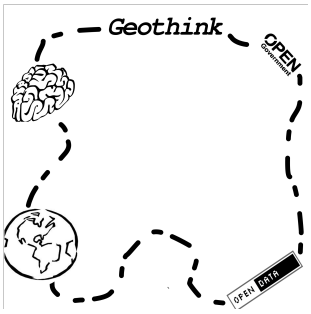
Open and Free? The Political Economy of the Geospatial Web 2.0



Geothink Working Paper Series

How the Geospatial Web 2.0 is Reshaping Government-Citizen Interactions

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Issue #001

By Harrison Smith

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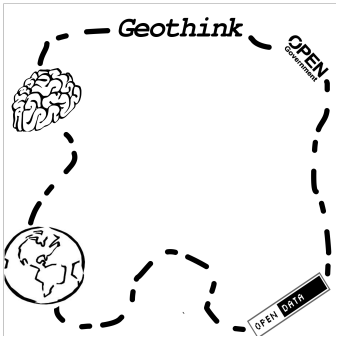
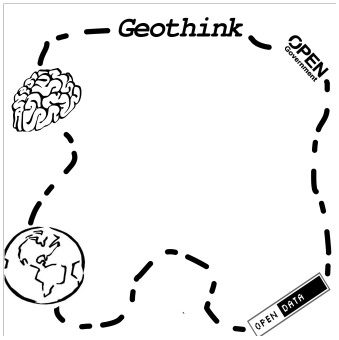


Open and Free? The Political Economy of the Geoweb
Summary

Harrison Smith, PhD Candidate
Faculty of Information, University of Toronto
e-mail: harrison.smith@mail.utoronto.ca

We present three concepts. We first outline the concept of political economy as a toolbox to understand the Geospatial Web 2.0 or Geoweb. Second, we apply these tools to produce a working understanding of the political economy of the Geoweb. Finally, we highlight future research priorities for political economists of the Geoweb.



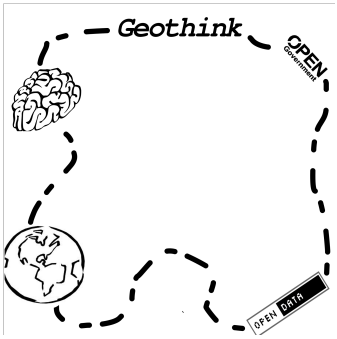
Section 1

Background and Relevance

The informational opportunities afforded by the Geospatial Web 2.0 (Geoweb) herald a belief in the increasing accessibility of geospatial data to a wide variety of audiences, including academics, civil society, government, the private sector, and the general public. A core tenet in the Geoweb is that maps and geospatial media can be produced, distributed, and used by non-experts; people with little or no training in cartography or geographic information systems are increasingly using geospatial media for a variety of political, economic, and social applications. This in turn poses important questions about whether and how citizens are empowered through the Geoweb. Assessing the extent to which such claims stand up to empirical scrutiny requires that we examine issues of accessibility, ownership, and diversity. In turn, it requires an examination of media commodification, labour, and literacy. With its focus on understanding the power relationships that structure the production, distribution, and consumption of media content and infrastructure, political economy offers a diverse toolbox for understanding the larger social issues of information and communication technologies (ICTs), making it particularly useful for understanding how "open" and "free" the Geoweb really is.

This working paper serves three purposes. First, we develop a basic outline of political economy as a toolbox to understand the Geoweb. Second, we apply these tools to the Geoweb to produce a working understanding of the political economy of the Geoweb. Finally, we highlight future research priorities for political economists of the Geoweb. This paper draws on Vincent Mosco's (2009) analytical framework of the political economy of communication to highlight the key research areas and approaches to political economy. Mosco's framework situates political economy as the study of power relations that structure communication technologies, particularly analysis of the dominant economic practices, institutions, and organizations that shape access to communication resources. Importantly, it highlights how social, political, and economic inequalities structure access and ownership to communication technologies and infrastructures.

In introducing Geothink partners to a working knowledge of political economy, this white paper serves to stimulate ongoing academic and practitioner discussions. Theoretical depth is omitted in favour of producing an overview of basic entry points and tools for future research in the political economy of the Geoweb. This white paper is also intended to compliment and inform relevant policy issues that surround Canadian Geoweb infrastructure, including open data, privacy, location-based surveillance and accessibility.



Section 2

Essentials of the Political Economy of Communication

1.Commodification

2.Spatialization

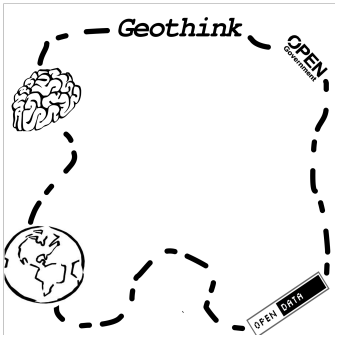
3.Structuration

To build a political economy of the Geoweb, we start with a well-established field of study, the political economy of communication. There are numerous entry points into the political economy of communication. A contemporary account of political economy defines it as "the study of social relations, particularly the power relations, that mutually constitute the production, distribution, and consumption of resources, including communication resources" (Mosco 2009: 2). Mosco's definition summarizes the overall purpose of a political economy, as it describes a research program concerned with understanding how relations of power reproduce themselves, and how particular individuals or groups ensure their survival or exert control over others. Simply put, political economy can be understood as the study of who benefits within a particular social, political, and economic context and who doesn't.

Mosco outlines three key approaches for understanding how political economists understand the social relations of production, distribution and consumption. These are commodification, spatialization and structuration.

Commodification: the study of how particular objects, including information, are transformed into exchangeable goods or services on a market. For example, publishing a book on one's family history, or perhaps even licensing that book for a movie, is an example of commodification. An otherwise intangible story is transformed into something with market value. Commodification can therefore be understood as the process of producing goods for sale or exchange in the market. In turn commodification touches on the modes and social relations of production, including relations between labour and capital, as well as property relations such as licensing agreements. Because media, information and communication technology are all subject to various kinds of media "work," commodification becomes an ideal way of understanding political economy (Deuze 2007).

Spatialization: the process of overcoming constraints of space and time in social life. This is particularly significant for communication studies as telecommunications infrastructure allows for particular individuals or groups to overcome such boundaries, effectively providing for an extension of power across space and time. This can be seen in the differences between a national broadcast firm compared to a small local outlet. The differences in the ability to reach audiences, to have one's message heard across territory, or conversely to affect policy changes at the national regulatory level are quite different for these two companies. Spatialization is particularly relevant for the Geoweb as it connects political economy to geography, or more specifically, how space can be transcended, compressed, or overcome through communication technology.



Structuration: the study of how particular structures such as gender, race, and identity are constituted out of human agency and pre-existing historical contexts. This process studies how social relations are always embedded in social structures, as well as individuals who are trying to make sense of, or change social structures. Whereas, spatialization connects political economy to geography; structuration connects with sociological understandings of groups of people and identity, and therefore concentrates around issues of social inequality, representation, and belief.

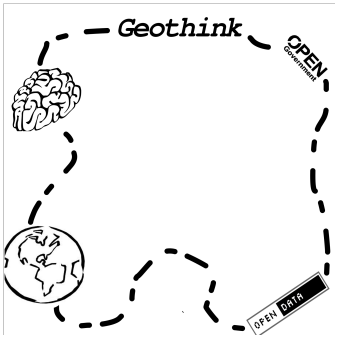
We now will discuss these three approaches in greater detail and provide examples related to the Geoweb to help illustrate the relevance of political economy to Geoweb studies.

Commodification

Commodities form the material "stuff" of everyday life. They satisfy particular needs, like food, and they enable individuals to express themselves, for example through clothing or music preferences. Commodities are, in short, necessary for survival. For political economists, commodification is the most immediate area of study because of the ubiquity of commodities around us. They are real in that they present themselves to us and they allow us to unmask a larger system of production. The utility in starting from the commodity is that it allows us to understand production and, therefore, the accumulation of value.

Production is based on the relationship between labour and capital. The laptop used to write this white paper, for example, was designed in California, but made in China. This indicates a two-fold system of production where intellectual labour, that is the technical design of a commodity, is delegated to a developed world where this intellectual labourer was in all likelihood highly educated, gainfully employed with a high salary and living in a prestigious area of a wealthy country. By contrast the actual manufacture of the laptop is undertaken in a third world factory characterized by low-paid, unskilled labour, often in precarious or even dangerous working conditions. We can therefore examine how commodities are produced to realize a greater understanding of the power relations that structure the relationship between labour and capital.

This example touches upon a host of global power relations between developed and developing countries, as well as indicates systems of exploitation and the creation of surplus value, or profit. For this reason, we can say that a commodity represents not just a physical appearance in a market, but a congealed set of social relations that connect the means of production to labour in a struggle for control over the creation of value (Mosco 2009: 131). Commodities tell us what kinds of power relations exist in the world. They tell what kinds of goods or services were

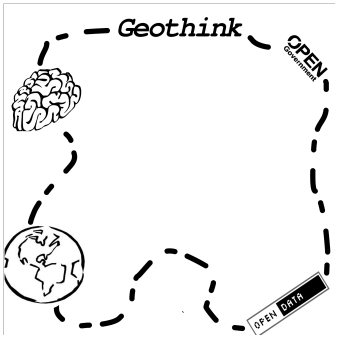


transformed into something exchangeable on the market, as well as what sorts of economic priorities exist in the world. For example, the assembly line is considered to be a revolutionary technological process that enabled capitalism to push production to limits never before imagined. As industries of all sorts began to incorporate the assembly line, what we also saw was the decline in highly skilled craft workers and guilds. In this respect, it can be said that the power craft workers had in determining how commodities were produced through their labour shifted towards mass-produced commodities that depended on the use of cheap low-skilled and easily expendable labour.

Communications technologies are increasingly essential for commodification across a range of industries and markets. For example, automobile makers have dramatically reconfigured their global logistics and supply chains, as well as manufacturing plants, through "just-in-time" management practices and organizational logics. These practices could not be possible without global telecommunications, especially broadband fibre optic lines, but also developments such as robotics. Again here, we see a long-term development in the history of assembly line manufacturing; in this case, many industries like electronics and automotive factories are phasing out low-skilled labour in some divisions and replacing them with automated robotics that can produce commodities at any time based on real-time demand. Rather than over-producing stock and speculating on its sale, manufacturers can produce exactly what is necessary by automating the labour process through robotics and telecommunications technology.

Many readers may find it curious to examine the role of commodification and material goods in a world that's becoming increasingly virtual. Many believe that the digital realm is increasingly rendering the world of physical goods and commodities as somehow less important, or perhaps even as obsolete. Political economists have been quick to critique these claims. Indeed our economies have never been more resource intensive (whether in the need for paper or for semiconductor metals), suggesting that the role of physical geographies is not simply stepping aside for virtual or global geographies (Huws 1999, cited in Huws 2008).

Political economists of communication begin with media content for understanding commodification. A television show, a newspaper, or software can all be seen as commodities to be bought and sold in the market. These commodities each had to be produced by a complex system of production, including labour forces such as actors, journalists, or software developers. Media production companies harness labour power, paying individuals wages for their services, such as a television network, a newspaper chain, or a software consulting firm.



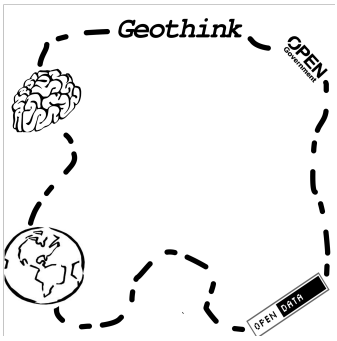
The specifics of media production are beyond the scope of this white paper. What is important to note is that it is possible to infer the power differences and inequalities by looking at specific material objects in everyday life. In media, for example, this can be seen by looking at the type of media programming and advertising presented to audiences. The ability to broadcast particular messages to audiences, such as an advertisement for a commodity or brand, requires considerable financial resources because media are for-profit industries that earn revenue from delivering advertisements to audiences. Commodities also reveal underlying structures that determine labour conditions, supply and demand in regulating markets, and the means of production such as factories and global logistics chains, which mediate the production, distribution, and consumption of commodities. Commodities are essential to reproduce societies so it follows that there are deep, underlying power structures mediating how commodities are produced.

Spatialization

Spatialization can be understood as the geographic approach to the political economy because spatialization examines the distribution of power relations across time and space. Spatialization also allows us to understand intensity and depth. For example, a transnational corporation with offices in all major cities necessarily has more geographic reach, and therefore greater access to markets, territories, resources, and labour compared to a small regional firm in the same industry. The transnational corporation is particularly influential and therefore has greater political capital in deciding the short or long-term direction of its industries and markets.

Political economists study spatialization in numerous ways. The most relevant approach here is market concentration. This refers to the amount and size of firms operating within a particular industry. If an industry is dominated by a few firms then it is said to be an oligopoly or sometimes a monopoly, which therefore makes it difficult for competitors.

Market concentration is best understood by examining horizontal and vertical integration. Horizontal integration occurs when a company in one industry owns or has a major stake in a company not directly related to their original business. For example, if a television network buys a newspaper then it is attempting to horizontally control, or at least have greater ownership over, broadcast media markets. Horizontal integration is complex in the political economy of media because media networks are often owned by companies that operate in non-media industries. For example, the major defense and consumer commodities company General Electric once owned NBC but has recently sold NBC to Comcast. Horizontal integration highlights the overall reach of a company across a variety of markets. Canada's media industry is no stranger to

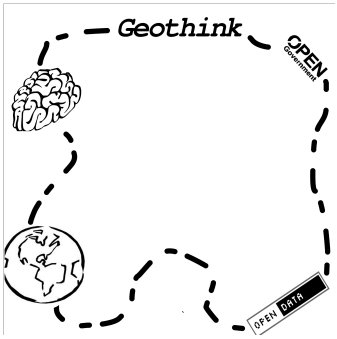


horizontal media consolidation. Quebecor Industries owns newspapers throughout the country, including the Sun chain found in all major Canadian cities. It also owns many dailies once owned by the Osprey Media group throughout Ontario like the Kingston-Whig Standard, the Barrie Examiner, the Belleville Intelligencer, The London Free Press and the Chatham Daily News. Quebecor's ownership of Sun Media has recently moved towards television markets with Sun News Network. Finally, Quebecor is also a cable television and Internet Service Provider (ISP) in Quebec, with its ownership of Vidéotron. Quebecor's ownership of many publishing and broadcast companies, coupled with its ownership of various service providers and distributors, effectively make it an extremely powerful media company in Canada. To exemplify the economic insertion of Quebecor into political life, its founder and majority owner Pierre Karl Péladeau, took an interest in politics, joining the Parti Quebecois and winning the Saint-Jerome riding in Quebec's recent election in April 2014.

Vertical integration describes the amount of concentration a company has over the entire means of production. This could occur, for example, when a newspaper purchases a paper mill. Canada's media often serves as the model of vertical integration. Bell Canada Enterprises, arguably Canada's largest telecommunications service provider, also owns the private broadcaster CTV. This means that Bell has a significant amount of control over both the content, which is produced and consumed, and the infrastructure via which the media content travels. Vertical integration offers companies the ability to gain a critical edge over competition by having more direct control over the entire production process.

Ownership is a core interest in political economy. Google's quick ascent to dominance over many aspects of the World Wide Web, particularly search, e-mail, and maps markets, is in part explained by its fast acquisition of firms. This includes Google Maps and Google Earth, which follow a strategic history of Google's purchase of Keyhole and other firms engaged in geospatial and remote sensing activities (Crampton 2008). Google's reach in the geospatial market is quite significant, including, the adoption of Google's KML (Keyhole Markup Language) standard by the Open Geospatial Consortium. This could not have been possible without Google's strategic ownership of the Geoweb market.

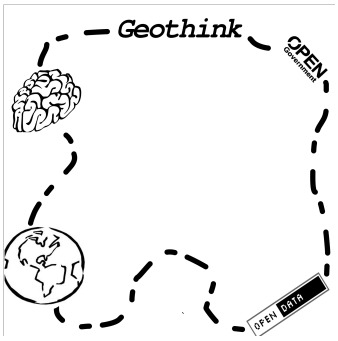
How did Google Maps become the dominant player in Geoweb mapping platforms (a.k.a digital earths)? One way to answer this is to explore the strategic acquisitions made by Google in the mapping market. The first and perhaps most important acquisition was in 2004 when Google purchased Keyhole Inc., for an undisclosed sum (Google 2004). Keyhole Inc., founded in 2001, was a key corporation in the production of satellite and



aerial imagery funded in part by In-Q-Tel, a venture capital arm of the Central Intelligence Agency; Sony's Broadband Entertainment unit and graphics-chip manufacturer NVidia (Bloomberg 2005; WSJ 2004). The strategic acquisition of Keyhole eventually culminated into the Google Maps and Google Earth products, as well as their Keyhole Markup Language XML notation, otherwise known as KML, which became a standard geospatial data notation of the Open Geospatial Consortium in 2008 for visualizing geographic information. By securing KML as an international data standard, we can understand how Google Maps has evolved to secure market dominance.

There are seven known acquisitions made by Google in the construction of Google Maps. One of these was Google's acquisition of Waze, an Israeli-based firm specializing in GPS-based real-time traffic and navigation services for $966 million USD, according to Securities and Exchange Commission 2013 quarterly filings. The strategic acquisition of Waze has been speculated by some as a means of further enriching Google Maps and deterring users from alternate mapping services from rival companies such as Facebook and Apple (Cohan 2013). In addition, the Waze service platform utilizes real-time GPS information about its users to construct maps, which can respond to changes in traffic such as accidents. This can effectively strengthen Google Maps' reliance on user-generated content. At the time of the announcement, the U.S. Federal Trade Commission (FTC) considered investigating the acquisition on grounds of potential anti-trust violations, but has since abandoned their pursuit (Forden and McLaughlin 2013).

For many reasons, Google's market dominance should be examined by those interested in using the Geoweb as a tool for open government or civic engagement. First, ownership influences what kind of skills or training will be in demand. Because Google's acquisition strategy led to KML as an open standard for geospatial media, it follows that cartographic and geospatial knowledge producers must be expected to have a certain degree of familiarity and competency with KML. Second, KML secures Google as a key player at the infrastructural level of the Geoweb, meaning that it becomes a key force in determining the overall direction of the Geoweb by setting industry standards. This means that KML as an open standard effectively "locks in" Google Maps and Google Earth as platforms for any Geoweb applications. Finally, because Google is a for-profit corporation, there is a monetary interest to maintain ownership and control over the Geoweb. Although the Geoweb is free to access, it is only free insofar as determined by Google's Terms of Service, meaning that Google Maps and Google Earth retain key rights over their interface and datasets in such a way which maintains their particular position of power and authority over geospatial media and infrastructure.



To properly understand the impact of Google on democratic usage of the Geoweb, it is necessary that we consider the extent to which Geoweb content can be commodified and subject to market exchange and intellectual property rights.

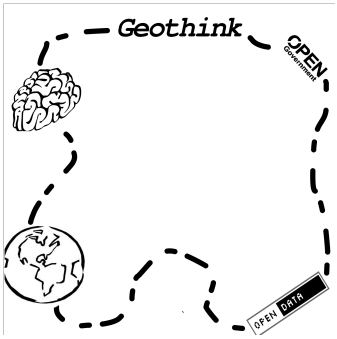
Spatialization is important because communication technology compresses space and time. This enables companies to have a greater influence and control over foreign markets and territories. The spatial division between developed and developing countries has been extensively studied by political economists with ICTs a focal point. For example, ICT4D (Information and Communication Technology for Development) has been a contentious topic for political economists because it exposes the beliefs our society holds for communications technology to enact positive economic growth. This belief can be problematic because it ignores the fundamental skills required to use information technology for such purposes. Digital literacy, as will be explored later, is essential for enacting notions of social development because the technology itself is insufficient for this task.

Spatial divisions likewise highlight how, even though territories and markets are increasingly interconnected through ICTs, it does not follow that they are necessarily evenly distributed. Thomas Friedman (2005) famously proclaimed that the world is flat through globalization. This presents political economy as devoid of inequalities and power relations. Anyone has an equal capacity to participate in the market and, through telecommunications, new markets will be constantly discovered and accessible by all. Political economists have been quick to critique assumptions of market neutrality or equitable playing fields in international markets (Harvey 2005).

Structuration

Whereas spatialization is concerned with the geographic processes of political economy; structuration represents the sociological aspects of how human behaviour and meaning are structured by existing power relations. Structuration is important because it considers the extent to which technology and society interact. Popular assumptions can overestimate the role of technology as a driving force for social change. What gets neglected is how individuals and groups construct meaning from technology or for what social relations are involved in mass-producing technology for everyday use. Structuration challenges our popular assumptions about technology and considers instead the underlying social aspects that structure its use.

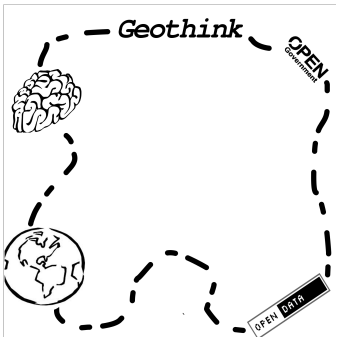
Structuration examines broader social change through the study of human-technology relationships. Mosco (2009: 188) argues that structuration expands our concepts of political and economic power, and also our understanding of the forms that social relations take in political economy. This can be seen in



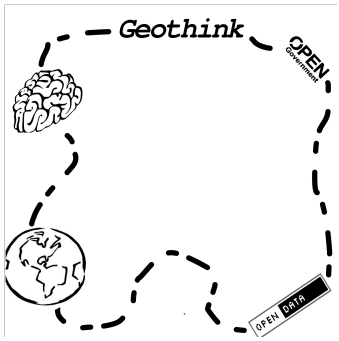
many practical areas of study in media and communications, including media content analysis, digital divides, policy and regulation processes, as well as critically examining the "common sense" views held about society, such as beliefs about gender, race, and social class.

One illustration of structuration concerns how changes in information technology led to new beliefs about the overall direction and future of the economy, including their implications for labour and the skills required to participate in the economy, such as familiarity and training with computer hardware and software. Here, numerous metaphors have sought to encapsulate a larger description of our society, including arguments that we are living in a "post-industrial society" (Bell 1979), or a "network society" (Castells, 1996). Information technology has profoundly come to define how we understand ourselves within a larger sense of belonging, including the overall directions, priorities, and future of social and technological development. Related discussions have focused on the changing nature of "smart" cities in a global economy (Townsend 2013), including the potential for a new "creative class" (Florida 2002) or "knowledge workers" as new forms of labour in an emerging service sector economy (McKercher and Mosco 2008). These forms of knowledge play a powerful role in influencing what kinds of social policies and political agendas form the long-term economic and social development of contemporary societies, including educational priorities, and labour and skills development.

In the Geoweb, how relations between technology and society engender new forms of work and knowledge production can be seen in the rise of Volunteered Geographic Information (VGI) (Elwood 2008). VGI is a social relationship between, on the one hand, developers of geospatial media whom invest in services and platforms that place users as primary content producers, and on the other hand, a new form of production based around new media web 2.0 principles of "crowdsourcing" value and information (Brabham 2009). For example, local governments are harnessing crowdsourcing in acquiring locations of potholes and noise complaints. They have built or contracted out applications to enable area residents and others to fill in the gaps in their own reporting. In the popular press, this is considered to create a Wikipedia model of government, where the cities are supposed to benefit from the "wisdom of the crowds" (Sui 2008). Crowdsourcing has the effect of sounding efficient. But this can effect a change in labour relations, where government justify the reduction in paid expert staff as it shifts data collection to an unpaid volunteer labour force (Sieber and Haklay, forthcoming).



The primary purpose of this section was to provide a basic introduction to political economy, itself spanning a long and rich tradition of scholarly research. Mosco's (2009) approaches of commodification, spatialization, and structuration are useful for understanding political economy, although it is by no means the only way for doing political economy. In the second half of this white paper we apply the approaches in discussing emerging issues and research topics which political economists can study the Geoweb. In particular, we will expand on the structuration of the Geoweb with respect to VGI, as well as examine the political economy of digital divides and digital literacy to examine how popular beliefs of the Geoweb and new media contrast with the larger reality of their development and use.



Section 3

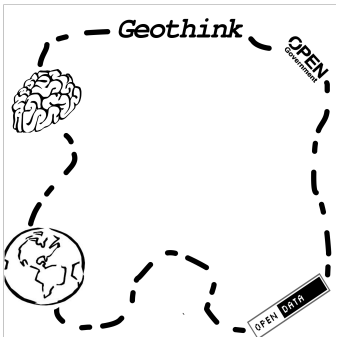
The Political Economy of the Geoweb

There have been few attempts to produce a political economy of the Geoweb. Leszczynski (2012) provides the most substantial contribution with her analysis on changing forms of market regulation in the production of cartographic information, paying close attention to the gradual diffusion of cartographic knowledge production to the private sector. This signals a new way we can analyze and understand the Geoweb because it can encompass a wide variety of interests and organizations that produce Geoweb content. Adams and Jansson (2012) argue for increasing interdisciplinary collaboration, especially between communication scholars and geographers, to have a more nuanced understanding of the social aspects of emerging GIS. We need to understand the Geoweb outside of the academic discipline of geography because the Geoweb is often framed as a form of geospatial interactivity for "non-experts" or people with no real training in GIS or in the discipline of geography. A core principle of the Geoweb is the persistent beliefs that citizens can cultivate new forms of social engagement and participation and it can result in new forms of government (Johnson and Sieber 2011). We must expand the disciplinary scope of Geoweb studies to recognize the complex interactions of government, the private sector, and notions of public and private engagement. Because it requires many disciplines and the activities of researchers and practitioners, political economy offers a robust toolbox for studying the Geoweb.

The Geoweb On Your Own Terms?

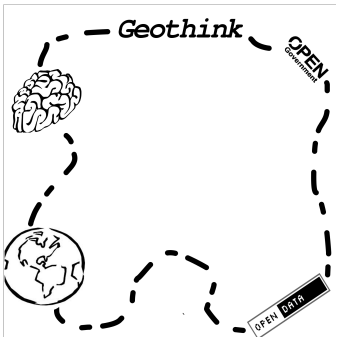
The Geoweb is complimented by related concepts like VGI, in which researchers are concerned with how cartographic information is increasingly being produced on a 'voluntary' basis by non-experts (Goodchild 2007). Some Geoweb scholars have suggested that VGI will have the potential to profoundly transform the way we know the world, particularly as VGI has the opportunity to open up the production of geospatial knowledge to everyday citizens with no expertise in geographic information systems (GIS) (Elwood, Goodchild, & Sui 2012: 573). This belief emphasizes the novelty of the Geoweb, but in particular stresses its potential for new forms of citizenship, democratization, and social participation. Turner (2006: 3) argues that neogeography is a new form of GIS which falls outside the traditional realm of geography, and therefore has the potential for a revival of GIS into the public sphere, where diverse people can create maps and share location "on their own terms."

The political economy explains part of what is said about the Geoweb, in both academic discussions and in the private sector. We are seeing an emerging market for geospatial data as a part of social media, including geo-spatial data from location-based services and desktop environments. Here, VGI can be situated



within a larger system of production where audiences are the primary content producers, often for private corporations such as Google. In mobile platforms, there are countless applications (apps) that provide contextual information based on GPS coordinates (Humphreys 2007). In many respects geo-locative data has become a valuable commodity, particularly for analytical and marketing companies hoping to develop geodemographic profiles about people's lifestyles, preferences and tastes (Burrows and Gane 2006). Other markets such as law enforcement and emergency services have sought to capitalize on geo-location for population management (Phillips and Curry 2003). Notions of volunteerism, when placed against larger issues of structuration of information labour, including beliefs that we are living in a networked society and therefore require significant digital skills. These pose significant challenges to understanding the underlying structures of participation in the Geoweb. In effect, it raises the question of whether or not we really have a choice to *not* participate in geospatial media if we are active and engaged members of society. This is particularly true if, as many believe, our society is becoming increasingly globalized and mobile (Urry 1999). The commodification of personal information structures new social relationships between users and Geoweb infrastructures. Financial incentives to realize valuable personal information through these services suggest that service providers will go to great lengths to encourage their use. Simply put, VGI participation transcends democratic citizenship; it is the private sector that arguably sustains market dominance.

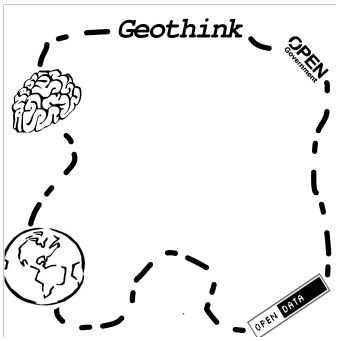
Andrew Turner (2006) suggests that the Geoweb allows users to engage with geographic interactivity "on their own terms". This examplifies a rhetoric of a new media that delegates power to the public (Mosco 2004; Leszczynski 2014). The Terms of Service for many popular Geoweb mapping platforms reveals a much more complex legal arrangement of content licensing and restrictions of use and ownership. Google Maps and Google Earth, for example, grant users a license to use their services, but this is subject to numerous restrictions of use as well as proprietary restrictions. Google's general terms of service also include provisions that grant Google "a worldwide license to use, host, store, reproduce, modify, create derivative works (such as those resulting from translations, adaptations or other changes we make so that your content works better with our Services), communicate, publish, publicly perform, publicly display and distribute such content" (Google 2013). This license continues, "even if you stop using our Services" (ibid.). If the geographic information produced through Geoweb applications remains the intellectual property of the service provider then larger issues of power and participation, particularly on one's own terms, are questionable.



Google's ability to provide a "free" service is reinforced by "common sense" notions in Web 2.0 culture that blurs the relationship between production and consumption, and encourage users to take on new roles as "sensors," "prosumers," and "crowdsourced" geographic knowledge producers (Goodchild 2007; Ritzer and Jurgenson 2010; Sui, Elwood and Goodchild 2013; Sieber and Haklay forthcoming). Political economists have paid considerable attention to the increasing popularity of crowdsourced knowledge and "user generated content". They are particularly interested in this knowledge production as a new form of media labour where users actively produce value for media corporations with no compensation (cf. Terranova 2000; Fuchs 2011). Claims about VGI's potential for new forms of civic engagement with geography, or its potential to transform the way the world is rendered knowable must be balanced with an understanding of who does and does not benefit. Companies like Google can profit from these beliefs and create infrastructures such as Google Maps that significantly restrict a user's ability to reconfigure or otherwise modify services for their own purposes. This capacity suggests that benefits largely accrue to Google—and rhetoric aside of "not doing evil"—the benefits are definitely monetary.

Digital Literacies and Divides: Situating Access in Political Economy

Communication technology is often framed in terms of individual empowerment, where people on the margins can overcome social, economic, and political barriers or inequalities. Information technology is likewise seen as giving people a "voice" in society, for example in social media where users are encouraged to post, share, and "like" their beliefs (the Arab Spring saw much rhetoric around the power of social media to topple governments). Information and communications technologies (ICTs) alone do not generate effective policymaking, particularly at the global level. ICT4D (ICT for Development) has been a popular trend in globalization and development studies and has been taken up at both the policy level and by various industries, companies and research organizations. The basic argument of ICT4D is that through rapid advances in networked telecommunications and computer hardware and software, developing nations have the potential to "leap frog" over certain historical periods of development and enjoy an equal footing in global market relations and economic competition. Many policy makers and technological entrepreneurs subscribe to this belief and have enact infrastructural development programs and strategies. The "One Laptop Per Child" program embodies the belief in the power of technology, irrespective of geographic and cultural differences, to allow the global poor to level the playing field in the market (see http://one.laptop.org/). The United Nations has likewise identified reducing global digital divides to be the focus of the World Summits on the Information Society (WSIS) in 2003 and

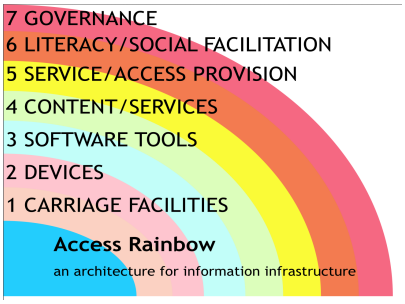


2005. Such policies and practices have fixated on simply delivering technology and infrastructure to developing countries, and relegated important questions around providing skills, education, and training (particularly skills that are durable over time!), to the margins of policy.

Political economists are critical of such initiatives. The primary concern and weakness of such programs is their reliance on what is known as technological determinism, a theory that grounds social change in technological advancements (Nye 1994). This theory has many flaws, but for our purposes, it ignores the larger social structures, as well as cultural and historical contexts in which technology is developed and used. Technology is not autonomous. Despite the best intentions of individuals, entrepreneurs, governments and technological pundits in developing technological capacities, digital divides will continue to persist because there are deeper underlying social, political, and economic structures that remain intact.

Technology requires literacy. Literacy here does not simply refer to the ability to read, but has a broader definition. Clement and Shade (2000: 11) have argued that:

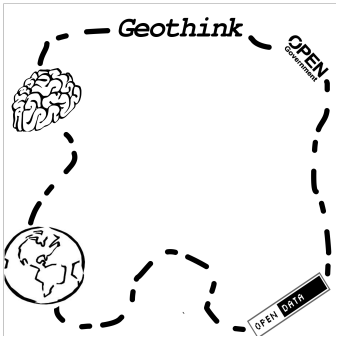
> Digital, or network literacy, is too often treated in practice as being mainly about keyboard and menu navigation skills. It is more usefully viewed as encompassing a broad range of knowledge and skills. Knowledge includes an understanding of the various types, sources and uses of global networked information; the role of networked information in research and problem solving; and systems whereby information is stored, managed, and transmitted.



The access rainbow (Source: Clement & Shade 2000)

It is insufficient to "throw" technology at a problem and expect a solution. Issues of labour and literacy surmount and determine how technology and society interact. Clement and Shade (ibid.) have illustrated the politics of socio-technical literacy and access in terms of an "access rainbow" (left) that shows the multiple layers, from technological to social, which organize technological diffusion, regulation and use.

Digital literacy is key to ensuring that all citizens can function and participate in a networked society. In its discussion paper on the development of a digital economy, Industry Canada states that fluency in digital practices is not just the basis for a thriving information economy, but enables a more connected and engaged citizenry. Digital literacy thus "contribute[s] in new ways to citizen engagement, quality of life and will open up new opportunities for all Canadians to participate in Canada's democratic, economic, cultural and social life" (Industry Canada, 2010: 24; cited in Shade and Shepherd 2013). With the move toward open data and the release of various datasets by municipal and federal governments, we need to pay attention to



the nuances and key attributes of data literacy (Prado and Marzal 2013; Twidale, Blake, and Gant 2013). Increasing broadband access does not generate an engaged public.

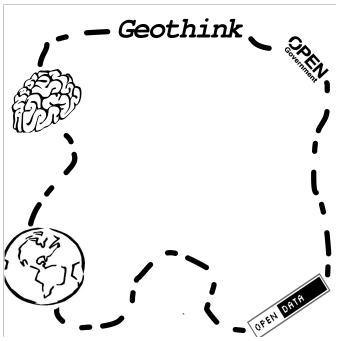
Mobile Geoweb

Mobile telecommunications technology is one of the fastest growing markets of technological adoption, and often believed to be the key to leveling digital divides in developing countries. Mobile has interest from the public and private sector alike, culminating around visions of hope for producing a new kind of communication based around freedom, flexibility, and mobility, in turn, spawning a new "M4D" (mobiles for development) industry (Shade 2013).

With approximately 6.8 billion mobile subscriptions worldwide, we are close to approaching a threshold 100 percent penetration rates, evinced by the dramatic decline in subscription growth rates (ITU 2013). Those who study M4D are highly concerned with issues of mobile commodification, spatialization and structuration. These resemble the beliefs of ICT4D. Developments in the Geoweb suggest that, as its integration into mobile platforms continues, geospatial data and apps will be increasingly incorporated in everyday use. This makes the Geoweb an excellent area for future research into its political economy implications.

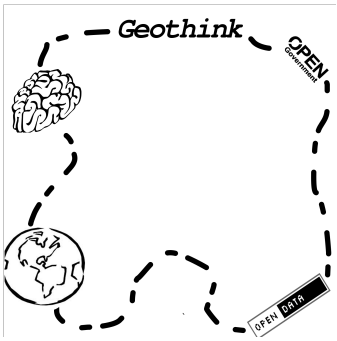
Location is at the heart of mobile development, whether it is a map on a phone or services delivered based on one's location. The Geoweb on mobile platforms is called location based services, which utilizes GPS and other forms of location awareness to deliver customized information services and, in turn, creates new forms of spatial awareness (de Souza e Silva 2006). This idea of spatial awareness runs deep in developing countries. A political economy approaches allows us to look at its roots in much larger notions of modernization and development: an eradication of "information poverty" through a new set of developmental organizations and state-corporate networks collectively comprising a new "development industry" (Alhassan 2010: 36, cited in Shade 2013).

Global development manifests in numerous policies or beliefs that imply that many developmental issues such as education and equality can be resolved by granting marginalized groups access to technology. This is not entirely a matter of altruism, but actually a belief that global development is synonymous with the exploration and structuration of new markets. In other words, those in need are also a new market. Prahalad (2009) championed the "bottom of the pyramid" thesis to encourage civil and private sectors to target low-income people to "convert" them to a business opportunity:



> Four billion poor can be the engine of the next round of global trade and prosperity. Serving the Bottom of the Pyramid consumers will demand innovations in technology, products and services, and business models. More importantly, it will require large firms to work collaboratively with civil society organizations and local governments. Market developments at the Bottom of the Pyramid will also create millions of new entrepreneurs at the grass root level – from women working as distributors and entrepreneurs to village level enterprises (Prahalad 2009: 6).

The bottom of the pyramid thesis exemplifies some beliefs around technology, especially the possibilities of new technologies to produce social and cultural growth. Absent these discussions are the myriad social and political conflicts that, in some respects, mobiles have helped shape across the developing world. Numerous commentators, scholars, journalists, and NGO's have called attention to the increasingly precarious mining, extraction, and processing of key natural elements required for mobile device capacitors such as cobalt, coltan and tantalum. Conversely, the actual disposal and recycling of electronic waste continues to find its way into areas of high poverty where trace amounts of precious metals such as gold are melted off of circuit boards with little to no regard for health and safety of workers or the environment (Vidal 2013, see also http://www.step-initiative.org/). The mobile Geoweb exists in these contradictions and it behooves us to take notice.



Section 4

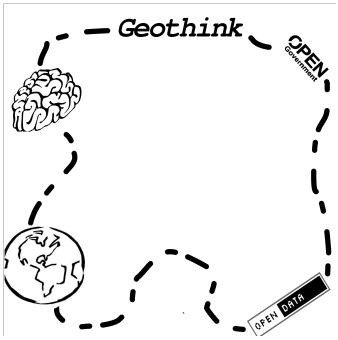
Conclusions

The Geoweb was created within larger trends in media and politics. It contains a diverse set of organizations, philosophies of technology, beliefs about democratic governance and the role that geospatial media will play in shaping the future of government, in facilitating new forms of citizen engagement, and in fostering civic empowerment. Stories of technological optimism can ignore the social realities, and the political and economic complexities of technology.

Many reasons suggest that there are underlying tensions and structural inequalities which Geoweb scholars have arguably neglected. Issues of digital access and data literacy persist. Digital divides continue to perpetuate themselves, with some scholars even suggesting they are becoming more complex (Graham and Marvin 2001; Wyatt 2013). For example, fewer women than men continue to use the Internet, particularly in the developing world, indicating a key area for future research on social diversity, ICT access, and inclusion (ITU 2013; see also Sarikakis and Shade 2008). Recent research highlights how women continue to volunteer on the Geoweb platforms like OpenStreetMap. By contrast, women's paid labour in the Geoweb industry, has been unequal, compared to their male counterparts (Stephens 2013). Concerns emanate from earlier entreaties to consider critical, participatory and feminist GIS as a key grounding for VGI to foster more integrated socio-technical approaches (Elwood, 2008) as well as the use of GIS for gender and development initiatives (Bosak and Schroeder, 2005).

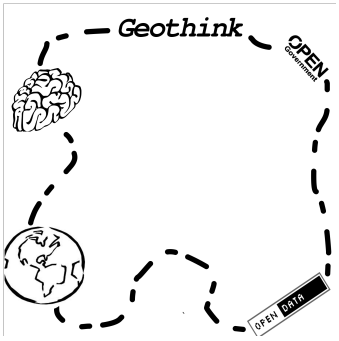
The Geoweb alone cannot resolve these issues. Geoweb research can acknowledge its underlying political economy. Political economy can play a valuable role in revealing the rhetoric of the Geoweb, in turn allowing developers and policy makers to identify the core issues that will influence the way the Geoweb informs, creates, and imagines new forms of social participation and government.

By examining the three inter-related processes of commodification, spatialization, and structuration it becomes possible to develop a more sophisticated lens for understanding the underlying social forces and structures that shape the production and use of geographic knowledge. Future research is needed to address the implications of the political economy on the Geoweb and its underlying beliefs of access and inclusion.



In this white paper we address key areas of study pertaining to the underlying sociological aspects of the Geoweb. Because the Geoweb is fundamentally an infrastructure, which focuses on the increasing diversity and needs of its users, as well as new forms of cartographic literacy that extend beyond professional or expert geographers, it is important to see the Geoweb within a larger social framework for research, and political economy represents a key framework for such an undertaking.

We also need to ask, how "free" or "open" is the Geoweb? Questions like this are vital to understanding the social implications of the Geoweb, that is, allowing us to critically evaluate the underlying beliefs of the Geoweb with respect to its political and economic realities. Political economy offers the ability to place human experiences within larger social structures, processes, and institutions. This is increasingly necessary in a world of global telecommunications interconnectivity and mediation. The Geoweb cannot be reduced to geography alone. It is a social infrastructure that demands a broader framework for future research and practice.



Section 5

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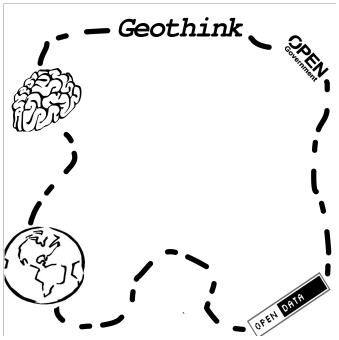

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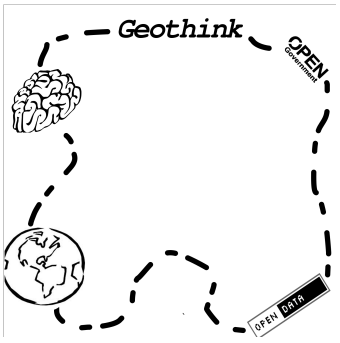

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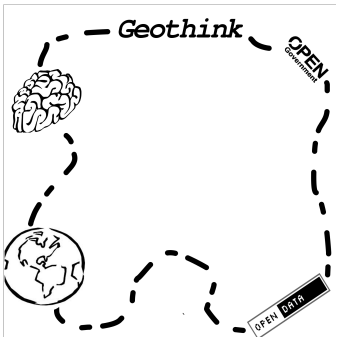

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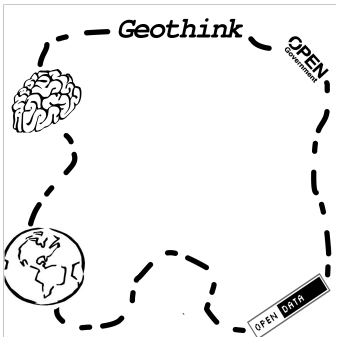

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