographic or otherwise) may or may not be immediately legible, and may in fact be deliberately occluded. These layers of ideological visibility are apt to become more contested in the context of open participation, as in VGI artifacts.

Furthermore, Occupy protesters faced the difficulty of wanting to use GeoWeb tools to coordinate actions and document wrongful arrests, even as those same tools (of the GeoWeb as well as social media more broadly) are increasingly being used by the authorities to make arrests and infiltrate movements (see Bratich, 2011). That maps have politics is a well–established claim (Crampton, 2001); the political complexity of crowdsourced maps lies largely in the degree to which politics are articulated, coherent and transparent (Harley, 2001). Questions of legitimacy — in terms of who is allowed to access and add to a map — and legality (what are the consequences of participation) become both highly salient and deeply complex in maps created by conflicting communities, as arose around the politics of Occupy.

Discussion and conclusions

That politics are embedded into the production and use of maps has been persuasively and powerfully argued (Crampton, 2001; Monmonier, 2010). Through analysis of a series of case studies, we have identified some of the political contours stemming from participatory GeoWeb technologies, including assumptions about the capacity of crowdsourced maps to produce objective representations of space, as well as differences between legitimate versus illegitimate productions of spatial data. We conclude by developing these themes further, looking to make connections between GIS and IS as areas of scholarship that attend to information practices in everyday life.

The political potential of uncertainty

A common assumption about VGI maps is that collective participation produces objectivity; where individuals are biased, crowds are assumed to produce generalized associations by drowning out extreme perspectives with a stabilized majority. Our analysis have pointed to ways in which this presumed objectivity can not only be inaccurate (following Stephens, 2013) but moreover undesirable. For example, Hollaback! presents a deeply subjective and politiczed set of spatiation representations, destabilizing dominant, heteronormative understandings of city streets. These distortions have parallels in other instances of technological convergence, for example in the emergence of folksonomies, or user–generated classification schemes via the use of tags such as Flickr and Delicious (Chu, 2010). Although folksonomies initially provoked excitement as a means of providing more democratic, egalitarian and (in de Certeau's (1984) terms) tactical means of classification [8], practical concerns of integrating folksonomies into existing systems quickly emerged (see Andreano, 2007; Schwartz, 2008). Part of the perceived benefit of user–generated metadata comes from the richness of individualized content revealing personal relationships to data. Yet these same idiosyncrasies present real challenges in the context of incorporating user–generated metadata into existing organizations and hierarchies. Moreover, although platforms that enable user generated content are by definition open to public use, bias can nevertheless emerge through self–selection and larger, more system gaps in participation with socio–technical systems (Collier and Bear, 2012). In VGI as in folksonomies, it becomes apparent that opening up a platform for general participation does not, as a process, necessarily result in more parity in terms of content.

Rather than thinking of this unevenness as a critical failing, however, we submit that these discrepancies have useful parallels with the concept of uncertainty in critical GIS. In generating provocations for future inquiry in critical GIS, Elwood, *et al.* (2013) have questioned "the appropriate functionality for a platial GIS" and ask "how might uncertainty be characterized in a platial approach?" [9] Generating uncertainty is a core purpose of the examples we've considered here, in that it is arguably vital for the projects we discuss to generate multiple perspectives on a given space. In this sense, uncertainty is an objective rather than an obstacle to "accurate" depictions of space/place. To generate uncertainties of space is to admit political dialogue, to allow for the contestation of multiple meanings (and tactics).

Legitimizing place and ethics of volunteer labor

Related to our earlier discussion of uncertainty, several of our case studies raised issues of legitimacy, which hinged less on whether or not VGI was accurate (a more conventional concern in assessing the GeoWeb) and more in terms of legitimate versus illegitimate relationships to data. For example, our analysis of competing Occupy maps demonstrated how structurally similar maps can differ radically in their political motivation. This observation points to a key tension of de Certeauian tactics and strategies, namely, what happens when tactics of the weak are subsumed into strategies of the strong? When Hollaback! users document street harassment, they contribute tactically both in the sense of providing non–dominant depictions of everyday street life and by enabling others to craft tactical routes through space. Yet these tactics have no inherent protection from reappropriation back into strategies of the dominant. For example, Hollaback! maps could easily be used by men to target specifically spaces where women might feel safe. Or in the example of conflicting protest maps, Occupy struggled to disseminate information about upcoming actions without alerting the police or counter protestors. In other words, as protestors produced tactical maps, they risked facilitating the development of police strategies. Whatever the circumstances of tactical production, there is no guarantee these maps (or, for that matter, tags or metadata) strategically benefitting dominant institutions. The history of Taylorist interventions in the workplace can be read as tactics being enfolded into the strategic.

Both the possibility of subsuming tactical work back into strategic infrastructure and concerns of privacy raise important issues of labor and ethics. Internet studies scholars have noted that common online interactions (Terranova, 2000), from using Google's search engine to tagging photos on Flickr, can be read as a form of free labor on behalf of users for corporate gain (see also Andrejevic, 2007). GeoWeb projects are open to similar critique, in that VGI initiatives are made possible only through the contributions of unpaid users; although these users may benefit from the maps they create, so do the underlying corporate entities that stand to gain from access to the products of VGI efforts. Particularly for projects with agendas of social justice, it behooves activists to consider the labor ethics surrounding VGI not only in terms of what is technically possible but what is ethically responsible. We offer these comments not to discourage the production of VGI maps within activist initiatives, only to advocate for careful consideration of avoiding conflations of open participation with democratic representations of space, as well as how projects can be converted from tactics to strategies.

Possibilities of VGI counter–conduct

Responses to leaked information about the National Security Agency's surveillance activities can be read as an indication that technologies for monitoring surveillance are of sustained public interest. From an activist perspective, geospatial technologies can facilitate organizing political action (Bennett and Segerberg, 2012) and also enable the many to surveil the many (Perkins and Dodge, 2009). With these issues of surveillance and control in mind, it becomes deeply important to consider how VGI participation can actually

lead to an erosion of privacy for those lacking rational–legal authority of the state (Rose–Redwood, 2006). Bossewitch and Sinnreich (2013) have argued that new models of conceptualizing surveillance are necessary, stating that "in the face of communication infrastructure's increasing scope and complexity, individuals will require simple and effective models of participation to avoid paralysis and to catalyze strategic agency" [10]. In terms of how agency can manifest on the GeoWeb, crowdsourced participation could be deployed to hide or deceive rather than earnestly report, what Bossewitch and Sinnreich called "disinformation campaigns" [11]. A few simple examples to potentially avoid or impede government surveillance or control access to the information for a disruptive VGI project could be to create a series of placename cloaks to omit activists' whereabouts or create an operate within a new coordinate system.

Archiving activism: Metadata as tactics?

The long–term consequences of archiving the GeoWeb constitutes an issue that explicitly brings together geographic productions and archival practice, where IS has expertise in increasingly pressing questions of data storage, as well as policy questions. Yet although the stakes of organizing and providing access to GeoWeb data (even after removal from original Web–based mapping applications) would seem to draw together both GIS and IS, there is a notable gap in terms of how these two disciplines (and professions) tend to conceptualize metadata. Most GIS users understand the value of metadata standards in terms of describing the world as it is, collecting data on objective reality to solve immediate, and temporally bound problems (Obermeyer and Pinto, 2008). For information professionals, metadata is valued as a disciplinary and professional obligation and area of expertise, but moreover as a semantic layer of subjective meaning (Berman, 1971; Drabinski, 2013; Schuurman and Leszczynski, 2006). Although wary of generalizing either field, we note that continued dialogue between these communities could have important consequences for the development of GeoWeb technologies as well as attending to the politics of future geographic information contributors and preservationists (Bishop, *et al.*, 2013). GIS would do well to consider VGI projects not only as documentations of the present, but as having real and long–term archival value. At the same time, in both professional and scholarly contexts, IS should expand efforts to include GeoWeb projects as part of their archival domain, intervening in discussions of how VGI is stored, accessed and (perhaps) deleted.

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Notes

1. De Certeau, 1984, p. 93.

2. De Certeau, 1984, pp. 35–36.

3. De Certeau, 1984, p. 37.

4. http://www.ihollaback.org/.

5. As another example, Kwan's (2002) work on feminist methodologies for GIS included referencing the ability to map women's movement through city space in ways that can foster discussion about affordances of race, class, gender and sexuality.

6. http://www.owsexposed.com/.

7. http://occupywallst.org/attendees/.

8. For example, scholars and activists have noted instances in which the Library of Congress Subject Headings privileges Christian values (Berman, 1971), situates homosexuality within a context of deviance (Drabinksi, 2013) or demonstrates one–sidedness in political issues (Fischer, 2005).

9. Elwood, *et al.*, 2013, p. 364.

10. Bossewitch and Sinnreich, 2013, p. 226.

11. Bossewitch and Sinnreich, 2013, p. 236.

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