Neogeography

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Matthew W. Wilson
Department of Geography, University of Kentucky
Center for Geographic Analysis, Harvard University

Introduction

The use of the term neogeography serves as a shorthand for a range of technical practices and attitudes that embrace ludic and everyday uses of geospatial technologies, amid their general proliferation. While the origins of the recent use of the term is often attributed to a post on the website *Platial* by Di-Ann Eisnor in 2006, neogeography has a more extended, if punctuated, provenance. This entry will take up this more recent emergence, to overview the conditions through which neogeography becomes a response to variants of academic and industrial mapmaking. Neogeography, as a more recent attitude or response, operates at a different rhythm than that of academic publication and, as such, an overview of the efforts nominally considered neogeographic requires a broader understanding of the modes of production -- academic and industrial -- as these ideas proliferate. As part of this broadened understanding, this entry places neogeography within a continuity of discussions that gained traction in the mid-1990s, under the umbrella subfield of GIS & Society. This includes specific debates around participation and democracy, privacy and pervasiveness, and commodification and connectivity. Those promoting the idea of neogeography tend to do so in absence of the history of the industries and academic fields that lead to its recent provenance. This overview is meant to establish some foundations for such departures.

General Overviews

Although created as preparatory thoughts for a PhD application, an online document created by David Haden (2008) highlights the multiple uses of the word 'neogeography', including more recent industrial actors that have framed the debate. The bibliography contained within illustrates the range of interests signaled by the term in the 20th century, signaling more generally the incorporation of a broader perspective than was present in conventional geographic inquiry. Contemporary usage of the term is likely credited to the catalyzing work of Andrew Turner's pamphlet published by O'Reilly (2006). This introduction elevates the recreational possibilities of web-based geographic representation and positions this work as a tacit rejection of traditional modes of cartographic and geotechnical learning as well as the mainstream corporate players such as Esri. The practices of neogeography were organized under an existing series of concerns within academic geography around the geospatial web, or geoweb. This included a response clustered around volunteered geographic information, or VGI. The contours of the uneasy relations between academic pursuits of web-based cartography and geospatial analysis and neogeography can be read in the conversation between Turner and Michael Goodchild in an interview published by Wilson and Graham (2013). At the same time of Turner's introduction, Chris Miller (2006) published a piece describing emerging web-based mapping technologies for consumers as a kind of GIS/2, drawing the work of the GIS & Society movement into conversation with these neogeographic industries. Haklay et al. (2008) is the first thoroughly academic treatment of the range of these technologies and their relationship to the field of GIScience -- and specifically the geoweb -- while Crampton (2009) devotes a one of his

invited reports on the status of cartography in human geography specifically to what he terms maps 2.0.

1. Haden, David. 2008. "A short enquiry into the origins and uses of the term 'neogeography'." Available at http://www.d-log.info/on-neogeography.pdf. Accessed on 1 April 2015.
   Highlights the multiple uses of the word 'neogeography', including more recent industrial actors that have framed the debate.

2. Turner, Andrew J. 2006. *Introduction to Neogeography*, *O'Reilly Short Cuts*: O'Reilly.
   Overviews a range of web-based geospatial technologies and data formats for the practice of neogeography.

3. Wilson, Matthew W. and Mark Graham. 2013. "Neogeography and volunteered geographic information: A conversation with Michael Goodchild and Andrew Turner." *Environment and Planning A* 45 (1):10-18.
   Brings forward the debate between VGI and neogeography, settles old miscommunications and establishes renewed areas for further thought and development.

4. Miller, Christopher C. 2006. "A Beast in the Field: The Google Maps Mashup as GIS/2." *Cartographica* 41 (3):187-199.
   Proposes and evaluates the creation of the Google Maps API as an intervention in the GIS & Society debates, specifically around the creation of alternative GIS, or GIS/2.

5. Haklay, Mordechai, Alex Singleton, and Chris Parker. 2008. "Web Mapping 2.0: The Neogeography of the GeoWeb." *Geography Compass* 2 (6):2011-2039.
   Overviews the state of the industry in terms of new geospatial technologies and data contributing to the geoweb as the variety of neogeographic practices that energize these developments.

6. Crampton, Jeremy W. 2009. "Cartography: maps 2.0." *Progress in Human Geography* 33 (1):91-100.
   Places the developments of neogeography and the geoweb in the context of academic cartography and GIS & Society concerns around the production of spatial knowledge.

Edited Collections

Five edited collections directly take up the topic of neogeographic practice, although deeply connected to existing debates around the geoweb and volunteered geographic information (VGI). A meeting of the NCGIA at Santa Barbara 13-14 December 2007, organized by Michael Goodchild and Rajan Gupta, led to a special issue of *GeoJournal* on a research agenda in VGI edited by Sarah Elwood. This special issue highlights both the technical and social complications of neogeographic and VGI practices. Taking up more of the technical aspects of user-generated geographic data, a special issue of *Geomatica* was edited in 2010 by Rob Feick and Stéphane Roche. Following a pre-conference at the 2011 Association of American Geographers meetings in Seattle, Dan Sui, Elwood, and Goodchild (2013) assembled a collection of 20 scholarly articles on the topic of VGI. The chapters include Wen Lin's work on participatory mapping in China, Jim Thatcher on web services, Jon Corbett with aboriginal communities, Edwin Chou on web demographics, among others, who have since built upon this scholarship in broader study of neogeographic practices. A special issue of *CaGIS* in 2013, organized by Ming-Hsiang Tsou and Michael Leitner, connects discussions of VGI and neogeography to the geographies of social media. Since the pre-conference on VGI in 2011, two

additional special issues have brought forward the research agenda into the social implications of neogeography, both published in 2013. The first, edited by Matthew Wilson and Mark Graham for *Environment & Planning A*, challenges the participatory and democratic potential of the geoweb, while the second, edited by Agnieszka Leszczynski and Wilson for *GeoJournal*, asks human geographers to develop a variety of theoretical frameworks for situating neogeographic phenomena.

1. Elwood, Sarah A. 2008. "Volunteered geographic information: key questions, concepts and methods to guide emerging research and practice." *GeoJournal* 72:133-135.
   Reports on a specialist meeting of the NCGIA in 2007 and sets the research agenda for VGI.

2. Feick, Robert D., and Stéphane Roche. 2010. "Introduction: Special Issue on Volunteered Geographic Information." *Geomatica* 64 (1):7-9.
   Establishes a number of more technical issues in the utilization of user-generated geospatial data over the Internet.

3. Sui, Daniel, Sarah A. Elwood, and Michael F. Goodchild, eds. 2013. *Crowdsourcing geographic knowledge : volunteered geographic information (VGI) in theory and practice*. New York: Springer.
   Reports on a preconference meeting of the AAG in 2011, including a more expanded discussion of the implications of neogeographic practices.

4. Tsou, Ming-Hsiang, and Michael Leitner. 2013. "Visualization of social media: seeing a mirage or a message?" *Cartography and Geographic Information Science* 40 (2):55-60.
   Examines the geographies of social media and asks questions as to the affordances of this kind of data as a record of particular social-spatial phenomena.

5. Wilson, Matthew W. and Mark Graham. 2013. "Situating Neogeography." *Environment and Planning A* 45 (1):3-9.
   Collection of a handful of key thinkers in the broader social and politicial implications of neogeography and the attendant phenomena of the geoweb and VGI.

6. Leszczynski, Agnieszka and Matthew W. Wilson. 2013. "Theorizing the geoweb." *GeoJournal* 78 (6):915-919.
   Organizes a set of theoretical interventions as to how to conceptualize neogeographic practices.

Neogeographic Industries

The recent and precipitous rise of neogeography is perhaps characterized as an industrial one. Indeed, very little of the techniques or the culture of neogeographic practices originated within the academy. This explains the tensions between neogeography and volunteered geographic information -- two perspectives on similar processes. While there are many non-academic moments that give way to this technocultural phenomena, the work of Paul Rademaker in building the first Google Maps mashup in 2005 was a catalyzing one. Rademaker was eventually hired by Google and worked to create the first Google Maps application programming interface (or API). At the same time, OpenStreetMap, created by Steve Coast in 2004, provided alternatives to for-profit or crown-controlled geographic data, through crowdsourced mapmaking. Other companies and websites have entered the mix, creating mapmaking solutions for users interested in a 'do-it-yourself' technical ethic. Chris Brown, based in the United Kingdom, founded MangoMaps, which provides user-friendly tools for the creation of web-maps. Other web-based mapmaking tools have included MapBox, ArcGIS Online, and CartoDB, each attempting to capture users interested in

neogeographic practice, but not formally trained cartographers or geographers. In addition to these web-based mapmaking tools, new mobile applications have expanded geospatial user-generated content, including Waze, Foursquare, and Twitter. Tensions between neogeographers and more traditional cartographers have continued largely through blogging and informal publishing, including a piece by Andrew Hill (2015) of MapBox which produced a group of responses, including one by Taylor Shelton (2015) of Clark University.

1. Coast, Steve. 2004. OpenStreetMap. Available at: http://openstreetmap.org.
   Created as a crowdsourced response to the crown-controlled and costly geospatial data in the United Kingdom.

2. Rademaker, Paul. 2005. HousingMaps. Available at: http://www.housingmaps.com.
   First instance of a Google Maps mashup, now discontinued due to the use of maps on Craigslist.

3. GeoIQ. 2008. GeoCommons Available at: http://www.geocommons.com.
   Created by a team including Andrew Turner, now an employee of Esri.

4. Brown, Chris. 2010. MangoMaps. Available at: http://www.mangomaps.com.
   Provides user-friendly tools for web-mapping.

5. MapBox. 2010. Available at: http://www.mapbox.com.
   Provides tools, like TileMill, to allow custom creation of map tiles for web-based cartography.

6. Esri. 2012. ArcGIS Online. Available at: http://www.arcgis.com.
   Launched by Esri, for more everyday users, to begin to compete with cloud-based mapping software.

7. CartoDB. 2012. Available at: http://cartodb.com.
   Enables basic analysis and visualization of geospatial data as a cloud-based service.

8. Hill, Andrew. 2015. In Defense of Burger Cartography. Available at: http://andrewxhill.com/blog/2015/03/28/in-defense-of-burger-cartography/.
   Argues that mapmakers should not have to apologize for the style and fervor of new cartographies.

9. Shelton, Taylor. 2015. In Defense of Map Critique. Available at: http://medium.com/@kyjts/in-defense-of-map-critique-ddef3d5e87d5.
   Argues for the role of critique and more careful use of big data, including social media, by neogeographers.

Participatory Mapping

The so-called 'GIS wars' of the 1990s led to a catalyzing moment at Friday Harbor, Washington in 1993. Nadine Schuurman (2000) discusses the roots of this epistemological uneasiness and the productivity that emerged around the GIS & Society subfield. From within these discussions within the discipline, participatory and public participation GIS emerged. Robert Rundstrom's (1995) manuscript appeared within a special issue of *CaGIS*, organized by Eric Sheppard. Rundstrom moves forward the epistemological critique waged by John Pickles toward a discussion of the role of GIS and mapping for the empowerment of indigenous groups. Similarly, Trevor Harris and Dan

Weiner (1998) discuss the dual potential of participatory mapping to be both empowering and marginalizing. This piece appeared in another special issue of *CaGIS*, edited by Nancy Obermeyer (1998), with co-authored pieces by Sarah Elwood, then at graduate student at the University of Minnesota. Indeed, the roots of the debate around neogeographic practices can be found in this literature around PPGIS and participatory GIS, as questions circulated around who participates and benefits from mapmaking and geographic technologies. These questions persist through debates around volunteered geographic information, neogeography, and the geoweb. As participatory mapping endeavors begin to benefit from new web-based mapping technologies, concerns around geospatial intelligence and exploitation of local knowledge coalesce in a controversy around the Bowman Expeditions. A special issue of *Political Geography*, organized by Phil Steinberg, hosted key figures in the debate, including Joe Bryan (2010) and Peter Herlihy (2010).

1. Schuurman, Nadine. 2000. "Trouble in the heartland: GIS and its critics in the 1990s." *Progress in Human Geography* 24 (4):569-590.
   Reviews the 'GIS wars' of the 1990s and the development of the GIS & Society subfield.

2. Rundstrom, Robert A. 1995. "GIS, Indigenous Peoples, and Epistemological Diversity." *Cartography and Geographic Information Systems* 22 (1):45-57.
   Explores the epistemological critiques of GIS as part of a broader movement of mapmaking with indigenous peoples.

3. Harris, Trevor M. and Daniel Weiner. 1998. "Empowerment, Marginalization, and "Community-integrated" GIS." *Cartography and Geographic Information Systems* 25 (2):67.
   Discusses the duality of empowerment and marginalization in participatory and public participation mapping.

4. Obermeyer, Nancy J. 1998. "The Evolution of Public Participatory GIS." *Cartography and Geographic Information Systems* 25 (2):65-66.
   Opening introduction of a special issue on PPGIS, with pieces by Sarah Elwood.

5. Bryan, Joe. 2010. "Force multipliers: Geography, militarism, and the Bowman Expeditions." *Political Geography* 29:414-416.
   Argues that the *México Indígena* program is indicative of a long-standing interest by the US military in participatory mapping.

6. Herlihy, Peter H. 2010. "Self-appointed gatekeepers attack the American Geographical Society's first Bowman Expedition." *Political Geography* 29:417-419.
   Responds to Bryan (2010) raising questions around the blurring of responsibilities for activists and scholars.

GIS and the Internet

While many of the debates around the social implications of neogeography have their roots within a discussion in Geography about participatory mapping, the increasing importance of the Internet for geographic representation draws scholarship from a broader set of thinkers within the discipline. Rob Kitchin (1998) explores the geographies of cyberspace, outlining a research agenda that highlights the implications for communication and spatial relations. At the same time, GIScientists began to explore the opportunities of the Internet for PPGIS. Peng (1999) establishes three primary ways in which the Internet affects GIS: data access, representation dissemination, and the processing

of spatial data. In addition to the technical innovations made possible in the late 1990s as GIS began to be built in the web browser, mapping scholars were beginning to question the democratic potential of web-based mapping. Wong and Chua (2001/2004) reports that the Internet cannot so simply reduce the barriers to participation in mapping nor reduce the importance of the social and political contexts around the use of these technologies, a study brought forward by Nyerges and Aguirre (2011). As web browser technologies became more sophisticated, web-based mapping would become more a project of industry than of the academy. Plewe (2007) reviews four generations of Internet GIS developments and discusses the range of technical and social research directions that should guide scholarship, including the growing field of interaction design, brought forward in work by Roth (2013). Shaowen Wang (2010) brings forward a renewed GIScience agenda for Internet GIS, in what he calls CyberGIS, arguing that computing capacity has made possible the collaborative study of complex geographic patterns including data generated through neogeographic practices, including volunteered geographic information.

1. Kitchin, Robert M. 1998. "Towards geographies of cyberspace." *Progress in Human Geography* 22 (3):385-406.
   Establishes a research agenda in the geographic study of the Internet.

2. Peng, Zhong-Ren. 1999. "An assessment framework for the development of Internet GIS." *Environment and Planning B-Planning & Design* 26 (1):117-132.
   Discusses the client-side and server-side technical issues that dominated GIScience scholarship around the late 1990s development and thinking of web-based mapping.

3. Wong, Sidney and Yang Liang Chua. 2001/2004. "Data Intermediation and Beyond: Issues for Web-Based PPGIS." *Cartographica* 38 (3/4):63-80.
   Reports on the broader social and political issues that persist despite the broader use of mapping technologies through the development of Internet GIS.

4. Plewe, Brandon. 2007. "Web Cartography in the United States." *Cartography and Geographic Information Science* 34 (2):133-136.
   Overviews the rush of efforts in web-based cartography as mobile devices and client side browsers become more capable of complex geographic representations and cartographic interactions.

5. Wang, Shaowen. 2010. "A CyberGIS Framework for the Synthesis of Cyberinfrastructure, GIS, and Spatial Analysis." *Annals of the Association of American Geographers* 100 (3):535-557.
   Argues that computing capacity has made the study of complex geographic patterns including neogeographic data.

6. Nyerges, Timothy L. and Robert W. Aguirre. 2011. "Public participation in analytic-deliberative decision making: Evaluating a large-group online field experiment." *Annals of the Association of American Geographers* 103 (3):561-586.
   Reports on an experiment in using web-based public participation technologies for spatial decision making.

7. Roth, Robert E. 2013. "Cartographic Interaction: What We Know and What We Need to Know." *Journal of Spatial Information Science* 6:59-115.
   Reviews the state of the field of cartographic interaction and discusses how existing models of

cartographic representation remain relevant with devices that have greater range of interactive potential.

Geospatial Web or Geoweb

Recognizing the increasing importance of the Internet to everyday life, human geographers and GIScientists began to take interest in the emergence of the geospatial web, or geoweb. While Haklay et al. (2008, above) drew attention to this phenomena as neogeographic from a GIScience perspective, economic geographers Matt Zook and Mark Graham (2007) examined the role of Internet industries, such as Google, in everyday life -- through a concept they termed digiplace. This attention to the impacts of web-based mapping industries widened scholarship around the geoweb and the neogeographic practices that would drive its creation. Graham (2010), a former PhD student of Zook, suggests that these practices in producing the geoweb leave an imprint on social and spatial relations -- one which can and should be measured, analyzed and represented. One aspect of these imprints is that of the changing conditions and attitudes towards privacy, as explored by Elwood and Leszczynski (2011), arguing for a reconceptualization of privacy as part of new relationships between individuals and the state and corporations. Relatedly, Johnson and Sieber (2012) document the shifting motivations of governments toward the utilization of the geoweb. The utility of the geoweb for social scientific study requires more comprehensive interrogation of the contexts surrounding neogeographic practices, to include more traditional data analysis of census data as well as social network analysis, as argued by Crampton, et al. (2013). By paying attention to these contexts and implications, scholars like Stephens (2013) and Lin (2013) document the gendering of the geoweb and explicitly political space-claiming practices, respectively.

1. Zook, Matthew A., and Mark Graham. 2007. "The creative reconstruction of the Internet: Google and the privatization of cyberspace and DigiPlace." *Geoforum* 38:1322-1343.
   Develops the idea of 'digiplace', or the imbrication of digital social media and everyday life.

2. Graham, Mark. 2010. "Neogeography and the palimpsests of place: web 2.0 and the construction of a virtual Earth." *Tijdschrift voor Economische en Sociale Geografie* 101 (4):422-436.
   Suggests that geoweb practices leave a material imprint on social and spatial relations.

3. Elwood, Sarah A., and Agnieszka Leszczynski. 2011. "Privacy, reconsidered: New representations, data practices, and the geoweb." *Geoforum* 42:6-15.
   Argues for a reconceptualization of privacy as part of new relationships between individuals and the state and corporations.

4. Johnson, Peter A., and Renée E. Sieber. 2012. "Motivations driving government adoption of the Geoweb." *GeoJournal* 77:667-680.
   Documents the shifting motivations of governments toward the utilization of the geoweb.

5. Crampton, Jeremy W., Mark Graham, Ate Poorthuis, Taylor Shelton, Monica Stephens, Matthew W. Wilson, and Matthew A. Zook. 2013. "Beyond the geotag: situating 'big data' and leveraging the potential of the geoweb." *Cartography and Geographic Information Science* 40 (2):130-139.
   Argues for a more comprehensive interrogation of the contexts of the geoweb in social-spatial analysis.

6. Stephens, Monica. 2013. "Gender and the GeoWeb: divisions in the production of user-generated cartographic information." *GeoJournal* 78 (6):981-996.
   Documents the gendering of user-generated content on OpenStreetMap.

7. Lin, Wen. 2013. "Situating performative neogeography: Tracing, mapping, and performing "Everyone's East Lake"." *Environment and Planning A* 45 (1):37-54.
   Argues for the conceptualization of neogeographic practices as explicitly political, in the context of China.

Volunteered Geographic Information

The voluntary submission of geographic information was one specific outcome of the rise of the geoweb and, with a longer perspective on the history of computing, the intersection of participatory and collaborative mapping endeavors and the rise of Internet GIS. Mike Goodchild (2007), a key figure across these debates, catalyzed the notion of voluntary geography, in what he defined as volunteered geographic information (or VGI). Following this important article, a specialist meeting of the NCGIA in December of 2007 resulted in an edited collection (discussed above). Indeed, VGI is a specific type, and use case, of user-generated content and the geoweb. Initially, VGI and the rising industrial attitude of neogeography were at odds, although converging somewhat in recent years (see debate between Goodchild and Turner, discussed above). Elwood (2008) overviews a research agenda in the use of VGI for critical or political projects and offers yet another moment of reconciliation between GIScience and critical human geography. Indeed, as GIScientists began to grapple with the neogeographic practices that produced VGI, new opportunities emerged to take stock of assumptions within GIScience. Sui (2008) suggests a 'wikification' of geospatial technologies and methods, reviewing the changes to the very definition of GIS. David Tulloch (2008) tackles a reconceptualization of the notion of participation, drawing linkages between scholarship in public participation GIS (PPGIS) and VGI. Nonetheless, VGI, as part of a broader movement in neogeography, has enabled innovations in the use of geospatial technologies toward health management and emergency response in the wake of global environmental and social instability, as reported by Cinnamon and Schuurman (2010) and Zook, Graham, and Shelton (2010), respectively.

1. Goodchild, Michael F. 2007. "Citizens as sensors: the world of volunteered geography." *GeoJournal* 69:211-221.
   Argues for the use of volunteered geographic information as part of the GIScience endeavor.

2. Elwood, Sarah A. 2008. "Volunteered geographic information: future research directions motivated by critical, participatory, and feminist GIS." *GeoJournal* 72:173-183.
   Articulates the need for VGI within the critical and political projects of critical human geography.

3. Sui, Daniel Z. 2008. "The wikification of GIS and its consequences: Or Angelina Jolie's new tattoo and the future of GIS." *Computers, Environment and Urban Systems* 32:1-5.
   Suggests a revision of the definition of GIS under the weight of neogeographic innovations.

4. Tulloch, David L. 2008. "Is VGI participation? From vernal pools to video games." *GeoJournal* 72:161-171.
   Assesses the relationship between public participation GIS and volunteered geographic

information.

5. Cinnamon, Jonathan and Nadine Schuurman. 2010. "Injury surveillance in low-resource settings using Geospatial and Social Web technologies." *International Journal of Health Geographics* 9 (25):1-13.
   Examines the use of the geoweb for the collection of public health data in Cape Town, South Africa.

6. Zook, Matthew A., Mark Graham, Taylor Shelton, and Sean Gorman. 2010. "Volunteered geographic information and crowdsourcing disaster relief: A case study of the Haitian earthquake." *World Medical & Health Policy* 2 (2):7-33.
   Overviews the emergence of VGI and geoweb support in the wake of the 2010 earthquake in Haiti.

Critical Data Studies and Critical Mapping

As discussed above, the rise of neogeographic practices is situated within broader discussions of the proliferation of internet-enabled mobile devices and the commodification of social and spatial applications. Within Geography, a critical perspective on 'big data', has extended decades of research and activism around critical mapping. Sitting just outside the discipline, boyd and Crawford (2012) outline an emergent research agenda in the study of big data as phenomena. Within a critical GIScience perspective, Leszczynski (2012) and Wilson (2012) bring these locative media and neogeographic industries (referenced above) under examination. This work asks who participates and who stands to benefit from these neogeographic developments. Muki Haklay (2013) directly questions our presumptions around the democratic potential of neogeography, analyzing the degree to which advocates presume that technologies are value-free. Drawing these discussions back toward the rise of 'big data', Craig Dalton and Jim Thatcher (2014) establish what they consider to be a critical approach to big data, as situated within Geography, arguing for the need to counter 'big data' hype as it becomes normalized within public discourse. Leszczynski (2014) further examines how the discourse of newness itself is leveraged as a depoliticizing move in discussions of the political economy of neogeographic practices.

1. boyd, danah and Kate Crawford. 2012. "Critical questions for big data: Provocations for a cultural, technological, and scholarly phenomenon." *Information, Communication & Society* 15 (5):662-679.
   Outlines an emergent research agenda in the study of big data as phenomena.

2. Leszczynski, Agnieszka. 2012. "Situating the geoweb in political economy." *Progress in Human Geography* 36 (1):72-89.
   Positions the emergence of the geoweb within the neoliberalization of the state.

3. Wilson, Matthew W. 2012. "Location-based services, conspicuous mobility, and the location-aware future." *Geoforum* 43 (6):1266-1275.
   Argues that a cultural form of conspicuousness permeates the development of location-based technologies.

4. Haklay, Mordechai. 2013. "Neogeography and the delusion of democratisation." *Environment and Planning A* 45 (1):55-69.

Suggests that the perspective of technology as value-free permeates the neogeographic tradition.

5. Dalton, Craig and Jim Thatcher. 2014. "What does a Critical Data Studies look like, and why do we care? Seven points for a critical approach to 'big data'." *Environment and Planning D: Society and Space*. Available at: http://societyandspace.com/material/commentaries/craig-dalton-and-jim-thatcher-what-does-a-critical-data-studies-look-like-and-why-do-we-care-seven-points-for-a-critical-approach-to-big-data/.
   Argues for the need to counter 'big data' hype as it becomes normalized within public discourse.

6. Leszczynski, Agnieszka. 2014. "On the Neo in Neogeography." *Annals of the Association of American Geographers* 104 (1):60-79.
   Examines the discourse of newness as it is leveraged to depoliticize discussions of neogeographic practices.