Model of Public Participation on the Geoweb

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1. Introduction

Google Maps/Earth have been described as the killer app of the 21st Century. These digital earths as well as the rest of the Geospatial Web 2.0 (e.g., geotagged Flickr photos, geoRSS, server-side Application Programming Interfaces {APIs}) shift the paradigm in how we do GIS and how we conceptualize public participation via geospatial tools. The Geoweb, like counterparts in Web 2.0, purportedly erases the digital divide. According to Time Magazine, Web 2.0 created the era of 'You': non-experts become prime generators of content on the Internet. Continuing the hyperbole, the public now controls the means of production, setting agendas for further participation on the Geoweb and in the public sphere. Vaunted claims warrant better understanding of the characteristics of this these technologies.

A conceptualization of public participation via the Geoweb (PGeoweb) draws on several fields. O'Reilly (2005) discusses the importance of reusability, platform independence and the long tail in Web 2.0. Bruns (2008) asserts that now producers and consumers of information blur into prosumers. Unlike Web 1.0 in which information travelled to users uni-directionally and top-down, in Web 2.0 information now moves bottom-up from users, top-down from producers as well as sideways as users socially network. PGeoweb is preceded by public participation GIS (Sieber 2006), an approach to GIS which seeks to empower citizens to influence or control policymaking towards specific objectives, although the approach is contextualized around questions of who is the public, what constitutes participation, with how much technology the public should be engaged, what are impacts when local geographic knowledge is rendered digital and who exactly is empowered. PGeoweb overlaps with newer concepts of volunteered geographic information (VGI), with its focus on the motivations of the non-expert to contribute content, and neogeography, with its similar emphasis on the non-expert who has fun with geographic information and applications (Goodchild 2007, Elwood 2008, Turner 2006).

The Geoweb is an "integrative, discoverable collection of geographically related web services and data that spans multiple jurisdictions and geographic regions" (Lake and Farley 2007, 15). Although VGI emphasizes the client side, this definition focuses us also on participation on the server side. The Geoweb can be more broadly considered the intersection of geospatial awareness and Web 2.0 (Goodchild 2007). We look upon the Geoweb as a geospatial mashup (i.e., online combination of content from more than one source to create new user experiences) but additionally an ideology in which technology are co-constructed to empower people and provide an easily accessible and transparent vehicle for social change.

2. The Model

We propose a concentric circle model of PGeoweb that covers characteristics of the infrastructure, content, publics, motivations and outcomes. Our purpose in proposing a

model is initially because the technological platforms are diverse. How does one compare a pushpin to a citizen-built mashup to an NGO built development platform? How does one compare the contribution of a single point to complete dataset built longitudinally by one or more individuals? While admittedly ontological, a model allows generalization from particular applications to enable evaluation of specific features of projects and comparison of PGeoweb initiatives. It also allows for correspondence across circles. The model attempts to merge the "how" of PGIS with the "why" of GISsociety literatures. It blends the Geoweb language (Turner 2006, O'Reilley 2005) with participatory GIScience concepts.

We start with the infrastructure of PGeoweb, which includes Digital Earths, social networks, immersive worlds, Integrated Development Environments (IDEs), APIs and location based services (LBS). Unlike traditional PPGIS, the PGeoweb is no longer confined to GIS or to the desktop. Robust tools now allow relatively inexperienced users to not only contribute x, y coordinates but also build his/her own digital earth to collate the points, expanding our conceptualization of participation. PPGIS can help us distinguish infrastructure by levels and types of needed expertise, ease of use, and availability/resources required for that use.

The next ring differentiates content. VGI's 'volunteer' implies the presence of an intentionality or altruism (Elwood 2008). This new information may be more accidental than in prior PPGIS applications; users may be unaware their geolocations are being collected and repurposed (Tulloch 2008). We can evaluate the quality of content. Generally this means accuracy, as VGI may be assertive, as opposed to the authoritative content to which we are accustomed in traditional GIS (Goodchild 2007). Quality can refer to capacity to mashup and syndicate, building tools so that content is easy to incorporate into other applications. PGeoweb content is also constantly in 'beta', a particularly challenging feature should governments wish to participate in the PGeoweb.

Quality refers to authenticity of the VGI: what constitutes a legitimate user contribution? That brings us to the user circle. We classify PGeoweb users differently from PPGIS publics. They include amateurs, citizen sensors, developers, critics, content sharers, curators, archivers, and lurkers. The Power Law of Participation illustrates that users adopt numerous roles on the web and that very few (Haklay et al. 2008) are responsible for the majority of original content. When is the contributor of a single point or photo significant?

Motivation of these individuals is the focus of the VGI literature (Elwood 2008). The Web 2.0 literature lists sharing, play (the Dionysian quality of neogeography), self-promotion, entrepreneurship, altruism, and advocacy. Coleman et al. (2009) see slightly different motivations in the LBS community, among them contributors protecting personal investment, enhancing personal reputation, confirming professional interest, providing intellectual stimulation, evoking a pride of place, controlling the agenda (which contrary to PPGIS, is considered by Coleman et al. to be negative), or causing mischief.

User terms from new media help us tackle a fundamental scalar distinction between VGI and PPGIS: focus on individuation versus the collective. We argue that instead of individual contributors of varying degrees, these users form an information ecology. A curator may contribute no original content but moderate others' content. Web 2.0 replaces individual experts with collective intelligence from crowdsourcing (the 'stupidity of the mobs' is just as likely). Contrary to a global, geographically collective medium, Andre Skupin points to hyperlocality of the PGeoweb, where 'the specific is the opium of the masses'.

The last ring considers societal outcomes of PGeoweb. Among them is the ideal that PGeoweb leads to a network society (Castells 2010) in which these new socially networked technologies "create new social configurations (e.g., virtual organizations, communities, and even societies) whose structures and functions are highly dependent on IT" (Barrett et al. 2001). We already experience 'ambient awareness' in which our locations are always known, with significant implications for privacy and confidentiality (Arbanowski et al. 2004). A PGeoweb unbounded by geography could lead to distantiation, a separation from presence, time and place and disembeddedness where local practices of interaction gets standardized and homogenized (Barrett et al. 2001). The transformation from pointing and clicking to local political action is unclear. These hold varied impacts on public policy.

3. Conclusion

This model starts a longer conversation on how the Geoweb can be used to improve non-expert participation in policies that affect their lives, indeed how publics can contribute to that discourse.

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