December 2014

The Practice of Neogeography in Community-Based Organizations

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Abstract

Neogeography and Volunteered Geographic Information (VGI) are two terms that have emerged recently to describe the practice of geography by those not formally trained in it as a discipline and spatial data provided by individuals through social media and other Web-based tools. Both neogeography and VGI can be directly linked to the growth of various online mapping websites and applications that allow for the creation of electronic maps that are interactive, adaptable, and easily shared via the Internet and Web. As recent phenomena, the practice of neogeography and VGI is not well understood, nor are the links these new fields have to previously established knowledge on Geographic Information Systems and its associated practices.

This thesis attempts to fill this knowledge gap through a participatory study of neogeographic practice. Using a participatory workshop format, I observed and documented representatives of community-based organizations in Syracuse, NY as they encountered online mapping tools for the first time. I followed up with two of those organizations in longer case studies to better understand how organizations with no obvious geographic focus come to see geography as a way of communicating complex ideas about space. This study revealed that while the technical complexity of the online mapping software continues to prove to be a hindrance to its use, there remains space for professional geographers to interact with laypeople who make maps. Furthermore, such engagement is necessary to begin to understand the issues involved with location-based information and privacy, access to data, and ability to use and communicate geographic concepts and knowledge.

THE PRACTICE OF NEOGEOGRAPHY IN COMMUNITY-BASED ORGANIZATIONS

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B.A., SUNY Geneseo, 2009

Thesis
Submitted in partial fulfillment of the requirements for the degree of
Master of Arts in Geography

Syracuse University
December 2014

Acknowledgements

By a wide margin, this thesis is, to date, the longest piece of writing I have done and the most involved research project. Both of these characteristics will hopefully be exceeded in the near future. In the meantime, such a project is never the work of one person alone. First and foremost, I must acknowledge my parents, Mary and John, who from an early age instilled in me a sense of curiosity about the world and a drive to be successful. For helping me break out of an unfulfilling job and get accepted into grad school, I must thank David Robertson and Colleen Garrity at SUNY Geneseo, and Ed Vasta at Manhasset High School for many hours of consultation, conversation, and of course, for letter-writing.

The research project itself could not have happened without the support of a number of people. I wish to thank Olive Sephuma at the Central New York Community Foundation for suggesting the workshops that led to the project in 2013, and for being of great assistance in advertising them. I would also like to thank Jim Emmons at the Syracuse Poster Project and Melissa Hidek at PEACE, Inc. for attempting to take on longer-term mapping projects with varying degrees of success. Finally, I also thank the 18 participants of the workshops.

At Syracuse, I of course must thank my advisor Mark Monmonier for his support, advice, and for imparting what he could of his research and writing expertise. Many thanks as well to Jonnell Robinson for offering me a research assistantship in Community Geography and for many hours of conversations related to this project. I would also like to thank my other committee members, Jane Read and Kishi Ducre for reviewing this thesis and for their helpful comments.

Last but not least, I would like to thank my fellow grad students who have offered various kinds of support throughout this process. They are (in no particular order): Kristin Cutler, Brian Hennigan, Renee Huset, Anthony Cummings, Bethany Eberle, Ashley Feist, Jon Glass,

Kelly Nickodem, Justin Hartnett, and Yi Yu. A special thanks must be given to Emily – I don't know how I made it as far as I did without her. There are undoubtedly others who I have neglected to mention; please don't take it personally and know you are also thanked as well. As for this thesis, I have tried to be as careful, precise, and accurate as possible- any remaining errors are mine and mine alone.

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Chapter 1: Introduction and Methods

Introduction

In 1989, J.B. Harley, a renowned scholar of cartography in the 1970s and 1980s, challenged academic geography to rethink how maps are made, interpreted, and accepted. He could not then have predicted how maps, in all their myriad forms both paper and electronic, have become so central to the daily lives of people around the world. In an era defined by electronic connectedness, location awareness has become a common denominator of the host of mobile applications and social media websites that form the basis of today's Web-centric world. Perhaps the new location-aware Web is indeed a Web 3.0, an electronic world of volunteered geography.

Amateur mapmaking is not a new idea. Anyone with a pen, some paper, and abundant free time can make a map. Amateur mapmaking on the Web, however, is a product of the last two decades. In addition to announcing one's location via Facebook, Twitter or any number of other social media outlets, collaborative online software now allows anyone with an Internet connection to edit, contribute to, and publish their own maps of their own communities, neighborhoods, towns, and cities. This online world of amateur geography has whimsically been dubbed "neogeography" and the data it generates constitutes a far more clinical sounding "volunteered geographic information" or VGI (Turner 2006; Goodchild 2007).

Academic engagement with neogeography has come about primarily due to the popularity and expansion of location-aware technology and services. Google has been a huge innovator in this area with the expansion of Google Maps and Google Earth applications and their developer toolkits called application programming interfaces

(APIs), which allow customization of maps and map mash-ups for sharing and publishing. In addition, lower cost GPS units and their integration into mobile devices such as smartphones, coupled with the expansion of social media like Facebook, Yelp, Google+ and Foursquare, among others, have resulted in an increased awareness of and engagement with location-specific information (Turner 2006). As a result, more and more people are contributing volunteered geographic information (VGI) to a variety of websites and social media outlets. This information can include observations, photographs, business reviews or any qualitative or quantitative data about a particular place (Elwood et al. 2012).

Research Questions

As a recent phenomenon, neogeography research has little in the way of defined research methods. Case studies into specific applications of neogeography have been popular, as has research into the potential of VGI as a resource for scientific research (Seeger 2008). These case studies are an important way of discovering how VGI is employed, but few engage with the process of creating maps online using existing tools and tend to focus on the end result. Additionally, academic geography has not deeply involved itself with neogeographers as they make maps and contribute location-based information. In this thesis, I will attempt to fill these gaps by answering the following questions. First, how can professional or academic geographers engage with neogeographers in a way that is beneficial to both? In what ways could academic geography facilitate neogeographic practice and encourage the public to “think spatially?” Second, what is the process of making an online map like for a neogeographer with little or no background in cartography or geography? What kinds of questions do

neogeographers ask and how does neogeographic practice influence their questions and the types of information they wish to explore geographically? On a theoretical level, neogeography's place in the pantheon of geographic research must also be addressed. Sarah Elwood (2008) pointed out that VGI (and neogeography by extension)[1] can draw much of its analytical framework from public participatory GIS (PPGIS) research. Specifically, she called for a better understanding of the types of knowledge practices VGI advances and what groups and individuals those practices can empower. The potential of VGI to empower traditionally underrepresented groups also links it to the idea of counter-mapping or counter-cartography (Elwood 2008). In exploring neogeography/VGI as an empowering participatory process, its ability to present a counterpoint to prevailing opinion can also be addressed.

Context

The introduction of the term *neogeography* has been attributed to a book by Andrew Turner that explained a variety of methods for integrating spatial information into a variety of online tools such as RSS feeds, GPX files for transferring GPS coordinates from a device to the computer, and KML files used by Google Earth (Turner 2006). Michael Goodchild later added "volunteered geography" to the discussion and used a sensor network as an analogy to the network of amateur geographers volunteering location-based information online (Goodchild 2007). Since then, VGI and neogeographic research have also been linked to PPGIS and also the outcome of debates about the role

[1] Neogeography and VGI emerged separately as terms but I use them almost interchangeably. If a cited author used 'VGI' I will use it when discussing his or her work. The same goes for neogeography. However, I prefer that *neogeography* be the term used to describe a field of study in which the untrained public creates maps and other works of geographic interest and *VGI* be the term used to describe the data and information they contribute.

of GIS in society that took place in the early 1990s (Elwood 2008). Broadly put, the proposed project is situated inside a body work that attempts to explore the relationships among GIS and geospatial technology and the way individuals and groups use them.

By answering the previously mentioned questions, the project will also explore some topics specific to VGI and neogeography that have been covered in the literature. Several projects have already studied and questioned the accuracy and veracity of VGI and online mapping tools (Flanagin and Metzger 2008; Haklay 2010; Frew et al. 2012). Elwood, Goodchild, Sui and others have also explored the connections of VGI and neogeography to concerns raised by PPGIS practitioners and scholars. This project is also informed by those studies, specifically their concern with the effects of participation by parties with competing interests and the extent to which VGI can be "democratizing" (Parker 2006; Elwood et al. 2012). In the broadest theoretical and conceptual sense, I turn to studies by Goodchild and others that sought to understand how VGI and neogeography can create new and worthwhile representations of space and place outside the confines of academic and professional geography (Goodchild 2007; Haklay et al. 2008; Goodchild 2009; Sui and Goodchild 2010; Martin and Dodge 2013). All of these studies also owe some thanks to the tradition of looking at maps and geography from a critical perspective – that is, seeking to understand the deeper (perhaps darker) meanings and motivations behind geographic and cartographic practice (Harley 1990).

A further analytical framework to help evaluate the success and failure of the two community groups implementing neogeographic techniques can be found in PPGIS studies on the implementation of GIS practices among grassroots and community organizations. In particular, research by Renee Sieber (2000a) into the implementation of

traditional GIS practices among several different grassroots organizations provides a useful starting point to evaluate how neogeographic techniques are either integrated or rejected by community-based organizations. Such a link is made possible by technological and methodological similarities between neogeography and PPGIS that I will explore more in Chapters 4 and 5.

Methods

The first question regarding the means of meaningful interaction between professional geographers and neogeographers presents some methodological challenges. Neogeography, by definition, requires that individuals or groups engaging geographic methods have no substantive background in geography, cartography or GIS. Furthermore, neogeography takes place via the Web. Engaging with neogeographers therefore requires that only a minimum of geographic knowledge is transferred from professional to amateur and that the interaction must involve an Internet-connected computer. As chance would have it, an opportunity to meet both requirements was presented to me in the spring of 2013. The Central New York Community Foundation (CNYCF) had approached the Syracuse Community Geography program about holding workshops on mapping and GIS. This eventually led to two workshops on online mapping. Participants in the workshops represented community-based organizations in the City of Syracuse and surrounding towns. Such a workshop setting allowed for a trained geographer (myself) to interact with community groups that are interested in exploring their areas of interest geographically. My overall purpose in pursuing this method was to address debates regarding the interaction of professional geographers and neogeographers. While a large

survey of contributors to crowd-sourced maps would be interesting (and should be done), it would not demonstrate how geographers and neogeographers can or should interact.

There are some limitations to the workshop method as a form of participant observation. In targeting this particular population, I ignored an active group of individuals who contribute to online maps in a more anonymous way and more generally. Google's MapMaker for instance allows users to submit edits to Google Maps directly and anonymously. This is still a group worth investigating in the future. Additionally, having the participants come from community-based organizations does not address the role neogeography can play in the expression of an individual's geographic ideas. The participants were representing the organizations they work for, not themselves. There is precedent for the study of the behaviors of community-based organizations regarding mapping and GIS throughout the PPGIS literature. For example, Christopher Seeger (2008) used a workshop setting to test a custom online mapping interface. He used a sketch mapping workshop, in which participants write directly on a paper map, to better understand how citizens inventoried points of interest along a proposed recreational river corridor. In the same tradition, my workshop setting further allowed for extensive participant observation and for conversational interviews in a relatively informal setting where I could better understand the kinds of projects community groups had in mind for online maps. Throughout the workshop and the subsequent follow-up interviews, I attempted to maintain a participatory approach where I not only observed but assisted (in an intentionally limited way) the participants in accomplishing their tasks.

The incorporation of participant observation with participatory action is also not without its drawbacks and potential pitfalls. It was impossible for me to be entirely

objective or separate from the research I was attempting to carry out. Indeed, at the start of the workshop all participants had to acknowledge that they were part of a research study and explicitly consented.[2] Though I cannot be absolutely certain of prior workshop participation by the particular groups I encountered, their participation was drawn from a list of organizations that had self-identified for skills training workshops sponsored by the CNY Community Foundation. The Foundation conducts its own surveys after workshops to ascertain if participating organizations are interested in further sessions. Based on communications I had with a representative of the CNYCF in setting up the workshops, I am comfortably certain that most participants have engaged in similar workshops in the past and were comfortable with the format. This is an important distinction to note, as it situates the participants in a setting in which they are used to engaging with new concepts, techniques, and ideas and not a contrived research setting – an accepted general requirement for participant observation research (Chari 2009). Furthermore, it helps mitigate the possibility that responses I received from participants during the workshops were not being overly influenced by my presence as a researcher, as participants were already familiar with an instructor/learner dynamic (Becker 1958; Yin 1994). Participants were furthermore permitted to work on their own as opposed to in a group setting and were not required to interact with one another if they did not want to. This was designed to limit the possibility that participants and their organizations would introduce "outside" political conflicts between organizations and focus their attention the process of mapping their data. However, this limited my ability to understand the role (if any) inter-organization conflicts and politics might have on mapping data dissemination.

[2] One participant did not sign the consent form and his survey was discarded. The total number of participants does not reflect his presence as a result and I kept no record of my conversations with him.

There were a total of two workshops, each two hours long. The first hour was reserved for instruction on how to use Google Maps Engine Lite, a free online mapping tool that allows for the creation and sharing of custom maps using Google Maps as a starting point. The second hour was designed to allow the participants to put their new skills to use and create a map with whatever data they brought with them or were able to find on the Web. Conversational interviews with many of the participants took place during this time. There were twenty-two participants, eighteen of whom completed a survey at the end of the workshop. Chapter 3 provides a more in-depth discussion of the workshops and their outcomes.

Follow-up to the Workshops

While other case studies in VGI/neogeography have focused on the output of a project and the quality of data produced, I wanted to use case studies to better understand the process of online mapping as a more thought-out long-term activity. The workshops allowed me to find out what community groups wanted to do; a set of case studies would allow me to see how they implemented their projects. Unfortunately, only two organizations expressed interest in any long-term mapping project and only one was able to generally complete theirs. Other workshop participants had mentioned lack of time, lack of personnel, and more urgent priorities as barriers to any kind of long-term mapping project. Therefore what follows in Chapter 4 can be described as a revelatory single-case study in which the descriptive information revealed can lend new insight into a new or previously under-studied phenomenon (Yin 1994). In addition, both organizations had participated in the workshop on Google Maps and indicated they would use that platform in the future. As one of the more comprehensive online mapping platforms available,

Google Maps Engine provided an excellent opportunity for a long term observation of the process of creating a custom Google Map and revealed the struggles, successes, and limitations of an online tool that many millions of people use on a daily basis. On a technical level at least, the process should generally be the same for anyone using Google Maps Engine. By examining the neogeographic process over a period of time, I was also able to interrogate the potential of online maps to be an empowering tool and address claims that the production of geographic knowledge by those outside academic and professional spheres is somehow emancipatory. A case-study approach under a participatory action framework allows for this.

The two organizations who volunteered for further investigation were PEACE, Inc. and the Syracuse Poster Project. PEACE, Inc. is the City of Syracuse's official Community Action Agency (CAA) and manages the Head Start and Early Head Start programs within the city limits. CAAs were created by the Economic Opportunity Act of 1964 as part of the War on Poverty to organize community members through the use of federally-funded social programs. In terms of VGI and neogeography, PEACE, Inc. was interested in the use of online maps as a means of communicating its services and the locations of its offices and Head Start centers to the communities it serves. For a variety of reasons I will discuss later in Chapter 4, PEACE, Inc.'s efforts at online mapping were not entirely successful.

The second organization was the Syracuse Poster Project, a non-profit group that promotes Syracuse through poetry and art. It holds an annual event at which residents of the city (or anyone with a connection to Syracuse) are invited to submit original poems that are then judged and published. In addition, the Poster Project recruits art students

from Syracuse University to create posters inspired by a selection of poems from that year that the students feel particularly inspired by. Many, if not most, of these poems are place-based in some way. For example, a submitted poem may have been inspired by a particular downtown building — the Niagara-Mohawk Building is apparently popular — or a vista that could be viewed from a certain place. The Poster Project's goal with online mapping was twofold: to create a map showing where their submissions are coming from and another map that would allow a user to locate the places that inspired the poems and the resulting posters. The Poster Project was moderately more successful than PEACE, although the process was much more involved than they or I had expected. The Poster Project case study took place from September 2013 to June 2014 and consisted of semi-regular monthly meetings and unstructured interviews with the Poster Project director primarily as well as several temporary interns.

Structure of Thesis

This thesis is divided into five chapters, including this one. In Chapter 2, I review the relevant literature and attempt to place neogeography and VGI into the wider context of geographic information systems in general as well as discuss the relevance of the former to the discipline of Geography. I also argue that neogeography and VGI are at the center of ongoing discussions and debates about the role of location-based technology in society. In Chapter 3, I discuss the format and results of the Google Maps workshop that I led in August 2013 as well as the survey instrument I handed out to participants. In Chapter 4, I review and analyze the online mapping efforts of PEACE, Inc. and the Syracuse Poster Project. In both cases, I assess the degree to which they were able to do what they set out to do with their online maps and discuss the process they went through

while trying to use online mapping technologies. Finally, in Chapter 5 I offer some concluding thoughts on neogeography, a self-assessment of the thesis project, and some ideas on where else geographers should be looking for greater insight into neogeography and VGI.

As is often the case, this study was more ambitious than the final product at the outset. While it would be interesting to see how registered and anonymous persons contribute to general online maps, the websites that manage them simply do not keep accessible histories of those changes. Further, many of the major search engines like Google and Microsoft Bing use sophisticated algorithms to keep maps updated based on local web searches and by mining public databases. As you read, keep in mind that using an online mapping application like Google Maps to make custom maps turns out to be more challenging and more complex than the pundits and advocates of such things would have you believe. If the goal is to have a technology that can “democratize” geographic knowledge, than we certainly have a long way to go in terms of access to the technology and the computer literacy needed to realize its potential.

Chapter 2: Neogeography and VGI in the Context of GIS and its Uses

Introduction

The expansion of the Internet and the World Wide Web (the Web) over the last decade has resulted in the creation of numerous new services and technologies. At the same time, advances in Global Positioning System technology and the spread of Internet-connected mobile devices have made location-based services ever more accessible. The result has been an expanded variety of tools that allow individuals to contribute geographic data to online maps and through social media. Academic geographers have labeled this new type of geographic information "volunteered" (volunteered geographic information/VGI). At the same time, professionals in information technology coined the term "neogeography" to describe the activities of those who use Web-based technology to add location-specific information to online maps, social media sites, and blog posts, among others. As use of these techniques has become more widespread, so has research into them from a variety of directions within the discipline of Geography.

Through a review of recent (and some not-so-recent) literature, this chapter will attempt to connect contemporary VGI and neogeography scholarship to the wider world of Geographic Information Science (GIScience). I will approach the topic chronologically, beginning with the foundations of GIS in the 1950s and 1960s through the GIS and society debates of the 1990s and the resulting diversification of GIS research including Public Participation GIS (PPGIS) and, I argue, neogeography and VGI. Through this history, it will become apparent that neogeography and VGI do not exist solely within the realm of GIS but are situated within a wider epistemological realm informed by postmodernism, post structuralism, and feminism. Additionally, I will

attempt to explore how neogeography and VGI relate to discussions of the relevance of geography and geographic knowledge.

The Beginnings of Geographic Information Systems

Timothy Foresman (1998) argues that GIS can trace its intellectual origins back centuries and that the tools we use today are merely the evolution of the same sort of spatial awareness documented by Ptolemy in ancient Greece and by Immanuel Kant many hundreds of years later. This would suggest that the histories of GIS and of Geography are one and the same. In the modern period, GIS as we know it today arrived as a result of the computing revolution in the 1950s, which coincided with the quantitative revolution in Geography (Gould 1979). Computer systems like ENIAC and its associated programming languages like COBOL and FORTRAN allowed for a rapid expansion in automated cartography. The same systems were used by geographers as well as land-use planners, landscape architects, and computer scientists to begin to automate traditional cartographic practices like overlays to perform a variety of analyses (Foresman 1998). Eventually, the need to process a growing amount of geographic data led to the creation of what is widely considered the first true GIS in the 1960s with the Canada GIS (CGIS), which became fully operational in 1971. This system was the first to move beyond pure mapping into data display and management (Tomlinson 1998).

While the CGIS was the work of professionals within the Canadian civil service, academia's interest in GIS began to evolve around the same time. Early work in quantitative geography at the University of Washington and Northwestern University led to a reputation for GIS research at those institutions by the mid-1970s. Curiously, Harvard also became an early leader in GIS work with its Laboratory for Computer

Graphics and Spatial Analysis led by William Warntz, who was given the title “Professor of Theoretical Geography” in 1968 despite the geography department’s controversial demise some twenty years prior (Chrisman 1998). These institutions’ early experiences soon became models for others, and by the 1980s GIS was a well-established area of study at universities and colleges throughout the western world (Foresman 1998).

In the years since these early forays into computer methods for handling spatial data, GIS has evolved into an entire category of geographical enquiry. In 1992 Michael Goodchild, then director of the National Center for Geographic Information Analysis at University of California–Santa Barbara coined the term “geographical information science” to denote the expansion of GIS research into new areas. In a now classic article, he argued that GIS was not simply data delivery but a whole process from data collection, management, modeling, analysis and theory as well as the ethical, policy and institutional issues involved in a GIS project (Goodchild 1992). Today, GIS is a thriving and incredibly broad method for understanding and working with spatial information. The GIS&T Body of Knowledge, a GIS curriculum guide produced by the University Consortium on GIS, lists seventy-three topics across ten content areas that relate to geographic information science and technology. These topics cover everything from the mathematical foundations and algorithms of GIS software to the philosophical grounding of GIScience as a whole (DiBiase *et al.* 2006). The technology and the process have become pervasive throughout a variety of sectors of both academia and society as a whole, from health care to urban planning to business logistics. As Longley, Goodchild, Maguire, and Rhind (2011) argue in their widely used textbook, “Almost everything that

happens, happens somewhere. Knowing where something happens can be critically important" (p. 4).

GIS Critiques of the 1990s and Their Outcomes

Perhaps because of its widespread appeal and growing adoption by numerous agencies and academic departments, GIS came under intense criticism in the early 1990s. These critiques are best understood in the wider context of the academic turmoil of the late 1980s and early 1990s. While the Vietnam War era had seen the introduction of radical and Marxist approaches to geography, these approaches began to be supplanted in the 1980s by ideas known collectively as postmodern (Blomley 2006). Postmodernism can be defined several different ways. In general it can be thought of as a change in philosophy from modernist thought–seeking metanarratives and connections between things or their structures–to an embrace of things as being ephemeral, relative, and constantly in flux. Postmodern thought then saw itself expressed as interest in power relations, the expression of power through text (discourse), and the understanding of these things through the philosophical process of deconstruction to find the roots of any object of study or problem (Harvey 1990). Within geography, these methods became known as "critical" in the sense of critical social theory (Blomley 2006).

Cartography was not immune from the postmodern turn. The earliest prominent application of critical theory to cartography was undertaken by J.B. Harley's "Deconstructing the Map" which appeared in the summer 1989 issue of *Cartographica*. Employing philosophical concepts pioneered by Jacques Derrida and Michel Foucault, he argued that maps should be treated as a form of discourse and therefore subject to power relations and deconstructive analysis. Power, he argued, is both exerted on cartography

by the patrons of mapmakers, whether they are governments or private industry. Power is then exerted by cartography when people use maps. As the producers of maps, cartographers “manufacture power: they create a spatial panopticon” (Harley 1989, p. 13). A fundamental shift had occurred in the understanding of maps. They were no longer viewed as objectively true representations of place, but rather representations embedded within subjective relationships of power between the cartographer and map reader. Harley’s introduction of postmodern critical theory was not without skeptics or detractors. Some have suggested that his exploitation of postmodern and post structural philosophy, which was very in vogue at the time, was opportunistic and relied on commentaries and summaries of social theory with no deeper engagement (Edney 2005).

In addition to Harley’s influential article and a few that followed, others picked up on postmodern critical theory as well. Denis Wood (1992) demonstrated that maps create boundaries and places as much as they represent them and that maps express power by what they show as well as what they omit. Mark Monmonier (1991 [1996]) discussed and analyzed how maps lie (an expression of power) through the cartographic process–generalization, projection, symbolization and color choice–as well as the purpose of the map being produced. By the new millennium, these works and others in this vein have been placed in the sub-field of “critical cartography” which seeks to examine the assumptions and meaning behind mapping and maps (Crampton and Krygier 2006). Understandably, these types of critiques were also applied to GIS around the same time (Crampton 2010).

While cartographers were beginning to grapple with understandings of power, knowledge, and representation, others were setting their sights on the growing GIS

community and its expanding influence. In a short 3-page commentary, Peter Taylor (1990) triggered a series of debates by attacking what he saw as the logical positivist underpinnings of GIS and its methodologies. He accused GIS as being nothing more than a means of collecting trivial facts and that its practitioners were, to the detriment of geography, ignoring the social relations embedded in their data. This in turn led to Stan Openshaw's (1991) now famous rejoinder in which he claimed that GIS could put "humpty-dumpty back together again." His central argument was that GIS provided a means whereby the myriad forms of geographic research could be brought back together under a single methodology. He also argued that geography had become a "soft" social science and that GIS was its ticket back to being considered one of the "hard" sciences with a spatial focus. This led to another back-and-forth (Overton and Taylor 1991; Openshaw 1992), curiously all within the confines of journal commentaries and editorials. It is also worth noting that at no point in these debates did either side mention any specific GIS methods – the controversy was entirely about epistemology and philosophy.

The influence of these GIS critiques was wide and long-lasting. By the mid-1990s, others had weighed in (Smith 1992; Shuurman 2000) demonstrating that outside the community of GIS technicians—few if any of these critiques were highly technical—debate and discontent were focused on how GIS fit into the discipline and what role it should play in the future. John Pickles's 1995 edited volume *Ground Truth: The Social Implications of Geographic Information Systems* brought together scholars from both sides of the debate in an attempt to reconcile their differences. In addition to the points already mentioned, there was a feeling among scholars of "cultural" geography that GIS

represented a return to the logical positivist days of the quantitative revolution in the 1960s. By the time *Ground Truth* was published, GIS was being offered by departments outside geography, and universities were increasingly looking for an expansion of GIS as a means to secure grants. Some geographers began to feel threatened that GIS could soon become the only acceptable way of studying geography at the university level (Schuurman 2000). *Ground Truth* had laid the groundwork for a less emotionally charged debate (meaning outside editorials and commentaries) by highlighting key issues such as the role of GIS, technological evolution and innovation, surveillance, representation, and public participation (PPGIS) (Pickles 1995).

After the publication of *Ground Truth* as well as a special issue of the journal *Cartography and Geographic Information Systems*[3], a new initiative was organized within the National Center for Geographic Information and Analysis (NCGIA) that came to be known as Initiative 19 or I-19. The goal was to bring together GIS scholars and critics to flush out the issues that had been raised in the aforementioned publications and to chart a way forward (NCGIA 1996). The result of the I-19 workshops as well as the continued expansion and adoption of GIS methods has been both a softening of the criticism as well as recognition of the critiques and their adoption into a variety of human geography-centered GIS studies (Schuurman 2000). It has also been argued that the implementation of the I-19 suggestions is an ongoing struggle and that despite some success, there is still plenty of room for improvement (Pickles 2006). It must also be noted that these debates, workshops, and critical publications took place external to much of what constitutes the GIS body of knowledge and, like critical cartography, were

[3] Later renamed *Cartography and Geographic Information Science*

centered on how GIS was being used, not the technical merits of specific GIS-based studies. This paradox was acknowledged even in the NCGIA I-19 report (NCGIA 1996, p.153).

The outcome of the "GIS wars" and the I-19 discourse relevant to the eventual conception of VGI and neogeography was the fostering of a new GIS category that involved the integration of GIS and public participation in the form of community based organizations (CBOs) and non-profit groups. The aim of PPGIS is to respond to critiques that GIS privileges elites by using it as a means to empower groups through geographic information analysis and mapping (Sieber 2006). PPGIS projects also endeavor to identify and understand issues regarding access to GIS technology, representation of different realities of landscape, stakeholders in GIS projects, how GIS software is situated in particular social and political contexts, and contributions to geography and GIScience (Weiner *et al.* 2002). Of particular note is the attention paid to how PPGIS projects are evaluated. A variety of studies have attempted to come up with a system to evaluate the effectiveness of a particular project at increasing awareness of the issue at hand, expanding the availability of GIS, and empowering participants (Barndt 2002; Sieber 2006). In the years since I-19, PPGIS has expanded to cover a wide range of topics based on community participation, including the environmental movement, urban design and planning, neighborhood revitalization, and even international development (Craig *et al.* 2002). In the developing world, the use of GIS to empower underrepresented groups can also reflect an evolution of counter-mapping principles first pioneered by Nancy Peluso and her research on how indigenous peoples in Indonesia use maps to maintain land-use rights (Peluso 1995). The final branch of GIS research to emerge as an outcome of the

GIS wars is the introduction of feminist research methods. An interest in and an acknowledgement of the positions of stakeholders in PPGIS projects have clear connections to classic feminist ideas of the "situatedness" of knowledge in general and the importance it in the outcomes of any project. Direct calls have been made for further engagement between feminism and GIS (Kwan 2002).

The Emergence of VGI and Neogeography

As the GIS wars were taking place and responses to those critiques taking form, a parallel interest was being raised in the cartographic community as to the role of the Internet and World Wide Web in cartography. Cartographers had developed an interest when the Internet began taking root in the 1990s as a means of easy communication and low-cost personal computers allowed for greater distribution of electronic multimedia maps and mapping software, including GIS. There was a sense that the Internet and Web-based cartography were emerging as a new paradigm informed by prior thought into how maps communicate, provide analysis, reflect and create power, and are tools for visualization of space (Peterson 2003). Early Web-based mapping tools like MapQuest and Yahoo! Maps were focused on driving directions but did not allow for user-contributed data (Haklay, Singleton, and Parker (2008). In 2004, OpenStreetMap was founded as a means for volunteers to contribute to a growing online set of maps that would be made available for free via the Web. Volunteers would use handheld GPS units to map streets. The project began in London and eventually spread worldwide (Schmidt and Weiser 2012). Google followed suit soon after with the introduction of their free Google Maps and Google Earth in 2005 which allowed users to make custom maps and

"mash-ups" via a free application programming interface (API) and numerous online tutorials (Schmidt and Weiser 2012).

Neogeography as a term first appeared in a guidebook on using location-aware features of a variety of online tools like blogs, RSS newsfeeds, and photo sharing websites like Flickr. Much of it involves the geo-tagging of information or photographs: a process whereby a user adds geographic coordinates to the metadata of the information or marks the location on an online map (Turner 2006). In 2007, Michael Goodchild wrote a brief article in *GeoJournal* that elaborated on the phenomenon of people sharing unprecedented amounts of location-specific information on the Web through social media and other such sites with little or no prompting aside from the ability to do so. He called this information "volunteered geographic information" or VGI. Neogeography therefore can be defined as the process of volunteering geographic information via social networking sites, online maps or a variety of tools that have become known as Web 2.0 (Turner 2006).

Early Encounters with VGI and Neogeography

Web mapping services such as Google Maps and Google Earth were recognized early on as introducing a more individualist slant to cartographic representation. Whereas more traditional maps provide a static representation of the Earth as demanded by the map's purpose, Google Maps and its clones let users customize their maps for a more personalized experience (Zook and Graham 2007). This customization is valuable insofar as PPGIS projects frequently attempt to accomplish a degree of "personalization" in the setting of a community organization by focusing on data collection and representation (Parker 2006), but the activities of web cartographers have to be

approached somewhat differently. Whereas GIS is interested in the underlying data in a map, web maps like Google's are centered less on data and more on pointing out locations, but this is changing.

Goodchild (2007) identified several activities that are central to understanding what producers of VGI do. Much of it is based on geotagging via online maps or GPS units. When people geotag an object or feature, they use either an online map service or a handheld GPS to find the geographic coordinates of any surface feature, and then use that information as part of a feature's identification. For example, a person could use a GPS device to find the coordinates of every bench in a park in order to make an informational map. In effect, Goodchild argues, people become a network of sensors that are constantly providing location-specific data to a variety of databases and maps that exist entirely in the virtual world of the Web and the Internet. This same article also marks the first appearance of the phrase volunteered geographic information.

As social media sites like Facebook and Twitter introduced location sharing features and the capabilities of Web mapping services like Google Maps and OpenStreetMap expanded in the last five years (Schmidt and Weiser 2012), as did the interest in the implications and directions of VGI and neogeography research. Sarah Elwood (2008) suggested that VGI research should be guided by lessons from PPGIS, feminism, and critical theory. Specifically, she pointed out the need for investigations into the role of software and hardware (the "digital divide"), the influence of corporate interests on VGI tools, the use and limitations of data, and the possibilities for VGI empowering underrepresented groups. Many of these same issues had previously been raised and addressed by early PPGIS projects as well (Sieber 2006).

VGI and Data Quality

One of the first concerns of VGI research was the quality of the information produced. Andrew Flanagin and Miriam Metzger (2008) explored the similarities of VGI tools to other crowd-sourced online communities like Wikipedia. They suggested that since the functioning of VGI tools were similar enough to other crowdsourcing technology that had proved accurate, it was reasonable to accept VGI as similarly accurate. They based this on the experience of websites like OpenStreetMap and Google Map Maker, which are edited both by human volunteers and by algorithms that judge whether or not contributions to those maps are accurate. For example, Google requires that user-moderated edits be based on local knowledge and be factually correct and verifiably so (Google 2013).

Mordechai Haklay (2010) followed up on issues of data quality with a side-by-side comparison of OpenStreetMap products and maps published by the British Ordnance Survey, the official state mapping agency of the United Kingdom. The study took place in London. OpenStreetMap began in London as a response to Ordnance Survey's policy of charging for the use of its maps and data. In Haklay's analysis, for areas that have high numbers of OpenStreetMap participants the quality and accuracy of maps is as good or as better than those of Ordnance Survey. However, where participation was low, maps were not as accurate. In addition, Haklay noted that OpenStreetMap products for low income, minority majority areas were less complete and less consistent than their Ordnance Survey counterparts, suggesting that OpenStreetMap volunteers were not coming from those areas and were less likely to venture into them to capture GPS coordinates and ground truth mapped features. It is also noteworthy that Ordnance Survey released a set

of products called OpenData for free in 2010 in response to mounting criticism regarding access to data (Ordnance Survey 2010). Hardy and his colleagues verified the implication that VGI participants are more likely to contribute information local to where they live as opposed to places further away (Hardy, Frew, and Goodchild 2012). They analyzed anonymously contributed geotagged information on Wikipedia and found that the likelihood of a contribution decreased exponentially as distance between the contributor and the place they were writing about increased. They were able to estimate the locations of anonymous contributors by the IP (Internet protocol) address logged by Wikipedia with each anonymous edit. These two studies have essentially validated the assumption that VGI is an expression of local knowledge.

Practicing Neogeography and Volunteering Geographic Information

The bulk of recent research into neogeography and VGI has been concentrated on understanding neogeography as a social practice. Mark Graham (2010) referred to Web-mapping tools as palimpsests, a type of ancient scroll that could be washed clean of its writing and reused. With a clear influence from post-structural thinking he asserts that the virtual places on the Web are being created, destroyed, rearranged, and remade constantly to suit the changing purposes of their creators. Going further, he observed that neogeographic practice has a spatial character grounded in people's interpretations of space. The challenge lies in leveraging the technology to effectively express that interpretation.

On the issue of technology, there has been some debate as to the extent that neogeography is simply a descriptive practice that provides no real depth or new understanding. Goodchild (2009) took a long view of that problem and related it to

ongoing public misunderstanding of what academic geography does. In his analysis, people can claim expert knowledge in geography because they experience it every day. However, people experience other properties of existence like physics, but there is no "neophysics." He attributed the emergence of a neogeography to the discipline's move away from ideographic regional studies and a resulting lack of popular press materials that explain more theoretical geography (both in the quantitative sense and the cultural sense). Combined with a lack of geographic education at the primary and secondary levels, segments of the public at large have embraced neogeography as a means of describing the spatial patterns around them. He also challenged academic and professional geographers to engage more deeply with neogeographic data and practice and pointed out an opportunity for geographers to better explain their relevance. Also, he argued that like neogeography, cultural and human geography have been increasingly focused on local knowledge and the empowering of local understanding through case studies and ethnography. As a technological means of expressing local knowledge without the need for the intervention of a researcher, VGI could have profound implications for the study of local-scale phenomena. Using VGI as sources of data and information has been singled out as the most likely way professional and academic geographers can engage with amateur neogeographers (Elwood, Goodchild and Sui 2012). However, there remain numerous challenges to this possibility, not the least of which are corporate control of datasets and extracting data from many disparate and incompatible technologies (Sui and Goodchild 2011).

Further highlighting the divide between amateur neogeographers and professional and academic geographers, Matt Wilson and Mark Graham (2013) facilitated an

interview between Andrew Turner, who wrote "the book" on neogeography, and Mike Goodchild. Turner, who by training is not a geographer[4], maintained that neogeographers are not merely acting as sensors but are "cognizant individuals" and is not particularly concerned with the types of critical and analytical work undertaken in academic geography departments. Goodchild described this split as "small-g" geography–the kinds of descriptive work being done by neogeographers and the everyday spatial experiences of people–and "big-G" Geography, the work being done by academic and professional geographers.

Martin Dodge and Rob Kitchin (2013) also addressed how neogeography may represent a split between amateur and professional geographers. They introduced the term "prosumer," which they borrowed from advertising and marketing. In the marketing sense, prosumer describes a device designed to fit somewhere between professional and consumer grade. The term is often used when describing models of digital cameras. Models that are not quite professional but also have some professional-grade features are often labeled as prosumer. This is relevant as they use it in a slightly different way to describe neogeographers as both producers and consumers of geographic information. When neogeographers contribute to, or creating online maps, they are producing information that they then consume when they use the map. They expand this analogy even further and attempt to fit it into a discussion of the evolution of capitalism since the end of the Cold War. In their view, neogeography fits a pattern of services being increasingly dependent on the labor of the person consuming the service, such as self-checkout lines at grocery stores. The company providing the service can then increase its

[4] Andrew Turner's background is in aerospace engineering. He now works for Esri and maintains a blog at http://highearthorbit.com/

profits by eliminating labor costs and moving the labor to the consumer. Google Maps is a good example of this business model. Google and other Internet companies are reliant on advertising revenue since many of their services are free. In order to improve both the quality of their maps, they enlist volunteers to edit the maps, thereby increasing their competitive edge and profit.

The discussion of the role VGI and neogeography play in divides between professional and amateur roles leads to a questioning of how they lend authority and credence to online maps. Increasingly, the role of map making is moving to private companies with national mapping agencies taking a reduced role. All of the products mentioned so far in this review exist independent of any government agency or public oversight, aside from the possibility that the information conveyed can be edited by anyone. The data that back up the maps remains in private hands however, and private companies and investors profit from it. Patrick McHaffie (1995) correctly predicted this would happen in his contribution to *Ground Truth*. Even during the GIS debates in the early 1990s, there was recognition that national mapping agencies were becoming less and less relevant to innovations in cartography, partly because of shifting attitudes and decreased Congressional appropriations. He also pointed out that by the end of the Twentieth Century, education in cartography was rapidly changing from a master/apprentice model, whereby a student spends years learning the art of cartographic design and representation, to a more Taylorist model of mass training. Looking back on this chapter eighteen years later, this is certainly evident in how easy it is for neogeographers to complete an online mapping task based largely on self-taught or intuitive techniques.

Online Mapping, Location-Based Services, and Surveillance

The potential for GIS, GPS and cartography to be tools of surveillance and violators of privacy were recognized early in the critiques of GIS's role in society. As access to these technologies has expanded and their usefulness increased vis-à-vis VGI and neogeography, so has interest in the role they play in harming a person's right to privacy. In a dissenting opinion in *Olmstead v. United States,* 277 U.S. 438 (1928), Justice Louis Brandeis famously described privacy as the "right to be let alone." What does this mean in an age where a person's location is routinely broadcast for anyone to find?

John Pickles (1991) was concerned with the role GIS was playing in expanding the surveillance capabilities of not only the state (and the military) but also the academy and its universities. GIS with its data processing capabilities, and especially those related to spatial data, gave the institutions that used it enormous power through the knowledge gained from them. This application of Foucault's exploration of knowledge and power in relation to cartography, GIS and related technologies had been pioneered by Harley (1989) and persists in more recent analyses by Jeremy Crampton (2010), who uses Foucault to explain how surveillance behaviors become normalized as a result of expanding use of technology. Additionally, the issue of the military's role in GIS development and the application of GIS for military means were not lost on Neil Smith (1992) when he called the Persian Gulf War the first GIS war.

In his 2002 book *Spying with Maps*, Mark Monmonier explored privacy and surveillance issues beyond those concerned with just GIS, but included aerial and satellite imagery, address matching, and traffic monitoring cameras as technologies that

contribute to an expanding culture of surveillance. The more public availability of satellite imagery led to the release of Google Earth in 2005 and brought satellite imagery into popular culture (Schmidt and Weiser 2012). Monmonier (2002) explored the idea of locational privacy in the epilogue. There, he referenced George Orwell's famous novel *Nineteen Eighty-Four* and its introduction of Big Brother into the English lexicon. He argued that the benefit of using location-aware technology, like a GPS radio in a cell phone that can help 911 operators find a caller, must be balanced against their potential abuses. For example, the manufacturer could track customers for the purposes of advertising to them based on where they are and where they have been could in theory, use the same GPS radio. This was an astute observation— Web companies now routinely tailor advertising based on location and services like Foursquare are designed so that restaurants and small businesses can target advertising and discounts to people who visit frequently. Locational privacy, he argued, is a relatively new concept based on the emergence of technology that can track individuals with ease. He recommended that balance could be achieved through opt-in requirements that would force users to explicitly allow themselves to be tracked.

Bandana Kar and her colleagues (2013) surveyed people across the United States in an effort to better understand attitudes toward location privacy and tracking. They found that most people surveyed agreed that privacy, when one is in the confines his or her own home, is the right to be left alone unless a law is broken, and to not be subject to unwanted observation or recording. Despite this, they found that people do not believe that a company collecting information about them violates their privacy, although the same action by a government agency would be a violation, as would a third party sharing

their information on social media. These contradictions demonstrate that even a decade after Monmonier wrote about location privacy and more than two decades after privacy and surveillance issues were raised in the GIS debates, the idea of location privacy continues to vex people. Barring a definitive legal ruling on the nature of location privacy, it is likely that it will continue to be a "myth" as Kar *et al.* say in the title of their article. It is worth noting here, though, that in *United States v. Jones*, 565 U. S. ____ (2012), the Supreme Court ruled unanimously that the FBI could not track suspects via GPS devices without a warrant, as it was a violation of the Fourth Amendment protection against unwarranted searches.

Emerging Topics in VGI and Neogeography

Neogeography and VGI have been identified as contributing to the concept of "Big Data." Viktor Mayer-Schönberger and Kenneth Cukier (2013) define big data as the sum total of all digital (and non-digital) information produced by humanity in any given time frame. The concept encompasses information recorded from a variety of sources, usually as a result of online activity, and can include purchase histories, Web search histories, Internet radio listening preferences and increasingly, location-specific data – a large enough scope to warrant the adjective "big." This information is usually stored in separate facilities, is owned by different companies and formatted in different ways. As a result, combining this information into one dataset for analysis can be very difficult. But when that can be accomplished, the results can be quite astonishing. The aforementioned authors point out the case of a recent advertising campaign by the Target store chain. Target was able to associate individual purchases made by customers using Target credit cards to accurately predict when female customers were pregnant in order to send their

customers timely coupons and related offers. Essentially, Big Data has the potential, they argue, to eliminate the need for surveys and sampling as the sheer volume of available data, combined with increasingly powerful processor capabilities, negates the need for smaller datasets. Dan Sui and Mike Goodchild (2011) also acknowledge the potential of harnessing the vast amount of VGI data present on the Web and elsewhere to draw new conclusions about places, cultures, and perceptions of landscape. The abundance and continued growth of VGI also leads them to conclude the society as a whole may be taking a "spatial turn" by becoming much more engaged with and aware of the places in which they live.

Leveraging Big Data and social media also has the potential to change the way teaching takes place. In a novel use of Twitter's location tagging features and GPS units, James O'Brien and Kenneth Field (2012) created what they termed a "geocollaboratory" during a field class in Malta. Instead of having their students embark on their own and combine their results later, they had them use Twitter to keep in contact and to keep each other of where they were located on the island. All of their observations were then able to be geotagged later, and the 140-character limit of Twitter posts (tweets) forced the students to be concise and focused in their discussions. They also combined these techniques with an ArcGIS geodatabase to catalog all of their tweets for later analysis, essentially creating their own Big Data dataset. They were satisfied that this form of collaboration was helpful with teaching the students field methods and plan to continue developing it.

Another recent study by Sebastien Caquard (2013) noted how online maps are being used to tell stories. Narrative cartography has been a topic for many years, but Web

maps, he argued, are changing the way people create narrative maps. Most importantly, Web maps have a standardized appearance with little opportunity for creative cartographic representations. He labeled the street map that Google Maps and others use as a base map a "grid map" and noted how creative representation on them is limited to points marking locations of things. While this can be used as a type of cartographic narration, it is more limiting than other means of making maps that do not rely on the grid-like street map. On a more positive note, however, he noted that the evolution of intuitive interfaces on Web mapping applications has led to activities once considered tedious to become enjoyable, such as digitizing features from aerial photographs.

As research into neogeography, VGI, and Web mapping have proliferated, there has been an increasing critique of the use of "neo" as a prefix to "geography," and positioning of neogeography as a possible return to un-critical uses of GIS. Agnieszka Leszczynski (2014) has been deeply critical of the framing of Web-based geographic information gathering and visualizing as somehow "new" and has argued that such a framing contributes to conflating information with knowledge.[5] She furthermore asserted that neogeography is instrumentalist in the sense that it is politically neutral. Muki Haklay (2013) has been similarly critical of the claims that the technology can "democratize" geographic knowledge and has resolved issues with GIS raised by PGIS (PPGIS) advocates in the late 1990s. He further cautioned that more must be done to ensure that access to the technology is not limited to those with the technical skills to use it. These critiques are strongly reminiscent of the previously discussed "GIS wars" in that they envision a "return" to descriptive geography, assuming such practices ever

[5] Leszczynski introduces yet another term: "neo, geography." I continue the use of "neogeography" here for the sake of clarity and because it appears to be the dominant use in the literature.

disappeared. While these concerns are valid, it is important to acknowledge the potential power of naming a location and marking it on a map, especially an electronic map that can be shared easily and widely. Such description is often the first step to more active political endeavors, such a counter-mapping and activism.

Conclusion

Research into online mapping practices, VGI and neogeography are ongoing. Some of the lingering questions that remain to be investigated relate to how VGI can inform other areas of geographic research, aside from how it contributes to new GIS-based methods. For example, the content of VGI might be just as useful as its geotagging. In addition, a legacy of insightful critique into the power of cartography and how it fits into different political and social contexts provides a solid theoretical backing with which to explore emerging GIS-like technologies. It would also appear that there has been a convergence recently of research into GIScience and cartography. While the two have always shared some commonalities——the final output of a GIS project is usually a map—the two fields have remained somewhat separate. More recently, there has been engagement by cartographers with problems and applications of electronic mapping as traditional ink and paper cartography becomes increasingly an historical artifact or something left to artists and illustrators. Many have called this a democratization of GIS and cartography, but as many years' worth of PPGIS projects show, this may not be the case. VGI and neogeography will likely continue to leave many questions unanswered for some time, especially in how they may be used to inform discussions of landscape and empower those who previously could not access the tools needed to produce high-quality map products.

Chapter 3: Google Maps and Neogeography Workshops

Google Maps – Background and History

Before beginning a discussion of how online maps are being leveraged by community-based organizations, it is prudent to explore their evolution and the history of Google Maps in particular. I chose Google Maps for two reasons. First and foremost, it provides a graphical interface with which to make new custom maps and to modify existing ones. This is a feature that few others provide. For example, OpenStreetMap provides tools for graphically editing the map, but does not allow for a user to create his or her own custom map. Second, Google does not charge a fee to access the more advanced features in Google Maps Engine, Google's custom map-making tool. The only other online mapping tool that allows a user to share and create custom maps (that is not somehow based on Google Maps) is Esri's ArcGIS Online, which does charge for its use. This chapter will discuss the background, history, and interface of Google Maps and Maps Engine and discuss the workshops held in August 2013.

Google launched Google Maps in February 2005, four months after acquiring Keyhole, the original developer of the software platform now known as Google Earth. The application programming interface (API) was released publicly and for free in June 2005, allowing web designers and those with some knowledge of coding to create rudimentary custom maps (often with only a few locations marked) and to embed them into a webpage. May 2007 saw the addition of Street View to Google Maps, allowing users to see a panoramic image of the view from street level. The first major change to making Google Maps editable came in June 2008 with the launch of Google MapMaker. This application allows users to graphically change the public Google Map and submit

their changes for review by the larger community of users. This is similar to the OpenStreetMap concept of a "crowd-sourced" or publicly contributed and edited map. Features such as building footprints, streets, points of interest, labels, colors, and other cartographic elements can be added or altered. In addition, any of the underlying attributes for a map feature can be changed. For example, a street can be labeled as one-way or two-way and this attribute is then used when calculating driving directions.

Google Map Maker, despite its name, does not allow for the creation of custom maps. Around mid-2012, Google's webpage catalog of services and tools for business was quietly updated to include Google Maps Engine. The original version became known as Maps Engine Pro after a free version was introduced. For a fee[6], a business customer could use Google Maps as a base map, upload data in the form of spreadsheets or raster images, and create their own custom set of maps for internal use or to publish for public use. These maps are therefore interactive and feature all of the tools built in to underlying base map, such as driving directions, transit routing, and the ability to view the world as a map or a mosaic of satellite imagery. The necessity of using geographically coded data in a spreadsheet format brought Google Maps closer to the realm of a traditional geographic information system. But instead of providing a downloadable piece of software, all data are stored on Google's servers, where image and data processing also takes place. Furthermore, Maps Engine utilizes Google's collaborative editing capabilities, allowing multiple users access to the same map simultaneously and to make changes simultaneously from any Internet-connected computer.

[6] Google's cost structure for Google Maps Engine is not advertised. They claim to offer prices to prospective customers based on project goals, organization/company size, estimated amount of data used, etc. Their ever-changing website can be found here: http://www.google.com/enterprise/mapsearth/

By the fall of 2013, Google had introduced the Maps Engine Lite platform. For free and with a radically different interface than Maps Engine Pro[7] which is available for purchase, the Lite version allows a user to upload three layers worth of information as either points, lines, or polygons or in the form of a spreadsheet that could be displayed as any of the above. While the same could be done with the API, the Maps Engine Lite offers a graphical interface so that a user with no knowledge of coding can create and share his or her own custom map. Shortly after releasing Maps Engine Lite, Google also added the pro version to their grant-funding model for educational institutions and non-profit organizations. Among other initiatives, Google will waive the cost for the service for qualifying groups (Google 2014).

In less than a decade, Google has positioned itself as a purveyor of one of the most comprehensive online mapping applications in the world. Esri's ArcGIS Online is more analytically advanced and has more features but comes at a cost and with no free version available.[8] Given how ubiquitous Google has become in our increasingly connected world, its position in the online mapping universe cannot be ignored or underestimated. I chose to use Maps Engine Lite as the basis for the workshops partly because of the widespread familiarity with other Google products and their particular interface design. Additionally, the interface is fairly simple and intuitive and more focused on cartographic uses than the data-driven basis of Maps Engine Pro. However, these differences would prove an added challenge for the Syracuse Poster Project when

[7] I coincidentally had the opportunity to speak to a Google employee at the Association of American Geographers conference in Tampa, FL in April 2014. According to the employee, there are two entirely separate teams for the Lite and Pro versions of Maps Engine. The two versions should be considered two entirely different applications as opposed to two versions.

[8] Esri offers a free trial of ArcGIS Online that is only valid for 30 days.

its organizers received a grant for the pro version. What follows is a description and discussion of both versions, their differences, and the implications for online mapping.

Maps Engine Lite

The interface for Maps Engine Lite is set up similarly to the regular Google Maps window in a browser. Instead of a sidebar on the left with options for search and directions, there are options to add data in the form of a spreadsheet or to simply draw points, lines, or polygons directly on the map. In keeping with the "lite" nomenclature, a

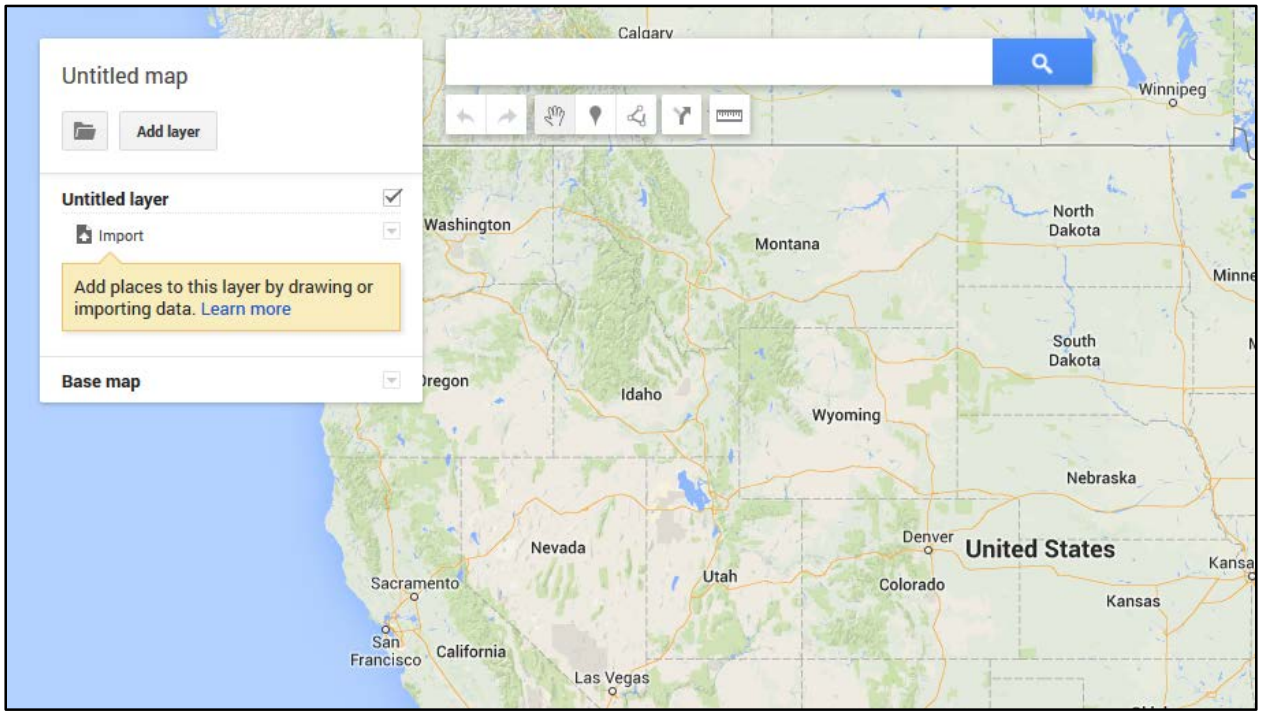

Figure 1 Maps Engine Lite Interface

user is limited to three (3) layers of data and 100 features (points, lines, or polygons) per layer. Each layer can be given a name and short description. There are several options with regards to the look of individual features that mirror what can be done in a GIS. Polygons can be shaded according to nominal or ordinal data as can lines. Line weight can also be adjusted if the necessary data are present. Points can be symbolized using a number of icons provided by Google. Each set of icons is organized based on its intended

purpose, such as a set for recreation, a set of weather icons, etc. (see Figure 4). The ability to essentially draw directly on the map is probably the most powerful feature of Maps Engine Lite. Without importing data from a spreadsheet or database, a user can begin placing features based on visual cues from the existing street map or satellite imagery. After a point, line, or polygon is drawn, Maps Engine Lite creates an associated data field where the user can add data attributes for each feature. No programming or cartographic background is required. While these features might seem innovative, their emergence was predicted long before Google Maps was created (Taylor 2003).

In 2003, D.R. Fraser Taylor listed seven major elements of the then-fledgling concept of cybercartography. He stipulated that cybercartography (online maps) would be multisensory, multimedia, and interactive; apply to a wide range of topics; exist as part of an analytical package rather than be a stand-alone product; and be compiled by teams from different disciplines, and involve new research partnerships (Taylor 2003). Placing Maps Engine Lite into this framework reveals that these early predictions were quite shrewd. Taylor described a multisensory map experience as being one that is visual, auditory, and tactile along with the stipulation that eventually maps could incorporate smell and taste. Maps Engine Lite meets at least two of these senses immediately: its displays are inherently visual and have the ability to be used on a tablet or smartphone which qualifies them as distinctly haptic. Regarding multimedia, the software allows for the integration of photos or links to other websites as part of the description for each map feature. Interactivity is by necessity integrated into any online map. The entirety of the map experience can be controlled by the user, who can turn layers on and off, re-symbolize any map feature, or change the actual base map itself. But what about Taylor's

prediction that online maps would be part of a larger analytical package open to different disciplines, research partnerships and being applicable to a wide range of topics? To explore these, I turn to Maps Engine Pro.

Maps Engine Pro

While it might be tempting to think of Maps Engine Pro as a similar, more fully-featured version of Maps Engine Lite, they are in fact two very different applications. Maps Engine Pro meets the requirements of Taylor's analytical package element. Unlike Maps Engine Like, Maps Engine Pro begins with a data management interface and further divides map layers into their source files, the layer itself, and its connection to a map (See Figure 3). Instead of allowing the user to draw features on the map and build a table from scratch, the Maps Engine Pro mandates that all map features be data driven from the beginning. The benefit is that more data formats are supported, such as Esri shapefiles and Google Earth-based KML files. KML stands for keyhole markup language and is the file format data layers built into Google Earth. The support for KML makes Maps Engine Pro compatible with any custom layers created in Google Earth and allows for Maps Engine layers and maps to be opened in Google Earth. Shapefile support makes the pro version compatible with any data that is formatted to be used in ArcGIS, including downloadable data from any number of governmental sources including the US Census Bureau.

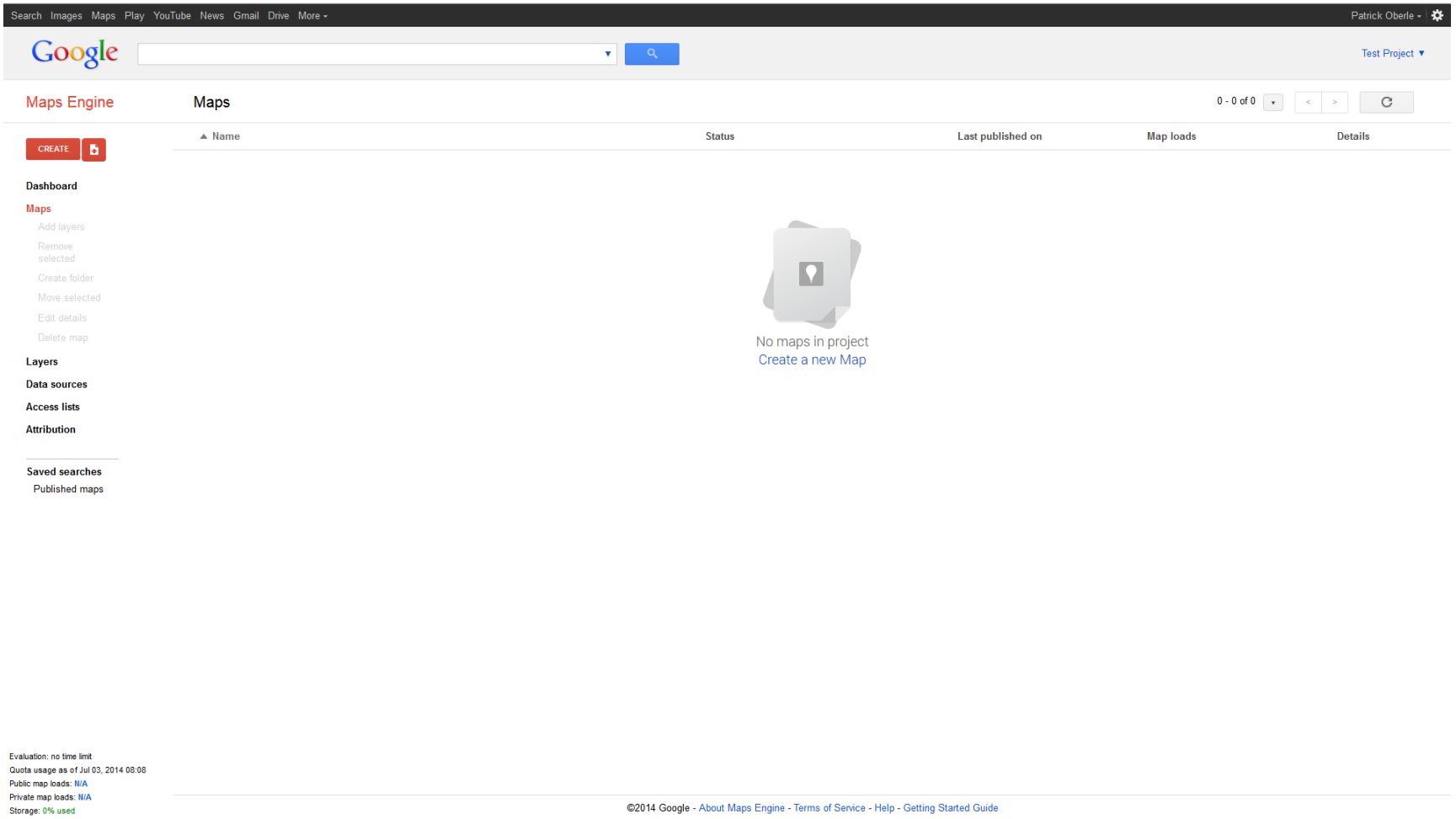

Figure 2- Maps Engine Pro administrative interface

The process for working in Maps Engine Pro is markedly different and requires more planning and forethought. Maps are built here from the bottom up, beginning with external data. Once a data set has been formatted and uploaded correctly, it can be processed into a layer and symbolized. The layer can then be linked to any number of maps as needed. The map is therefore a separate entity from the layers and their associated data. Each map that is created can then be managed and sharing permissions can be established. This function allows the map author to limit who can further edit the map or who can see it. In addition, the author can use sharing controls to specify the user's ability to control the map's interactive features. This data-to-layer-to-map paradigm makes the pro version remarkably similar to commercially available GIS software.

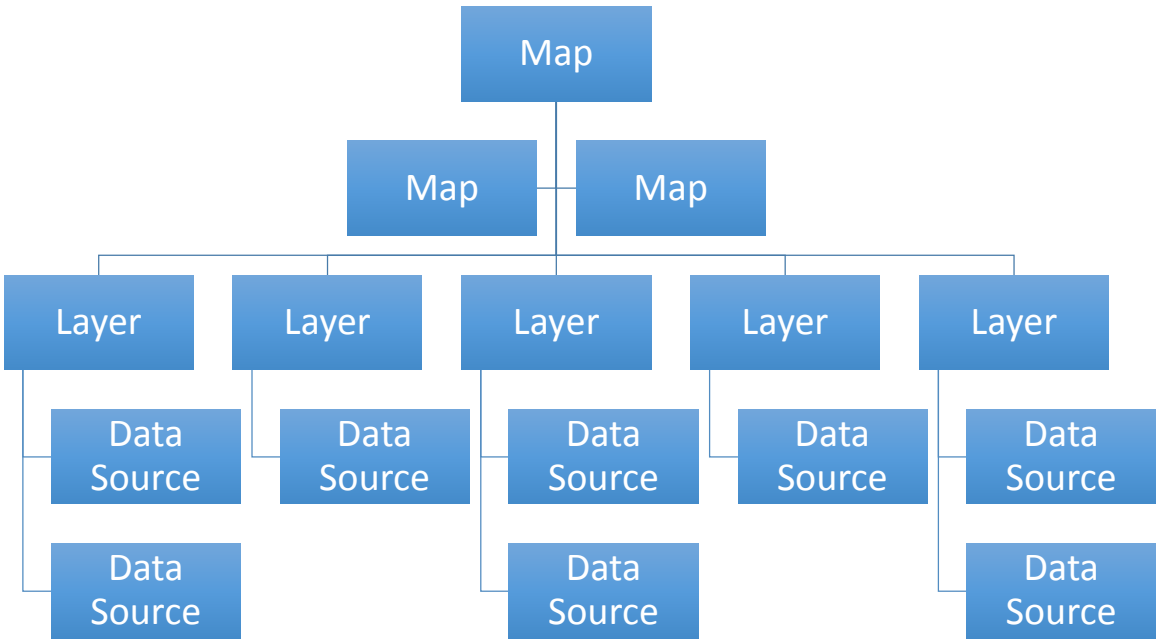

Figure 3: Google Maps data hierarchy

Figure 4- Maps Engine Base Maps

Taylor's cybercartography concept with the map as the center of an information package is the most useful way of thinking about Maps Engine. Similar to a GIS, the pro version at its heart is an information management system that uses maps to express a central theme or narrative. But unlike a GIS, Maps Engine lacks a comprehensive set of analytical features. There are no statistical tools, route management functions, or anything similar. Instead, Maps Engine is more concerned with interactivity and the presentation of descriptive spatial information. The goal is to make a map that facilitates the visualizing of data for its users while hopefully being engaging and dynamic. Despite the flexibility of being able to choose base maps and activate some layers and not others, there are few options when it comes to actual design. The user is limited to Google's selection of base maps that range in detail from the common street map to a sparse greyscale map as well as satellite views (See Figure 3, above). There are a variety of icons to choose from in addition to color and line weight options. However, the icon

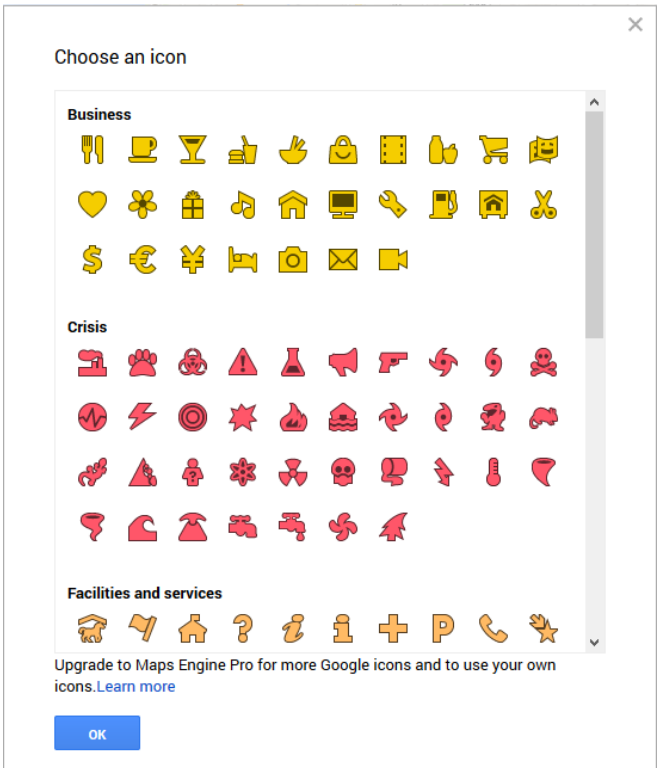

Figure 5- Maps Engine Icons

choices do not reflect every possible use for maps, only what Google considers to be the most common. There are large sets for disaster-related maps, weather, business icons, and icons related to recreation (See Figure 4). Authors can import their own icons in Maps Engine Pro, but the process is laborious and is not available in Maps Engine Lite.

As Taylor argued accurately, cybercartography, in the form of Google Maps, leverages the power of the Internet to link various kinds of data through a map. The most apparent way Google Maps Engine does this is by allowing the use of HTML[9], the standard Web layout language, in interactive windows that appear when a map feature is clicked. This makes the map a vehicle for accessing other Web-based resources. HTML support also fulfills Taylor's multimedia requirement by allowing images to be embedded in the pop-up windows.

Teaching Google Maps Engine

Teaching a novice how to use any software application involves a learning curve that is embedded in the notion of a digital divide. Essentially, there is a gap between those who know how to use computer technology and those who do not. Consider the following essential skills that must be mastered even before a user begins the process of making an online map. First, he or she needs a basic understanding of how, from a user's point a view, a computer operates on a practical level (as opposed to the science behind computer operation). This means being able to power it on, log-in to the operating system, and access the appropriate software. To accomplish those tasks, the user must understand not only how to use a computer mouse and keyboard but also understand the visual metaphors inherent to contemporary computer systems, like windows and buttons.

[9] HTML is an acronym for hypertext markup language

For Google Maps Engine in particular, there are additional requirements. Users must access a Web browser and log-in a second time using a Google account. Due to the underlying data that Maps Engine employs, users need to know how to create and access a spreadsheet by way of additional software like Microsoft Excel. They must be able to locate the appropriate spreadsheet file in the computer's file system. If the spreadsheet is going to be used to place points on the map (either via geocoding a postal address or using geographic coordinates), the user must be able to format the spreadsheet to Google's specifications. Maps Engine also supports Esri's shapefile format that is part of ArcGIS so if the user would like to use that kind of file, additional knowledge is needed. Before a single virtual pin is tacked on the map, users have to accomplish a whole series of tasks unrelated to making online maps. To a person who uses a computer daily, this is not an issue (or should not be), but if it is, the potential pool of online mapmakers has already been limited.

This particular set of workshops (as described in Chapter 1) were designed to weed out some potential digital divide problems from the outset. Participants were recruited from organizations that presumably use computers daily and the announcement advertised Google Maps as the focus of the workshop. Despite this precaution, there remained some minor issues getting participants logged-in to the computer and into Google Maps Engine, especially if they appeared to be middle-aged or older. While I did not survey the participant's demographic information, it is worth noting that both workshops appeared predominantly white, and evenly split between men and women.

Most participants also appeared to be at least middle-aged with only a few younger individuals.[10]

Workshop Format

The workshops were held over a period of two days in August 2013. Participants were solicited by the Central New York Community Foundation (CNYCF) as part of their ongoing summer workshop series for non-profit organizations. The workshops were part of a collaboration between CNYCF and Syracuse Community Geography (SCG). In the past, SCG had hosted similar workshops on GIS and the use of US Census data. CNYCF entirely handled the recruitment of participants and initiated the idea to hold them based on interest they had received in surveying the organizations they work with. The pool of participants brings up some concerns. First, this cannot be considered a representative sample of the non-profit sector as a whole or of those interested in creating online maps in general. However, CNYCF is greatly involved with non-profits and community organizations in Syracuse metro area so its reach is fairly wide. The second concern is that these participants knowingly signed up for a workshop in online mapping practices. We can presume that they had a basic knowledge of maps generally and online maps more specifically. It is also safe to say that they may have already had an idea in mind for creating an online map or at least had some data pertinent to their organization that they thought had a geographic component.

This second concern is not necessarily problematic and was in fact, a somewhat desired circumstance. While Google provides a means for anyone to create his or her own map of anything, exploring that usefulness requires the subject of the map to be more

[10] I did not ask participants to list their age. All estimates of age are based on my own observations and are qualitative in nature.

than a person's preferred jogging route. Organizations that focus on community and social issues have a vested interest in communicating their work as effectively and widely as possible in order to reach their targeted populations and justify their work for donors and government grants.

The workshops took place on the campus of Syracuse University in Syracuse, NY in a computer lab under the control of the Department of Geography and the Maxwell School of Citizenship and Public Affairs. This lab had been used in previous workshops held by the CNYCF and Syracuse Community Geography. Every participant had access to a desktop computer and most worked alone. All stations have a view of a centrally mounted projector screen and participants were encouraged to position themselves to see it easily. The capacity of the lab is twenty (20) and with eight (8) participants per workshop, there was plenty of room. The lab also benefits from having a long row of windows allowing natural light. Each two-hour workshop session began with an overview of online maps and GIS as well as a discussion of what free resources are available for both. Working with a pre-established set of data, I demonstrated the basic functionality of Google Maps Engine Lite and how it handles importing and mapping location-based data. Participants had the option of using their own dataset if they brought it or could otherwise access it via the Internet or they could use an assortment of spreadsheets I provided. The entire demonstration period took approximately one hour with the remaining hour allotted to letting participants work on their own. Most of them took advantage of this time to ask questions and work on their own maps. Following each workshop session, participants were asked to complete a brief survey.

Survey Results and Participant Observations

The survey (see Appendix I) was comprised of eleven questions in a mix of Likert-scale responses and free-response questions. Likert-type questions asked respondents to choose a response along a five-scale continuum of possibilities. Such questions can be subjective but were designed to be as clear as possible (Fowler Jr. 2009). Although the sample size was small, 18 respondents in total[11], there are some interesting conclusions we can draw from the responses. First of all, approximately two-thirds of participants reported that their organizations had used maps before, either online maps or some other kind including traditional paper maps. In addition, all but one participant pointed out that the tools presented in Google Maps Engine Lite were sufficient for their organizations mapping needs. In isolation this does not say much; however when combined with my experience with Community Geography and other, so far as community based organizations are concerned, mapping needs appear to be relatively simple and that map use for community-based social services and education (which represent the majority of participants) is common. I call their needs simple because Maps Engine Lite does not contain any geographic analysis tools and limits the amount of data a user can enter into it. This is reaffirmed by the fact that only one-third of the participants responded that they were interested in performing any kind of analyses while the remaining 67% were interested in pointing out locations, marking service areas or showing routes to or from their places of operation. Regarding the ability to learn on their own, participants' responses were mixed. Only one responded "definitely" to the question about being able to learn independently, 28% replied probably, 22% were

[11] Not all participants filled out a survey. One organization on each day had sent two representatives who only filled out one survey on behalf of their organization.

uncertain, 28% replied probably not, and 17% replied definitely not. This might be attributed to the participants' comfort level with technology in general, or an uncertainty about the capabilities of the software.

Table 1: Survey Responses

Question	Response	Number of Responses	Percentage
Would you have been able to learn the techniques demonstrated today on your own?			
	Definitely	1	6%
	Probably	5	28%
	Uncertain	4	22%
	Probably not	5	28%
	Definitely not	3	17%
What aspect of mapping is most important to your organization? (could choose more than one response)			
	Pointing out locations	8	44%
	Marking service areas	7	39%
	Showing routes	5	28%
	Performing analyses	6	33%
Will your organization use online mapping tools in the future?			
	Definitely	11	61%
	Probably	5	28%
	Uncertain	2	11%
	Probably not	0	0%
	Definitely not	0	0%
Question	Response	Number of Responses	Percentage
Has your organization ever used maps (either paper or electronic) before?			
	Yes	12	67%
	No	6	33%
Are the tools used today generally sufficient for your organizations mapping needs?			
	Yes	17	94%
	No	1	6%

How important is cost to your organization when it comes to choosing an online mapping tool?			
	Not important	0	0%
	Somewhat important	2	11%
	Neutral	1	6%
	Important	6	33%
	Very important	9	50%
How important is the availability of free data to your online mapping needs?			
	Not important	0	0%
	Somewhat important	4	22%
	Neutral	1	6%
	Important	4	22%
	Very important	9	50%
What sector does your organization work in? (could choose more than one)			
	Health	1	6%
	Education	7	39%
	Environment	0	0%
	Community development	7	39%
	Social services	7	39%
	Other	4	22%

Particularly insightful given the small sample are some of the qualitative free-response replies regarding map use and its benefits. Many of the participants noted, either on their surveys or in conversation during the workshop, that their organizations maintained data in spreadsheets and compiled narrative reports of activities. They further maintained that these data and associated narratives could be more useful if they were represented on a map. They viewed maps as “easier to share with visitors” and “better than giving a description.” These statements reveal that participants’ interest in online maps is with their use (or potential use) as a means of communication, rather than for

personal analysis. This is reinforced by further free-form statements[12] about needing maps to supplement grant applications insofar as maps support and reinforce claims made in other narrative portions of the grant application. These results confirm recent reports suggesting an expanding style of online maps that are used to tell stories and act as the main interface for retrieving location-based data (Caquard 2013). Participants alluded to potential problems using such maps as a means of persuasion or even coercion, but such ideas have been covered extensively[13] and such a discussion is not my purpose here. Regardless of their end goals, these organizations see maps as both necessary and beneficial to the communication of their missions and services.

Discussion of Workshops, Caveats and Communication

As discussed in Chapter 1, my original goal was to have the workshops fit into a participatory framework, in which I instructed the participants in the basics of Google Maps Engine but largely let them figure out what to map and how to map on their own. This seems to have worked reasonably well. Most participants already had ideas of what kinds of things they felt their organizations could map. In most cases, this involved creating maps of their members or those who use their services. Based on the workshop experience, I feel comfortable asserting that online mapping tools, despite their relative simplicity when compared to "professional" software like ArcGIS, remain beyond the reach of many. As stated earlier, few felt that they could have learned it on their own. Many of the questions that came up during the 'work on your own' time involved concepts rather than technical questions on how Maps Engine works. Table 2 below

[12] These statements refer to undirected conversations with workshop participants. See Appendix 2
[13] For extensive treatments of the power of maps to persuade, see Mark Monmonier's *How To Lie With Maps*, Denis Wood's *The Power of Maps*, or Jeremy Crampton's *Mapping: A Critical Introduction to Cartography and GIS* among others.

provides a summary of needs that participants had and how those needs relate to the capabilities of Google Maps Engine.

Table 2: Mapping Needs

Need	Possible with Google Maps	Possible with a GIS
Visualizing point locations	Y	Y
Provide directions	Y*	Y
Delineate service areas of locations	Y	Y
Visualize polygon-based spatial information (i.e. Census data	Y**	Y
Companion to printed grant applications	N	Y
Perform some kind of spatial analysis (no specifics on what kind of analysis)	N	Y
Analyze driving routes for efficiency and time	N	Y

*Y = yes; N = no. *End user can calculate driving directions, but the provided route cannot be saved. **GIS shapefiles can be imported, provided the user has knowledge of their operation and how to locate and download GIS data.*

Of the geographic and cartographic concepts that participants asked about, privacy appeared to be a primary concern. This might be the result of the areas in which the participant organizations operate – many work in providing services to underrepresented social groups and the poor. It could also be the result of timing, as the workshops took place in the immediate aftermath of the Edward Snowden revelations in the months of May, June, and July 2013. Privacy, especially privacy in the context of the Internet and mobile Internet-connected devices, was certainly on the minds of anyone following the news at the time. There was some concern about placing their data, even if they had been stripped of most personally identifiable information, into the hands of Google. There was also concern about exposing their organization's volunteers,

employees, and those they serve to unnecessary or harmful scrutiny by the public. One could easily imagine a scenario in which a volunteer with a local health promotion organization could be harassed at home for distributing materials on sexual health by those who disagree with the idea.

The issue of privacy as it relates to the corporate ownership over the means of online map production and data storage is more complicated. I also do not think that it would have come up without the disclosures and leaks by Snowden. Without getting into a lengthy discussion of the exact legalese regarding data someone gives to a third party, there is generally a lessening of the original owners' control over that data. This is complicated by the often lengthy terms of service a person or organization tacitly agrees to when using most websites or online applications. For Google's part, the terms of service for Maps Engine (which amount to 13 pages) expressly permit Google to do as it pleases with any data uploaded into its systems: "As part of providing the Service, Google may store, process, and serve Customer Data in the United States or any other country in which Google or its agents maintain facilities. By using the Services, Customer consents to this transfer, processing, and storage of Customer Data" (Google 2014). This fact was not explicitly discussed at length during the workshop, but participants were quite astute as to the nature of the problem. All of the benefits of online mapping become somewhat muted when we consider that the data mapped fall out of the direct control of the person or organization making the map. Taylor maintained that the Internet's inherent ability to create links between various data sources and bring them together through online maps is a beneficial one. However, there is the potential for privacy and legal concerns with this idea. While companies like Google might set their

own terms of service, the laws of the countries that house the physical servers storing the data also must be accounted for. For example, data stored on a Google server in Russia or China might not have the same privacy protections as data stored on a server in the United States. John Pickles recognized GIS (as it existed then) as being embedded in wider societal and cultural contexts (Pickles 1995). However, he may not have then anticipated how data, transferred via the Internet and Web, could become embedded in any number of *different* societal and cultural contexts, not just those of the person who originally uploaded the data or used them first.

Helen Nissenbaum (2010) described such societal norms as a framework of contextual integrity. According to this framework, a refined (yet complex) system of social norms governs the flow of information in specific societal contexts. Such norms evolve over time as technology and society changes, but maintain their presence as a way to protect people from harm, sustain the functions of society, and balance the power of different groups. It is only when contextual integrity is violated do people in a society act with alarm and concern. Regarding the privacy concerns of workshop participants, it is possible that some of their concern relates to the violation or evolution of the contextual integrity in which they work. Social-service organizations that work with sensitive personal information—regarding children or minorities especially—must often take great pains to protect that information. Being able to map such populations might be useful to an organization in optimizing their services, but could open those populations to harassment. Some privacy requirements are legally mandated while others have been established as common practice. The willingness of a community organization to engage online mapping may therefore heavily depend on its own contextual integrity or that of

the organization's senior administrators. Even with access control features built into Google Maps Engine and other mapping software, it is unlikely that companies producing such tools have accounted for the wide variety of restrictions needed to satisfy a widening pool of map authors and users.

We can acknowledge three facts regarding privacy and online maps. First, all of the issues involved in locational privacy broadly also apply to online maps. This includes simply knowing where someone or something is and pointing out this location to others, perhaps without the consent of the person being pointed out. Second, we must start thinking more broadly beyond just the finished online map but also towards the data that forms its backbone. If an organization or a person gives their data to a third party, such as the corporate owner of an online map making application, then that organization or person must be ready to sacrifice control over that data. Third, the very nature of the Internet means that a dataset need not be stored, physically, anywhere near the person using it or near the corporate headquarters of the company providing access. Data can be located, literally, half a world away. This means that the laws and practices of other countries could also come into play. When applying the contextual integrity framework, we have to stop and ask whose social norms apply to data stored in different municipalities and states. As mentioned above, Google could store sensitive data in a country with weak privacy regulations, which may open it up to digital eavesdropping or theft. Again, Taylor's claim that cybercartography would be more of an information system is generally correct, but at the cost of having to better understand maps not as standalone visualizations but as the result of data and the practices associated with storing and accessing data.

Conclusion

The workshop format revealed that creating online maps remains a complicated process that has not yet reached the simplicity of drawing shapes on a piece of paper. The convergence of online mapping applications, particularly Google Maps, with more traditional GIS software means that the digital divide will continue to be an issue. The promise remains that online maps will make cartography more accessible to the public at large and that creating maps will be easier. However, this also means that a new set of terms and practices will have to be learned. This may turn out to be generational. Young people are generally more computer-savvy than their parents and grandparents. Though Google does not release data on its registered users, I would suspect that the majority of those using it's map-making products are relatively young, less than fifty years old. As an art and science, cartography, even when practiced online, remains a specialized endeavor and the role of trained professionals remains important.

These workshops also reinforced the idea of using geography as a way of communicating complex ideas. All of the participants acknowledged to varying degrees the importance of "Where?" in their work. Academic geographers might respond to this statement glibly, but consider that none of the participants was a geographer by training.[14] Whether concerned with data on historic sites, on childhood education, or on tourism, participants felt that place was very important to the ideas they were trying to convey. What better way to communicate about geography than with a map? Certainly, the Internet and the Web have been great facilitators of communication so the development and growth of online maps as a means of communicating about place seems

[14] This was not asked formally on the survey but I asked at the beginning of each session. Aside from some participants that mentioned having taken a class, none offered themselves as a trained geographer.

only natural. While information specific to online mapping websites is often difficult to come by, consider the Internet as a communicator more broadly. According to the Pew Research Center's Internet and American Life Project, 68% of Americans said the Internet has had a major impact on the ability of groups to communicate with members and 62% said the Internet had a major impact on the ability of groups to draw attention to an issue. The percentages of only Internet users are higher for both categories (Rainie, Purcell, and Smith 2011). As online mapping becomes more widespread and more connected to the daily activities of people's lives, academic and professional geography is going to have to come to terms with how maps are used as a way of communicating. If maps are the trademark of Geography, it may come time to reclaim them from programmers and computer scientists if we are to have a say in how they get used.

Online mapping has not dulled or removed many of the issues of privacy and ethics attached more traditional paper maps. The questions of what gets mapped, who gets to read it, who gets to map it, and who controls the map, are all still valid. The Internet-connected nature of online mapping has only added to those concerns. The ease of access only heightens the privacy concerns, and since users will likely be using corporate-owned software and systems, the issues of data security, data storage, and data access only become more complex. We will need new systems in place to ensure that data do not get abused or mishandled and we will need new ways of thinking of how they get integrated into other applications and represented. While the Internet could perhaps make the democratization of mapmaking a reality, the inherent dangers in that must also be addressed.

Chapter 4

Neogeography in Practice: The Syracuse Poster Project and P.E.A.C.E, Inc.

My original plan was to observe a few community organizations as they tried, over time, to create their own online maps to complement and reinforce what I had found at the Maps Engine Workshops. Surprisingly, only one participating organization decided to follow up with its own mapping project. When I had mentioned the possibility of a longer-term mapping project to the workshop participants, they initially seemed open to the idea but cited a lack of time and available personnel as reasons they would not likely complete such an endeavor. This chapter will discuss a participant observation case study I conducted with the Syracuse Poster Project, a community art organization that followed through with a longer-range online mapping initiative. In addition, I interviewed a member of a second organization, PEACE, Inc., that had intended a longer-range mapping project but was not successful. While this is single successful case study, the Poster Project opted to use Google Maps Engine to make their online maps, so their experience (at least on a technical level) would be largely similar to anyone else who uses this tool. Over the course of the 2013-2014 academic year, I worked with and followed the Syracuse Poster Project as its staff and interns attempted to create an online map. The method of my interaction with Poster Project staff and interns followed closely to the original participatory workshop method. I assisted them with technical issues as best as I could and gave them some direction on what they would need based on Google's specifications for data and display. The concept, planning, and ultimately the execution were all theirs. My goal is to show that neogeography may not be panacea some hope for and that it is wrought with challenges, though not insurmountable ones. I also hope to

show that geography and the importance of place remains quite important, even to lay people, and that Geography should engage that feeling to remain a viable discipline in the future.

The Syracuse Poster Project is a community art initiative in Syracuse that began in 2001 with the goal of better utilizing a number of weather-shielded "poster panels" attached to bus shelters and information kiosks throughout downtown Syracuse. The panels had originally been intended for advertising, which failed to materialize. The Poster Project brought together the strong illustration program at Syracuse University's School of Visual and Performing Arts with an annual poetry contest run by the weekly *Syracuse New Times* newspaper. The *New Times* solicited three-line haiku poetry from readers in the Syracuse metro area. The Poster Project would then solicit illustration students to draw a poster inspired by the poem. The *New Times* ended its haiku contest in 2006, but the Poster Project continued to solicit poems annually. Not all of the poems get illustrated — it is up to the students to select which ones they find inspiring. Ultimately, the Poster Project hopes to enhance the quality of life in downtown Syracuse through beautification of the streetscape and collaboration between students and the community (Syracuse Poster Project, 2014).

The Poster Project's interest in mapping their illustrated posters is derived from a recurring theme they encountered during the nearly 15 years of the project's existence. Increasingly, many of the submitted poems and the resulting illustrations are place-based (see Figure 6). Syracuse's architecture, streetscape design, bisecting highway, and other landmarks have inspired (and continue to inspire) a wide variety of emotions that get captured in poems and translated into posters. Examples include famous buildings like

the Niagara-Mohawk Building, the State Tower Building, and the Everson Museum of Art. Landmarks inspiring poems and posters include the green-on-top traffic light in Tipperary Hill and the Interstate-81 viaduct.

The Poster Projects goal was to create an interactive online map (or maps) that would allow a visitor to their website to click on a place marker, see an image of the poster (which includes the poem), find out about the artist and poet, and find out how to purchase a print of the poster. Google Maps would also allow the user to see an actual image of the place via Street View. A secondary goal was to create a map of individuals submitting poems over the last 10+ years to get an idea of the reach of the project and to see the connection Syracuse has to other places around the United States and beyond.

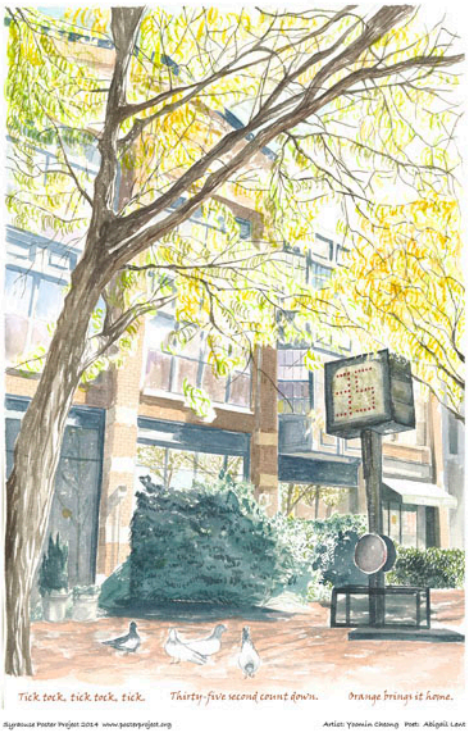

Figure 6-An example of a place-based poster, in this case a scene from downtown Syracuse showing the famous shot clock in Armory Square.

From www.posterproject.org

Grants and Non-Profit Maps

In the workshop, I demonstrated Google Maps Engine Lite, a free online mapping tool that contains a number of built-in limitations that I described in detail in Chapter 3. The Poster Project's original curiosity into expanding outside the Lite version was spurred by the limitation of 300 place markers per map. In wanting to create a map of their poetry submitters, they needed to accommodate a spreadsheet with information on 12 years of individuals numbering over 500 records. The "pro" version of Google Maps

Engine (called simply Maps Engine or Maps Engine for Business) can handle this larger number of records but a business or individual must pay for its use. There is no standard price, rather it is based on the version the organization or business wants to buy and what their anticipated usage is. As previously mentioned in chapter 3, there are "grants" offered by Google to non-profits and educational institutions that reduce the cost of the service. Depending on need, the grant amounts to a discounted price or eliminates the cost entirely. Maps Engine grants are available to non-profits that have received 501(c)3 status from the Internal Revenue Service and are only available to organizations based in the United States. Educational institutions can apply under a different program and academic faculty members can apply individually. The application for a grant is relatively simple. Google requires contact information, proof of non-profit status, a description of what data will be used, and a description of what the organization hopes to get out of mapping its data.

The Poster Project applied for a grant for Maps Engine in early September 2013 and was granted one shortly thereafter. The grant entitled them to 10GB of cloud-based storage and limited the total number of map views to 250,000 "internal" (meaning viewed via the Maps Engine administration page) and 10 million "external" (meaning maps viewed by the public) per year. The grant also gave them access to Google's technical support. Once access to the full Maps Engine suite has been allowed by Google the process requires users to become deeply familiar with how Google's myriad services are linked together. Again, there is somewhat specialized knowledge required before a user can begin to map anything. Poster Project staff were instructed to manage individual access to their data and maps on their own by way of a two-step process. Using the

"master account" of the person who applied for the grant, the Poster Project was required to set up an access list of individual users (all of whom need their own Google accounts) through Google Groups, an online discussion and forum service. Once a Google group was set up, the group as a whole had to be placed in the right access category in the Maps Engine administrative console, a new and separate interface unique to Maps Engine Pro.

Once again, we find a clear technical hurdle that must be overcome before any kind of map making can take place. Unlike Maps Engine Lite, the pro/full version requires the user to have sufficient understanding of user and access management to create a hierarchy of additional users who can contribute to the map, data, and layers. Perhaps this is an unavoidable consequence of the evolution of online maps into more comprehensive information system packages, as D.R. Fraser Taylor called them. It also reinforces the idea that we cannot think of online maps without considering their supporting data. If privacy and security of data are important—and the Poster Project would agree that those concepts are important—systems and procedures become necessary to ensure privacy and security. The more complex the privacy and security needs are, the more complex the systems and procedures to accommodate those needs will be. This is not something the Poster Project staff had considered and they were surprised to encounter this level of complexity in account and data management. Considerable time (about a week or so) and effort was put into understanding the management requirements of the Maps Engine system before they even began contemplating how to enter their spreadsheet data.[15]

[15] As a participant-observer I made some attempt to explain the management system to the Poster Project. Given their very limited staff (one director and some student employees) it took some time for them to come to terms with how it worked. To someone who has worked in information technology, the Maps

The Poster Project's first actual mapping goal involved creating a simple map showing where their contributors lived. Over more than ten years, the Poster Project had amassed a single database with contact information for everyone that has submitted a poem in their annual collection drive. This could make them an outlier in the world of neogeography, since they had been keeping their data in a relatively organized fashion and in an electronic format.

Even though assembling their records the way they did, the Poster Project still encountered two limitations worth mentioning. The data-centric paradigm of Maps Engine meant that any changes that needed to be made had to be first applied to the original spreadsheet. The spreadsheet would then have to be re-uploaded, made into a layer, and re-linked to the map. While not challenging, the process is tedious: after a few rounds making changes this way, the interns assigned to the task essentially gave up.[16] The other limitation was with regards to design. As a group focused on community art, the Poster Project's director and some of their interns have an eye for aesthetics. But there are, to their dismay, fairly few options when it comes to design in Maps Engine. They were able to change color and the style of the place markers to something other than Google's standard inverted teardrop and as time went on, Google continually added more sets of place markers. They could also change the color of lines and polygons but this is essentially the extent of the design options that are made available. The base map options

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Engine management interface is somewhat similar to how Microsoft and Apple manage users and access permissions PC and Mac networks.

[16] The Poster Project had a number of personnel issues that greatly increased the amount of time they spent on the project and nearly caused them to abandon it entirely. Operating on a very small budget, they rely heavily on interns and work study employees provided by Syracuse University. Early in the spring of 2014, they had a high rate of turnover as a series of interns became unreliable. Aside from these student volunteers and employees, the Poster Project only has one full-time staff member. The implications of staff and time on neogeographic endeavors will be discussed more in the last chapter.

are equally limited to a few standard Google-designed choices. The Poster Project was particularly frustrated by an inability to control what appeared on the base map as a user zoomed in or out.

The Poster Project as Neogeographers

In a series of facilitated interviews published in 2013, Michael Goodchild and Andrew Turner discussed neogeography, VGI and participatory GIS and offered their somewhat different viewpoints (Wilson and Graham, 2013). One of the main points Goodchild raised with regards to neogeography is the difference between the production of information and the production of knowledge. He differentiates the two by describing *information* as a collection of facts and data and describing *knowledge* as insight gained by analyzing and synthesizing data and information from many sources. While he is keen on placing neogeography in the realm of information production, Turner sees neogeography as a new way to produce knowledge. Where can we place the activities of the Poster Project in this spectrum? Certainly, it collected a great deal of place-based information. The Poster Project's data can be described most easily as qualitative. It has electronic files of the illustrations they have accumulated over the years as well as the poems that inspired the illustrations. They have some quantitative data as well, regarding the number of poems submitted per year, number of illustrations per place, and so on. None of this information was collected with mapping in mind but eventually the organizers of the project came to realize that a map would better help them see where their contributors were coming from and would help them better communicate to the public about their place-based poetry and illustrations. By mapping the locations of their place-based illustrations and also adding images of them to place markers on the map, the

Poster Project took their curiosity one step further than perhaps Goodchild or Turner might have predicted. The Poster Project brought together a variety of data sources and mapped them to say something about the city it operates in (in this case, Syracuse). What makes this "neo" or new? The Poster Project does not explicitly say what its members think of Syracuse or what they think their poster art says about the city either. They do put their assembled data out on the Web for others to interpret which we could say places them somewhere in-between amateur and professional Geography. Turner emphasizes individual interpretation as a hallmark of neogeography and the Poster Project would certainly fill that need. They offer up the individual interpretations of place through text and through illustration that are made by others and allow website visitors to come to their own conclusions.

In the same interview, Goodchild raised a point regarding academic Geography's shift since the 1950s from ideographic regional studies to more nomothetic studies, which place value on ideas and theories that can be replicated and that apply to all similar circumstances. He went on to mention that more recent place-based analysis uses local variation to support ideas that apply generally to everywhere. His concern is that neogeography is too ideographic in its claim as a source of geographic knowledge and that academic geography should be somewhat wary of neogeographic practices lest academic geography return to an earlier and less prestigious era. The Poster Project presents an opportunity to discuss whether or not a neogeographic endeavor could progress from ideographic to a nomothetic place-based analysis. Using the map of poets as an example, there is little to be said that would not be considered ideographic. The Poster Project's director was curious to know where exactly their poets were lived in an

effort to better understand their relationship to the City of Syracuse and the general area around it. This curiosity did not extend to comparing those known locations to other regional characteristics using available data on, for example, median income or race. This is not to say they did not find this simple information useful. Indeed, they hope to use it to demonstrate how Syracuse connects to the rest of the world – a good portion of their poets are from out of state and even out of country.

The Poster Project's map of their posters and poems presents a more complex issue. Connecting art (both graphic and textural) to particular locations on a map places them more soundly in the nomothetic realm. The challenge is that it is unlikely that they are aware of this. Geographers have been interested in studies of place and space for some time. In 1977, Yi-Fu Tuan stated that a space becomes a place when it becomes stable and visible enough to catch our attention (Tuan 1977). By way of an illustration and poem, the Poster Project presents an alternative view of a particular space that calls attention to it and therefore transforms the space into a place. It was certainly not the first to do this, but by doing it online and by using a dataset years in the making for a novel purpose its members have become neoGeographers. By contrast, an independent researcher, even a well-trained one, would not have easily been able to replicate their feat as easily. Consider that the Poster Project brought together resources from several different disciplines in order to accomplish their mapping goal and that those resources had almost no inherent geographic foundations aside from being place-based. They were in a perfect position to "do Geography" as it were, even though that was not the original intent of their project when it began. This is in line with Turner's argument that citizens are not merely sensors, as Goodchild once (2009) called them, but have a deeper

awareness of their local surroundings that enable them to better define places and analyze them than an outside researcher ever could (Wilson and Graham 2013). In the same interview, Turner viewed time as an important factor and the Poster Project certainly fulfills this requirement. The staff drew on over a decade's worth of assembled information in order to arrive at their synthesis. Such longitudinal studies of place in academic Geography are not common and would require substantial financial support.

A defining aspect of neogeography is the use of online resources to accomplish the project. It is also important to consider whether a mapping project could have been completed without online resources. If neogeography is to be considered a novel way of thinking about geography and not just a collection of new tools, then an absolute reliance on the Internet and its services is essential to defining a project as neogeographic in nature. The Poster Project could have produced a paper map of its participants using traditional cartographic methods, though it would have likely been time consuming. The map of their posters, however, is a product made entirely possible by online mapping. They could not have reasonably placed as much information as they have on a paper map unless such a map was huge. Would even an attempt at such a paper map be even as compelling? Such a map would not have necessarily let a user compare an illustration to a photograph or link to them to more information. Such a map may also not have been as widely available. We can also consider a predilection to online mapping as an extension of the Poster Project's Web-centric nature. It does not have a store or storage facility and do not market or sell their wares via the mail or even at local craft fairs. Aside from a shared office space in the basement of the Nancy Cantor Warehouse in downtown Syracuse, it exists entirely on the web.

A further aspect of the Poster Project that helps make it a good example of a successful neogeography project is that it is not dealing with subject matter that is open to scientific scrutiny. Understanding place by way of art and poetry is certainly not something that can be modeled or explained through a scientific process – it is open to individual interpretation and feeling. This does not delegitimize it by any means, but it does not allow for a discussion of how neogeography handles uncertainty, accuracy, and precision. There is no "expert" knowledge needed to understand place. Contrast this with the San Diego Open Tree Map (www.sandiegotreemap.org), which asks citizens to input the coordinates and characteristics of every urban tree in San Diego County, California. Contributors to that project have to be able to identify the tree species, measure its trunk diameter and height using accepted methods, and have some knowledge of when it was planted. The Poster Project and the San Diego Tree Map are two different types of neogeography and unfortunately, there is little in the Poster Project that allows for a discussion about how accurate their information is. We can assume that Google's ability to geocode street addresses is fairly good since they use them to give reasonably accurate driving directions. By avoiding issues of accuracy and precision, the Poster Project does not address the concerns of Goodchild and others regarding the value of neogeography to scientific research.

Professional, Amateur, and Authority

Almost every scholarly article on VGI or neogeography attempts to address the amateur quality of neogeography projects. More recently, the term "prosumer" was introduced as a way to explain how neogeographers can be both a producer of geographic information and consumer of it (Dodge and Kitchin 2013). The same article admits to

borrowing the term from advertisers who label devices like cameras as “prosumer” to place them somewhere between a professional-grade model and a consumer (amateur) grade model. I think the marketing definition is more appropriate here. An amateur online map would be one that fits the ideographic model. It would certainly produce information and visualize it but it would stop there. The Poster Project’s poster map, I have argued, takes it a step further and presents information to convey a sense of place. When we think of a professional or academic cartographer producing a thematic map, we would expect the map to convey a particular message, support a position, or sustain a theory. The Poster Project’s poster map does not do any of those things. The sense of place it conveys is not the opinion of anyone in the Poster Project or an official position taken by the Poster Project as an organization. It does not even convey one sense of place, but dozens, and those of third parties. Some research into VGI practices (Elwood 2008) has suggested that geographers should look into how maps produced through VGI or by neogeographers are situated within certain aspects of politics, especially with regards to access and what message the map is trying to convey. This assumes that neogeography is a political project in some way. That may be true of some projects but not all of them. The Poster Project would seem to call such an assumption into question. First, the poems and the illustrations were not created by the same person. If the poem had a particular message or was meant to convey a particular feeling (as poems usually do), that may not have been the message or feeling the illustrator also had or felt. Furthermore, the Poster Project assembled the poster map without any particular attention paid individuals messages. The staff explicitly hoped to allow visitors to their website to enjoy each poster either on its own or to draw their own conclusions by looking at all of them. The individualistic

character of neogeography is what makes it an object of curiosity but also difficult to analyze.

Other VGI studies dealt with directly crowd-sourced data contributed by a large number of individuals all interacting with the same map. Such a map may then be considered to have an air of authority since it drew its data from enough different sources, each vetting the other's inputs. The Poster Project does not use crowd-sourced data in quite the same way, but the map still presents itself with some level authority. There is a professional quality given to it by the design principles Google incorporates into Maps Engine. When a user asks Google Maps for directions, he or she likely assumes they are accurate. Given that Maps Engine uses the same design language, anything made with it may be assumed to have a similar level of accuracy or truth to it. Other web mapping websites like OpenStreetMap or maps made with ArcGIS Online are similarly constrained by design elements laid out by the website creators and owners. In Maps Engine, there is no altering the base map, although a user may choose from six different ones. Typefaces, colors, and symbols are all similarly limited to those provided.[17]

While the Poster Project's exercise in neogeography did suffer from a few false starts and other issues technical and organizational, it was generally successful. Its map of contributors can be found on their website and the map of posters will, as of this writing, be publicly available online as well. The next organization discussed differed greatly in terms of mission, size, and project goals – all of which combined to be a hindrance to success.

[17] Maps Engine allows for the importation of a custom image as a point symbol, but it must meet file size, color, and dimensional requirements.

P.E.A.C.E., Inc.

The other organization that expressed an interest during the workshop on working more long term on an online mapping project was P.E.A.C.E., Inc. (PEACE). This section will explain what PEACE had originally hoped to accomplish with online maps and why the agency ultimately was unable to reach those goals. PEACE, which stands for People's Equal Action and Community Effort, is Syracuse's officially recognized Community Action Agency (CAA). CAAs were created as part of the Economic Opportunity Act of 1964, better known as the War on Poverty. Their mission is to implement the act's directives through disbursement of funds and coordination of community resources (Community Action Partnership 2014). In Syracuse, PEACE administers a variety of programs using federal funds and donations including Big Brothers Big Sisters, Head Start/Early Head Start education programs, food pantries, emergency assistance and crisis intervention for families, services for the elderly including nutrition programs, and job training programs. The common denominator among these services is that they cater to low-income residents, typically at or below 100% of federal poverty guidelines (PEACE 2014).

PEACE came to the workshop in an attempt to see if Google Maps could be a solution to help its staff better allocate resources with regards to Head Start/Early Head Start (HS/EHS) centers. Head Start/Early Head Start began as a federally funded program under the Johnson administration in 1965 as part of the War on Poverty. While originally operating as extended summer schools for low-income children, Head Start expanded in 1981 to include full-year instruction for preschoolers aged 3-5 and again in 1994, when Early Head Start was added for toddlers younger than 3. Administered through the US

Department of Health and Human Services, the program provides grants to local agencies designated as HS/EHS providers. In most cases, these providers are local non-profit organizations like PEACE or school systems. The grants are competitive and recent changes to the Head Start Act limit their duration to five-year increments, renewable only after a re-application and review process (Department of Health and Human Services 2014). This grant process was a primary motivation, in PEACE's view, for looking into using mapping software to produce visuals to support their grant requests. This was similar to the goals of other non-profit workshop participants that also rely on grants and donations to operate. HS/EHS centers—the actual locations where services are rendered—are organized based on the need and income levels of particular areas. In smaller towns there may be only one center, but in moderate to large cities there are usually several centers. PEACE wished to map the locations of their HS/EHS centers and compare them to local poverty data to ensure that they are locating them in appropriate areas and where families of limited means could access them. According to their website, PEACE directly operates three EHS centers and collaborates with others on two more, as well as "special programs" at two other locations. In addition, they operate eight Head Start schools, collaborate on three, and operate one "special program." HS/EHS home-based visits are also coordinated through five family resource centers. This makes for a total of twenty-four (24) sites for HS/EHS alone and does not include centers for their other programs.

The locations of HS/EHS centers are guided by policy directives from the Department of Health and Human Services that specify the minimum percent of population in a service are that must be below poverty level. According to PEACE, the

overall poverty rate in the City of Syracuse and some of its adjacent suburbs is sufficient to qualify for HS/EHS funds in general, but to demonstrate that it is operating cost-effectively, PEACE must take extra steps to understand poverty within the city in order to decide on center locations. There is also federal guidance that limits the time a student can spend on a school bus to one hour in either direction. For school districts, this is not usually a problem because routes tend to be geographically compact, but PEACE must move children all over the city with few transportation resources. According to them, a single bus may make stops at several different HS/EHS centers on one route. Accurately routing their busing is important if they are to meet the 1-hour rule. Finally, there was a third goal regarding HS/EHS. Because of limited funds and the physical limitations of the spaces they use, PEACE has to limit the number of children accepted into HS/EHS programs each year. They typically have waiting lists that they identify as having a geographic component. Essentially, in any given school year the number of children on waiting lists for HS/EHS seats is geographically uneven. Using maps, agency officials hoped to better understand why they have more applicants than expected in some areas and not others. In addition, they wanted to ascertain whether or not an applicant lived close enough to a different center than the one closest to them that might have an open seat. To summarize, PEACE had three goals that would have been considered maps for internal use only: one to analyze the locations of their HS/EHS centers with respect to local-scale poverty (likely at a census tract level), another to route their transportation system accurately and effectively, and a final one to help understand the distribution of their applicants from year to year. In addition to these internal-use maps, PEACE also hoped to create a map of their centers for public use. Instead of relying on printed

directions, text, or having people search for directions on their own, PEACE wanted to provide a single map that the public could use to find the closest facility to their home based on what programs were being offered at each location.

PEACE's Lack of Maps

Based on the descriptions of what they wanted to do, PEACE sounded like a complicated, but not impossible, project for neogeographers to complete. However, as of this writing the agency officials have not completed more than preliminary steps toward accomplishing their project goals. Some of the reasons for their lack of success are institutional. By their own admission in interviews, PEACE's current employment hierarchy does not place responsibility for this sort of work in the hands of one person. They do not have any kind of analyst position that would be able to work with the kind of data needed to make the project successful, nor do they intend to hire such a person. Additionally, the project was looked upon as something that could have some potential benefit, but not enough to warrant changing established practices. Because the use of maps was not "mission critical" to the organization mapping was given low priority. Furthermore, because PEACE, Inc. is a non-profit organization, it has little discretionary funds to pay a current employee to do work outside their established job description. The organization itself is also large and complex, and the project as described would have to involve internal data from different organizational units that tend to operate with little interaction with each other. For example, employees working with Head Start do not often have to work with other employees providing senior citizen nutrition assistance.

Some of their failure can also be assigned to the complexity of the project they proposed. As has been noted, neogeography lends itself well to the ideographic. It is very

good at description, but not reaching analytical or theoretical conclusions. Much of what PEACE hoped to accomplish was heavily analytical in nature. They had at least two questions: why some areas of the city had higher numbers of applicants than others, and why those areas tend to fluctuate over time. These are deceptively simple questions, even when limiting the extent of the possible answers to geographic topics. Such an analysis would have to bring in data on demographics, poverty, adult education levels, and other socio-economic indicators. Such a project would lend itself very well to a fully-fledged GIS analysis. Unfortunately, the analytical capabilities of the online mapping tools discussed here are not capable of accomplishing that. Specific to PEACE, they would need census data at several levels, including tract-level. The data are easily available but working with it in the confines of Maps Engine would have been extremely difficult, even with software support for Esri shapefiles. When they began looking into the project, PEACE came to recognize this limitation fairly quickly.[18]

The Poster Project and PEACE Compared

These are only two cases among a great many online mapping projects out there, and the differences between both organizations, in terms of mission, size, and complexity, make it challenging to compare them. There are however two generalizations that we can make that may point to why one succeeded where the other failed. The first involves the complexity of the mapping project's purpose. The Poster Project was already in possession of the data they wished to map from the outset. Organizers had not originally foreseen themselves mapping it when the project started in 2002, but they came

[18] In an interview, a representative from PEACE saw this as a huge impediment – they simply didn't have the staff or money to explore other software solutions like ArcGIS and hiring an outside company to do the analysis was not a high priority.

to recognize that their project data had a geographic component. The challenges they faced were mostly technical and involved learning to use Maps Engine and sustaining the maps they created. They did not have a research question in the traditional sense, they wanted to present a pre-existing list of images in a new way that would garner interest in their organization and hopefully sell some poster prints. The deeper meaning and communication about a sense of place only came out in conversations as their staff and I worked through the technical issues of their online maps. That sense of place was important to them but it was not something they had anticipated revealing. PEACE, Inc. was quite different. Its goals involved a set of research questions that would require geographic analysis to answer.

This leads to the second general conclusion. When faced with changes in the software, or a change in the availability of staff, the Poster Project was able to adapt either the timeline or expectations with regards to their online mapping project. For example, around the holiday shopping season an increased demand for poster prints and other products required their limited staff's full attention. The online mapping project was essentially put on hold, but resumed after the holiday rush. PEACE, Inc. on the other hand essentially stopped when they discovered that Maps Engine was not going to be suitable to their needs. This was not unreasonable but it did demonstrate that there was not enough flexibility and interest in the project to make it practicable. This may also reinforce the previously mentioned idea that neogeography and VGI are inherently individualistic endeavors. My approach of studying organizational attempts at neogeography was novel in this sense, but the Poster Project, in many ways, is not an organization in the sense that PEACE is. At most, I encountered three staff at the Poster

Project: its director and an intern or two. This is as much as they usually have throughout the year. PEACE, meanwhile, is a massive organization by comparison. Individuals can have flexibility with regards to glitches, changes, and timeline changes that might be requirements to successfully completing a neogeography project. Organizations that have layers of accountability, chains of command, and other priorities may lack the requisite flexibility.

Chapter 5: Neogeography and Geography Considered

In theory, the neogeographic process sounds simple enough. An individual or organization has a topic with a geographic component. They access a web mapping tool and create an interactive map of the appropriate data. In reality, the process can be complicated by a number of different factors. Access to the necessary tools might be limited, either by cost or by technical limitations imposed by the website's creator. Time is another major factor. For a group or individual not already familiar with geographic concepts, the mapmaking process can become drawn out as they work through technical glitches, design issues, and data problems.

Success and failure also seem to be influenced by the complexity of the issue at hand. Limitations in online mapping applications still preclude any heavy analysis taking place. Neogeography is simply not there yet and it may never be. A good analogy might be to that of maintaining a house. An untrained neophyte might be able to use a limited set of hand tools to make minor changes, like painting a room. It still takes a professional with a wide range of skills and tools to build an addition. A successful neogeographer can make a compelling map that might even move beyond ideographic description, but the tools are not there to tell a reader more than that.

Neogeography continues to hold much promise for better interaction between geographic ideas and practices and the general public. However, it has not lived up to the hype that originally surrounded its emergence as a term five years ago. My study of interactions between neogeographers and professionals through a set of workshops and the case studies of the Syracuse Poster Project and PEACE, Inc. revealed several gaps between the potential of neogeography to be a transformative and empowering tool and

how the use of neogeography falls short on that potential. In this chapter, I will evaluate my study in this context and tie it into earlier similar discussions of the potential of PPGIS to also be empowering. I will also discuss how my own study does not necessarily answer all of the questions I set out to answer and provide some possibilities for future research directions.

Engaging Neogeography

In Chapter 3 I described a series of workshops I designed to test how professional geographers can better engage a particular public increasingly aware of the geographic aspect of social issues. I had thought of these workshops as a response to a recurring theme in neogeography literature about the role of neogeographers in relation to the work done by professionals. There is a degree of anxiety present in some of these prior studies over the possibility of neogeography tainting the popular perception of academic geography, should "neogeography" ever become more than a quixotic term academics use to describe web-based cartography. Michael Goodchild channeled much of this anxiety when he talked about neogeography as (possibly) hearkening back to a time when academic geography was more concerned with making detailed descriptions of places without much analysis of why place matters – the ideographic method (Wilson and Graham 2013). More recently, Angieszka Leszczynski has voiced concerns that neogeography may skew public perceptions of what geography as a discipline does and may encourage a reemergence of ideographic geography (Leszczynski 2014). Similar anxiety about GIS was made clear by Peter Taylor nearly twenty-five years ago when he predicted that GIS would return geography to a time when purely quantitative analyses were seen as the only correct way to conduct geographic research (Taylor 1990). The

discipline of geography, it seems, is frequently concerned with its image, particularly when it involves the use of information technology. The 'neo' in neogeography is likewise not quite new. By engaging community groups, and individuals within those groups, that were practicing neogeography through online maps, I found that they were mainly interested in geography as a way of communicating. This is not necessarily novel, but as mentioned in Chapter 4, the ability of the internet to facilitate communication in ways not possible before has been recognized in nationwide surveys. Furthermore, description of places, while not necessarily appropriate for academic work, is potentially empowering to marginalized peoples as it may allow them to claim places or territories. On these terms, the possibilities for engagement between professional and neogeographers seem numerous, and the power of being able to communicate claims via the Internet makes such claims to space able to be more widely heard.

In 2009 Paul Adams argued that the so-called "cultural turn" in academic geography can be described as increasing engagement with various forms of communication. As a result of the cultural turn he argued, academic geography (especially human geography) has divided itself among various philosophies— humanism, post-colonialism, postmodernism, Marxism, etc.— that attempt to represent the representations of others while rejecting the notion that there can be a single, accurate way of explaining spatial patterns of human activity. In Adams' construction, communication is thought of as texts, drawings, and other things widely called "media." Neogeography is a likewise communicative practice that combines maps with the interactive and collaborative features of the Internet to allow the public to explore geographic ideas.

The public exploration of geography predates the emergence of neogeography but in different contexts. Nancy Peluso's (1995) notion of counter-mapping suggested maps as a way for oppressed populations to resist dominant narratives regarding land use. Likewise, PPGIS studies argued for the use of GIS to empower underrepresented groups. With neogeography, however, the goal of the groups I studied and those I interviewed in the workshops did not fit either of these paradigms. As I mentioned in Chapter 3, several participants expressed an interest in online maps as a way to communicate their organization's missions in new ways. They were not necessarily resisting a dominant narrative but rather creating a new one. One participant explicitly mentioned a lack of maps being made available by the city government was forcing her organization to create its own to fill the void.[19] The likely explanation for such a lack of publicly available maps is probably that the city government has other priorities in a poor economic climate. However, the participant's observation led me to ponder another possible explanation behind academic geography's anxiety towards the emergence of neogeography.

According to Adams, the cultural turn has made human geography at large wary of creating authoritative narratives. Instead, many human geographers have become deeply enmeshed in a wide variety of esoteric social theories and philosophies they use in an attempt to explain a similarly wide variety of geographies (in the sense of Earth-writings). Perhaps in doing so, they have created a void that neogeography is attempting to fill. Online maps have become popular enough that *Wired*, a leading technology

[19] Based on a conversation with a participant representing the Northeast Hawley Development Association, housing redevelopment non-profit. She referred to the City of Syracuse simply not having the neighborhood maps her organization required. Several other participants echoed similar sentiments. In their opinion, the city does not have the time or personnel required to produce the maps they need regarding basic demographic information on city neighborhoods, in addition to maps on housing conditions and income.

magazine and website, began devoting an entire section of their online publication to maps in July 2013 (Mason and Miller 2013). While they post maps that are made by agencies, companies, and academics, a great deal of the maps posted are made by neogeographers. Given the variety of goals workshop participants had, the two very different projects that the Syracuse Poster Project and PEACE, Inc. wanted to accomplish, and the wide variety of amateur maps found online, professional geographers are either not investigating issues the public is interested in, or they are doing a poor job of communicating their work to a wide audience.

Ongoing Issues

Online mapping, neogeography and VGI have been labelled as having the potential to revolutionize the way the public interacts with geography. Nothing I have found would suggest that this is not the case, but such a transformative change has yet to occur. There remain too many obstacles neogeographers must overcome. Some of these obstacles are technical, some are conceptual, and some involve the scope of projects that neogeographers may want to undertake. In most cases, the considerations for implementing a neogeography project are remarkably similar to studies on the implementation of GIS in grassroots organizations (Sieber 2000a).

On the technical front, my workshops and case studies pointed out several barriers to online mapping access. I previously discussed in detail in Chapter 3 the basic computer knowledge a user must have to work with online mapping tools. On a more conceptual level however, this technical knowledge needed further requires the user to adopt a data-centric viewpoint of how the world gets represented. Like GIS, Google Maps Engine operates under a paradigm that organizes objects and places in the real world into a

virtual table of identifiers, attributes, and other assorted data. To an information technologist, this might seem an obvious method of representation, but it proved to be a barrier to accessing online mapping tools. If a person is willing to adopt this way of thinking then online mapping should be accessible to them, but there is little in the way of alternatives if a person is unable or unwilling to see the world in this fashion. The closest realistic alternative I observed was the Maps Engine Lite application that allowed a person to literally draw objects directly – a feature that was not duplicated in the pro version of Maps Engine. A phenomenon of compliance to what amounts to be a computer-science-driven worldview prevalent in GIS and other electronic mapping applications was also observed by others in early PPGIS work. Those studies also found that successful GIS implementation required an acquiescence to a GIS-based viewpoint (Sieber 2000b). The technological barriers to neogeography application are going to continue to perpetuate a divide between those who can access it and those who cannot. This may not necessarily be a function of financial resources either. PEACE, Inc. for example is relatively well funded, but it has very specific allocations for its programs that did not apparently allow for experimentation with neogeography.

Neogeography is also not yet suited to all forms of mapping that the public may wish to do, and it may never be. The one successful mapping project I observed was successful partially because of the simplicity of its goals. The Poster Project approached its mapping goals in the context of what the technology was capable of doing and what its staff had seen others accomplish on the Web. PEACE, Inc. had an ambitious (for a perennially underfunded non-profit agency) research agenda. Part of its failure to its mapping project through is attributable to the project goals exceeding the capabilities of

free online mapping tools. This strongly suggests that neogeography is indeed better suited to simpler—conceptually and technically— mapping tasks and is not any kind of replacement for full-fledged GIS-based research. The application of neogeography strategies are, like so many other things, uneven and are dependent on many different factors that will influence their success or failure.

Lastly, the question of neogeography's role in location-based privacy remains open to further research. Using Nissenbaum's contextual integrity framework as a guide, it is clear that changing technological capabilities are changing the way that people defend and subvert their location-based privacy. While I had not considered the role of privacy in my original study design, future research should consider the role of privacy as both a legally defined protection and as a popular social construction. Often privacy is thought of as protection of personal information and space from state and corporate interests, but neogeographic practices create a space for violations of individual privacy by other individuals, sometimes inadvertently. How is it possible to rectify the tension of wanting to protect personal information while sharing it freely via social media and facilitating the production of knowledge through crowdsourcing (which requires freely available data)? Furthermore, the role of digital divide in terms of access to mapping technologies and access to the data needed to have them work properly is not well understood. These are important questions that I was not able to address adequately.

This Study and Possibilities for Future Research

As acknowledged earlier, this study did not completely turn out as originally planned. While I had hoped for a more definitive understanding of how neogeography functions in practice, the limitations of a small sample size prevent me from drawing any

concrete conclusions. However, there is enough to suggest that such a framework is a viable way for studying neogeography. The workshop format allowed me to see a process of online mapping from its inception, not just after a map was created and published. This was insightful because it suggested that there is much crossover between the technical issues of neogeography and previous studies in PPGIS. Likewise, the case study of the Syracuse Poster Project became much more longitudinal than anticipated, lasting nearly nine months. The length of time it took the Poster Project to complete its mapping project suggests that neogeography is not as simple as guides like Andrew Turner's (2009) book suggest it could be. Future research should attempt to survey, categorize, and analyze the many Web-based maps that have appeared in recent years to better understand how neogeography is being used and what can be considered the best applications for it.

Neogeography represents an opportunity to better communicate a deeper understanding of geography in general. It was mentioned that there are no equivalents in other disciplines – no neophysics or neobiology. This should not be seen as diminishing geography as a discipline or as a way of thinking. Instead, geographers should utilize the tools being made available on the Web to better position Geography as an important discipline. Such engagement can help mitigate some of the issues I described earlier, particularly when it comes to the spread of a highly technical, computer science-based vocabulary within neogeography that may limit its appeal and access. The popularity of location-based services and online mapping shows no sign of abating. Academic and professional geography needs to do more to guide the use of such technologies for their own sake and for the sake of the discipline's continued relevance.

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Appendix I: Survey Instrument

Survey

1. Would you have been able to learn the techniques demonstrated today on your own?

   ☐Definitely ☐Probably ☐Uncertain ☐Probably not ☐Definitely not

2. What aspect of mapping is most useful to your organization?

   ☐Pointing out locations ☐Marking service areas ☐Showing routes ☐Performing analyses

3. Will your organization use online mapping tools in the future?

   ☐Definitely ☐Probably ☐Uncertain ☐Probably not ☐Definitely not

4. Has your organization ever used maps (either paper or electronic) before? Please explain.

5. Are the tools you used today generally sufficient for your organization's mapping needs? Please explain.

6. Is there a tool your organization needs that was not demonstrated? If yes, please explain.

7. How important is cost to your organization when it comes to choosing an online mapping tool?

   ☐Not important ☐Somewhat important ☐Neutral ☐Important ☐Very important

8. How important is the availability of free data to your online mapping needs?

   ☐Not important ☐Somewhat important ☐Neutral ☐Important ☐Very important

9. How many people are part of your organization? Include volunteers in your estimate.

10. Explain how your organization can benefit from making, using or distributing maps.

11. What sector does your organization work in?

    ☐Health ☐Education ☐Environment ☐Community Development ☐Social Services ☐ Other:

Appendix II: Qualitative Responses

Previous map use (Q4):

- Other paid software described as clunky and unhelpful
- To show community characteristics in relation to services provided
- As visual aids in presentations
- To show people served
- Service territory
- As a part of grant applications to show demographics
- Tourist and visitor maps
- No- organization data is stored as narratives and spreadsheets that could be maps
- Web maps to give directions
- Outsourced or secondary source only

Sufficiency of tools used (Q5):

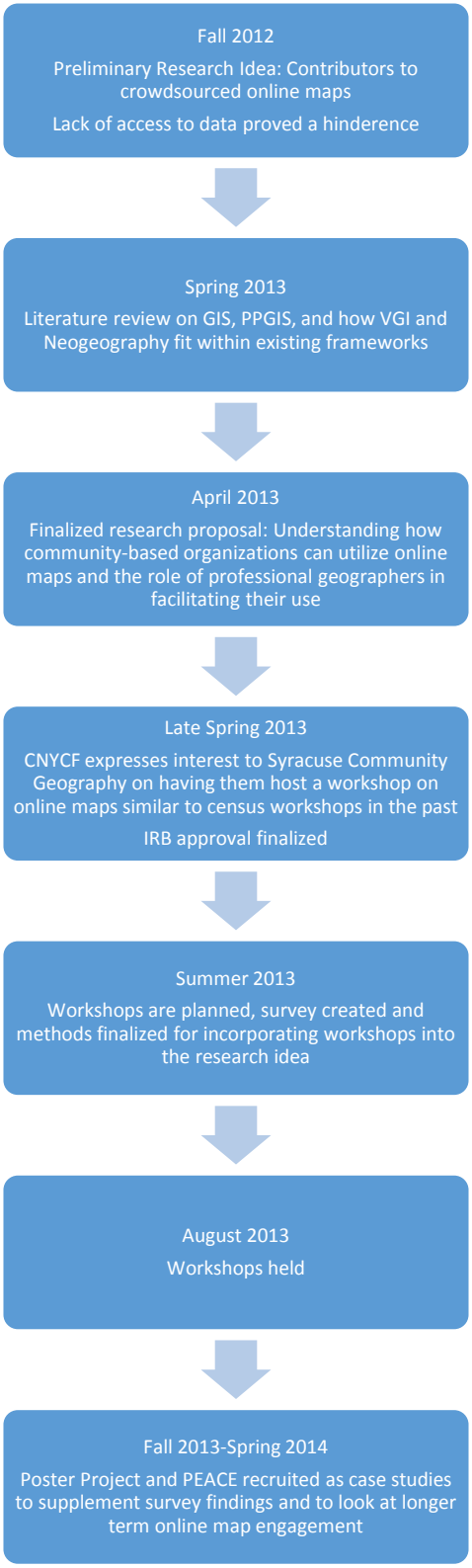
- Yes as a referral tool for parents
- No, unable to map data in polygons
- Yes good for quick mapping needs- better than a hand drawn map
- Yes for non-GIS users
- No, not able to save routes

Benefits of map use (Q10):

- Visualize locations of participants
- Good for allowing people to get their own directions to locations
- Visualizing service areas
- Sharing information with third parties
- More efficiently allocate resources/personnel
- For educational purposes
- Grant applications
- Easy to share with visitors and others new to the area
- Better than narrative description

Other observations during the workshop through talking with participants

- Privacy was a concern among several participants. With no prompting, at least 3 people in each workshop who were dealing with lists of organization members recognized the pitfalls of providing their locations on a map. One mentioned the difference between having a list and having it visualized.
- There was a general sense that having a map was better than a spreadsheet.


Fall 2012
Preliminary Research Idea: Contributors to crowdsourced online maps
Lack of access to data proved a hinderence
Spring 2013
Literature review on GIS, PPGIS, and how VGI and Neogeography fit within existing frameworks
April 2013
Finalized research proposal: Understanding how community-based organizations can utilize online maps and the role of professional geographers in facilitating their use
Late Spring 2013
CNYCF expresses interest to Syracuse Community Geography on having them host a workshop on online maps similar to census workshops in the past
IRB approval finalized
Summer 2013
Workshops are planned, survey created and methods finalized for incorporating workshops into the research idea
August 2013
Workshops held
Fall 2013-Spring 2014
Poster Project and PEACE recruited as case studies to supplement survey findings and to look at longer term online map engagement

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