Transdisciplinary approaches to critical data studies

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Transdisciplinary Approaches to Critical Data Studies

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ABSTRACT

In this paper we describe the rationale behind a panel concerning the transdisciplinary approaches to critical data studies. We illuminate emerging modes of conducting critical data studies research and highlights the interdisciplinary opportunities within future research directions. We describe the format for the panel and the themes that will be covered by each of the author. By having this panel to occur it creates a space for interdisciplinary dialogues on a timely topic that touches various sub- fields of information science along with the broader social science disciplines in the academy.

KEYWORDS

Critical data studies, interdisciplinary, ethics, GIScience, Queer theory.

INTRODUCTION

This panel illuminates emerging modes of conducting critical data studies research and highlights the interdisciplinary op- portunities within future research directions. Highlighting the plurality of approaches within the emerging research area, the panel focuses on the transdisciplinarity of critical data studies for the following reasons:

1. In recent years, the field of critical data studies has been researched across multiple disciplines and is no longer merely of interest to information and computer sciences. Other disciplines such as geography, communication and media studies, and sociology provide additional theoretical frameworks for critiquing data, including critical theories of race, sexuality, political economy, governance, and gender.
2. Critical data studies are growing in popularity and it is important to build connections between fields rather than in disciplinary silos.
3. Research in this field is continually growing as data's significance becomes more of an issue in public domains. Given the ongoing discussions about data production and usage across disciplines and in popular discourse, it is a timely juncture to convene a panel on transdisciplinarity in critical data studies. Across disciplines in the social sciences and humanities there are concurrent discussions about data: who produces this data, how data can racialize communities, who benefits from the data, and how processes of sexuality coincide and interact with data production. This collective of researchers hails from diverse academic backgrounds that intersect ethics, critical race, social theory, political economics, public health, queertheory, and GIScience. By having this discussion, we hope to create a productive space to explore pressing new research directions as data become more embedded in society.

BACKGROUND

Critical data studies is a transdisciplinary field that explores the mutual imbrication of data with spatial, social, political, eco- nomic, and institutional processes (Dalton and Thatcher 2014). It has fostered debates across disciplines as varied as informa- tion science, GIScience, sociology, and the digital humanities. These debates have suggested that data should not be considered politically neutral abstractions of the natural or social world, but instead as artifacts deeply embedded with values, norms, epistemological claims, and philosophical outlooks (Iliadis & Russo, 2016; Schuurman, 2000; boyd and Crawford, 2012; Kitchin, 2014, Hoffmann 2017).

While related to the methodologies and exigencies of Big Data as it is practiced and imagined, the concerns raised in these and other works highlight the need to continually engage new technical regimes with critiques from feminist, queer, critical race, and social theory. To date, research has primarily investigated the social and political nature of *existing* data, but recent work has also sought to explain the gaps in data production systems as well as the reasons why some data exist, but others do not (Burns 2018; Thatcher 2014; Graham 2014). The *implications* of this research extend beyond data into the socio-spatial inequalities and une- vennesses of algorithms and software for data processing, and the ways in which power functions through them (Dalton et al. 2016; Noble, 2018). Some work has focused on the development of feminist and decolonial approaches to data-driven knowledge production (Leurs, 2017).

Within the discipline of geography, critical GIScience has explored the political and power relations within map making. Building on JB Harley's (1988) ideas that cartography constitutes the exercise of power, Monmonier's (1996) *How to Lie With Maps* exposed that maps have the capacity to shape the ways we come to know the world and the people in it, partly through the legitimacy afforded to cartographic representations. These ideas at the time, however, sat askew to what many human geographers saw as a broader disciplinary-wide return to "naive empiricism" in the growing use of GIS (Taylor 1990, 212). After a series of heated debates in the early and mid-1990s, closer collaboration and conversation between GIScientists and human geographers fostered the field of critical GIS. Coined in 2000 (Schuurman 2000), Critical GIS has embraced many, sometimes conflicting, epistemological orientations. It has been feminist (Schuurman and Pratt 2002), queer (Brown and Knopp 2008), and indigenous (Rundstrom 1995); however, throughout, like the work of Harley and Monmonier, Critical GIS has been concerned with the social and epistemological foundations of spatial technologies.

Recently, and drawing from the insights learned in and through these earlier contestations, Critical GIS work has more directly engaged with the ways in which data, analysis, and visualization matter to non-dominant cultures and peoples. Exemplifying scholarship by Jack Gieseking (2017a; 2017b; 2017c) incorporates radical feminist and queer critiques to the ontologies of map and data production for mapping. He shows that data marginalize vulnerable communities by normalizing the data that have been collected, and by reinscribing heteronormative and masculinist forms of measurement. As postulated by Gieseking "[h]ow can we recognize those whose lives and data become attached to the far-from-groundbreaking framework of "small data"? Specifically, how can marginalized people [especially queer people] who do not have the resources to produce, self-categorize, analyze, or store "big data" claim their place in the big data debates?" Thus, big data needs trenchant critique despite its emergent opportunities, and this critique is needed especially among communities traditionally under-served and represented in data systems.

In information science, critical-oriented researchers have been interested in data labelling and sharing in the context of scientists solving data-sharing problems in science teams (Fonseca and Martin, 2007; Borgman, 2010, 2011, 2015). This work coincides and is in line with increasing critical attention to issues of social justice, identity, and community across library and information science research broadly (Jaeger, Shilton, and Koepfler, 2016). Critical information studies ask us to center in our analyses "the ways in which culture and information are regulated, and thus the relationships among regulation to commerce, creativity, science, technology, politics, and other human affairs" (Vaidhyanathan, 2006, p. 293). In addition, longer-standing conversations around cultural and ethical dimensions of information, technology, and privacy in information studies and elsewhere make clear the ways in which data-intensive surveillance systems help produce and regulate the lives of subjects, especially along the lines of gender (Smith, 2015) and race (Browne, 2015). These domains - social justice in LIS, critical information studies, and cultural studies of surveillance - offer important footholds for the development of critical data studies.

Building and extending this work to data justice and social progress issues involves also looking at how critical approaches are connected to data gathering, data modeling, databases, and metadata in informatics (Sweeney and Brock, 2015), and how the use of these and other tools like application programming interfaces (Qiu, 2017) impact civil society through public facing apps and technologies. Drawing on the work of Gitelman (2008), Srinivasan (2012) offers one such approach by asking how we might include discussions related to "ethical questions about the sovereignty of diverse knowledge, and whether the voices of emerging users should be ignored or empowered" (205). Similarly, Duarte and Belarde-Lewis (2015) offer "imagining" as a methodology for decolonizing the classification and organization of data and information, especially with regard to indigenous subjects. Duarte and Belarde-Lewis (2015) work will be brought into conversation with cultural geographer Sarah Hunt's (2013) work on indigenous ontologies, which, in turn, will be deepened through consideration of traditions within and across the fields of Critical GIS and critical information studies. Critical data studies serve as the locus that brings together experts across these areas, allowing for ideas in separate, but related, disciplines to hang together; to inform and to trouble.

Panel Agenda

The purpose of this panel is to 1) examine the various theoretical and methodological approaches possible within critical data studies, and to 2) consider the potential overlapping themes that might lead to productive future research collaborations. In other words, this panel will be both exploratory and agenda-setting. We will address the following topics:

* the overlapping foundational debates across disciplines concerning critical data studies;
* theoretical resources for critiquing data, data systems, and data implications;
* future research needs of, and productive directions for, critical data studies;
* obstacles for research in the field of critical data studies. The organization of our panel is as follows:

1. A brief introduction about critical data studies and its transdisciplinary nature by the panel moderator Dr. Jim Thatcher (5 Minutes)
2. Five examples of research in critical data studies will be presented by the panelists Ryan Burns, Blake Hawkins, Anna Hoffman, Andrew Iliadis, and Jim Thatcher. (50 minutes)
3. World Cafe discussions in small groups, each panelist acts as a facilitator for discussions related to the panel, creating five options for audience members to engage in a discussion about the transdisciplinary nature of critical data studies. (30 minutes)

4. Brief closing remarks and additional discussion of critical data studies will be presented by a panelist to be deter- mined (5 minutes)

PANEL DISCUSSIONS

Ryan Burns is Assistant Professor in the Department of Geography at University of Calgary, and a faculty fellow with the O'Brien Institute for Public Health. In this panel, Burns will discuss the new ways in which forms of exclusion, oppression, resistance, and empowerment are occurring in open data platforms. Municipalities across the globe are increasingly pursuing "smart city" status by accelerating the circulation of data -- embedding sensors in the urban fabric, analyzing data for real- time data-driven decision making, and promoting open data platforms as ways of being "transparent" and "accountable". Burns's research shows that despite claims to "openness", multiple layers of social process and power relations saturate open data platforms, essentially reinscribing pre-existing inequalities and producing new forms of marginalization. In contrast, a small movement of community and grassroots data sharing platforms and data co-operatives are working to subvert such top-down state-sponsored open data initiatives by creating their own open data platforms. Although these open data platforms enable and encourage alternative visions of their cities, their work is still in tension with many of the same logics of neoliberal governance and empiricist epistemologies as the platforms they resist. The result is a complex picture of the ways data serve many competing and contradictory aims.

Blake W. Hawkins is a PhD student at the University of British Columbia Interdisciplinary Studies Graduate Program. As pan- elist, he will highlight some early findings from an ongoing interdisciplinary project about Grindr users perspectives of the appli- cation metadata. Grindr is a hookup application commonly used by gay, bisexual, and other men (trans-inclusive) who have sex with men. What motivated this project were the recent changes made to the metadata items by Grindr to create a more inclusive application. These recent changes to the profile include the option of sharing preferred pronouns, HIV status, last time being tested, and preferred sexual practices. Despite creating these new metadata options, there are still some tensions with the application and the data produced from filling in the metadata for a profile. In April 2018, it was reported that Grindr sold data about HIV statuses in different geographical settings. Furthermore, to take advantage of searching with dif- ferent metadata options, users need to have the pay-per-use version which creates new barriers. Additional motivations for sharing this work include the opportunity for future critical data studies research that incorporates queerer perspective and suggest some potential challenges when completing research with an underrepresented community, like Grindr users, to discuss their perspectives about meta/data

Anna Lauren Hoffmann is an Assistant Professor at the University of Washington Information School. As a part of this pan- el, she will highlight the connection between data and violence, as well is the implications of this connection for "data ethics"— that is, for thinking about ethical approaches to data science, research, and computer engineering especially as it relates to vulnerable subjects and communities. Inherent in conceiving of something as data is a kind of subjection—it involves taking myriad and diverse ways of being or knowing and subjecting them to the more or less exacting logics of quan- tification, segmentation, and reduction. Hoffmann theorizes this subjection as a kind of violence not in the sense of a deviation or abhorrence, rather as some- thing that can be pervasive and routinized. She illustrates this through three case examples centering the lives and experiences of transgender women: 1) airport body scanners that flag trans bodies as threats, 2) the automated banning of trans women from dating sites, and 3) the culling of trans YouTubers' videos to train facial recognition software. In each case, harmful cultural ideas and stereotypes surrounding trans women are not only reproduced, but routinized in the service of administrative, commercial, or scientific ends. By foregrounding the experiences of this particular vulnerable community, Hoffmann seeks to reinforce the idea that data is merely instrumental to, but constitutive of violent social, political, or other action.

Andrew Iliadis is Assistant Professor at Temple University in the Department of Media Studies and Production (within the Lew Klein College of Media and Communication) and serves on the faculty of the Media and Communication Doctoral Pro- gram. In this panel, he will discuss metadata ecologies and their relationship to social ontology. Increasing data accessibility through metadata curation is a key feature of the semantic web. Several domain-specific metadata initiatives have facilitated linked data for individual industries. These metadata schemas allow administrators to tag web data to boost contextual expressivity and se- mantic content, thus improving search and retrieval in their respective fields. Some drawbacks of this prac- tice are that a plurality of metadata schemas produces layered code that can overburden administrators, while lack of a single metadata vocabulary results in unequal distribution of schemas due to intermittent application. The present work provides an analysis of these schemas and describes global efforts to amalgamate smaller domain-specific schemas into a universal standard vocabulary. We will discuss organization and practice in these metadata ecologies, how they differ from applied ontol- ogy, and end by raising potential ethical concerns in social categorization.

Jim E. Thatcher is Assistant Professor of Urban Studies at the University of Washington Tacoma and holds an affiliate appoint- ment in the graduate school of Geography at the University of Washington. He is the current chair of the Digital Geographies specialty group of the American Association of Geographers and was previously an NSF fellow for CyberGIS. His research ex- amines the recursive relations among extremely large geospatial data sets, the creation and analysis of those datasets, and society, with a focus on how data has come to mediate, saturate, and sustain modern urban environments. His work takes as central questions how the constitution and analysis of data are framed by and subsequently frame the production of knowledge with

regards to nature, society, and politics. On one level, his work engages directly with large geospatial data using a variety of research tools, including bespoke open-source applications, to conduct rigorous, empirical analysis of urban systems. On another, it draws on critical theory and qualitative methods to trace the impact of massive geospatial data sets on the shifting relations among economic forces, technology, environments, and society. His research is often referred to as Critical Data Studies or Digital Political Ecologies. He is the lead editor of a 2018 University of Nebraska Press book on the roles 'big data' has come to play within and across academic Geography and cognate disciplines.

REFERENCES

Borgman - 2010 - Research Data Who Will Share What, with Whom, Whe.pdf. (n.d.). Retrieved from https://www.ratswd.de/ download/RatSWD_WP_2010/RatSWD_WP_161.pdf

Borgman, C. L. (2010). Research Data: Who Will Share What, with Whom, When, and Why? *SSRN Electronic Journal*.

https://doi.org/10.2139/ssrn.1714427

Borgman, C. L. (2011). *The Conundrum of Sharing Research Data* (SSRN Scholarly Paper No. ID 1869155). Rochester, NY: Social Science Research Network. Retrieved from https://papers.ssrn.com/abstract=1869155

Borgman, C. L. (2015). *Big Data, Little Data, No Data: Scholarship in the Networked World*. The MIT Press.

boyd, danah, & Crawford, K. (2012). Critical Questions for Big Data. *Information, Communication & Society*, *15*(5), 662– 679. https://doi.org/10.1080/1369118X.2012.678878

Brown, M., & Knopp, L. (2008). Queering the Map: The Productive Tensions of Colliding Epistemologies. *Annals of the Association of American Geographers*, *98*(1), 40–58. https://doi.org/10.1080/00045600701734042

Burns, R. (2018). Datafying Disaster: Institutional Framings of Data Production Following Superstorm Sandy. *Annals of the American Association of Geographers*, *108*(2), 569–578. https://doi.org/10.1080/24694452.2017.1402673

Dalton, C. M., Taylor, L., & Thatcher (alphabetical), J. (2016). Critical Data Studies: A dialog on data and space. *Big Data & Society*, *3*(1), 2053951716648346. https://doi.org/10.1177/2053951716648346

Dalton, C. & Thatcher, J. (2014). WHAT DOES A CRITICAL DATA STUDIES LOOK LIKE, AND WHY DO WE CARE?

Retrieved April 4, 2018, from http://societyandspace.org/2014/05/12/what-does-a-critical-data-studies-look-like- and-why-do-we-care-craig-dalton-and-jim-thatcher

Fonseca, F., & Martin, J. (2007). Learning the Differences Between Ontologies and Conceptual Schemas Through Ontology- Driven Information Systems. *Journal of the Association for Information Systems*, *8*(2). Retrieved from http:// aisel.aisnet.org/jais/vol8/iss2/4

Harley, J. B. (1992). Deconstructing the map. *Passages*. Retrieved from http://hdl.handle.net/2027/spo.4761530.0003.008

Hoffmann, A. L. (2017). Making Data Valuable: Political, Economic, and Conceptual Bases of Big Data. *Philosophy & Tech- nology*, 1–4. https://doi.org/10.1007/s13347-017-0295-x

Iliadis, A., & Russo, F. (2016). Critical data studies: An introduction. *Big Data & Society*, *3*(2), 2053951716674238. https:// doi.org/10.1177/2053951716674238

Jaeger, P. T., Shilton, K., & Koepfler, J. (2016). The rise of social justice as a guiding principle in library and information science research. The Library Quarterly: Information, Community, Policy, 86(1), 1-9.

Kitchin, R. (2014a). Big Data, new epistemologies and paradigm shifts. *Big Data & Society*, *1*(1), 2053951714528481. https://doi.org/10.1177/2053951714528481

Kitchin, R. (2014b). Big Data, new epistemologies and paradigm shifts. *Big Data & Society*, *1*(1), 2053951714528481. https://doi.org/10.1177/2053951714528481

Leurs, K. (2017). feminist data studies: using digital methods for ethical, reflexive and situated socio-cultural research. Femi- nist Review, Volume 115, Issue 1, pp 130–154

Monmonier, M. (1996). How to Lie with Maps. Chicago: University of Chicago Press Noble, S. (2018). Algorithms of Oppression. New York: NYU Press

Rundstrom, R. A. (1995). GIS, Indigenous Peoples, and Epistemological Diversity. *Cartography and Geographic Informa- tion Systems*, *22*(1), 45–57. https://doi.org/10.1559/152304095782540564

Schuurman, N. (2000). Trouble in the heartland: GIS and its critics in the 1990s. *Progress in Human Geography*, *24*(4), 569– 590. https://doi.org/10.1191/030913200100189111

Schuurman, N., & Pratt, G. (2002). Care of the Subject: Feminism and Critiques of GIS. *Gender, Place & Culture*, *9*(3), 291– 299. https://doi.org/10.1080/0966369022000003905

Thatcher, J. (2014). Big Data, Big Questions| Living on Fumes: Digital Footprints, Data Fumes, and the Limitations of Spa- tial Big Data. *International Journal of Communication*, *8*(0), 19.