

September 04, 1998: Entanglement and experimentation;
or, Cultural fascism and Google Street View

Cheryl R. Gilge

A dissertation

Submitted in partial fulfillment of the
Requirements for the degree of

Doctor of Philosophy

University of Washington

2014

Reading Committee:

Robert Mugerauer, Chair

Nicole Huber

James Tweedie

Program Authorized to Offer Degree:

College of Built Environments

© Copyright 2014
Cheryl R. Gilge

University of Washington

Abstract

September 04, 1998: Entanglement and experimentation;
or, Cultural fascism and Google Street View

Cheryl R. Gilge

Chair of the Supervisory Committee:
Professor Robert Mugerauer
Department of Urban Design and Planning

Google Street View (GSV) presents the public realm as ‘fact’, mapped and documented, and reconstituted online. In deleuzoguattarian terms, GSV is a unique assemblage, a bloc of space-time, with three distinct lines of force critical for its function. As a visual object, the photographic line both informs its mode of construction and its value as a wayfinding tool. As a mapping function, the systematic documentation of the built environment tied to an abstract representation gives it a range of use values within the social field. As social production, the particular political and economic environment in which Google is operating impacts not only its comprehensiveness as tool, but the company’s mapping efforts have filled a particular niche and need as a result of an opening for the private sector. The unique assemblage of Street View emerges from its particular socio-political milieu, in which modes of thought and practices are latent within it, explicitly active or as virtual impulses.

The dissertation is comprised of four larger sections. The first section examines the current social production of Google as a company and its development of Street View. The second section examines the historical impulses of photography and its value as both an objective index of the world and its creative potential. Within GSV, artists extend creative photographic practices as a subjective medium, while

researchers use the same platform to produce knowledge. The third section examines the variegated history of mapping as influencing the diversity of Street View uses. Mapping has established territories and asserted power through demarcation, as well as produced knowledge from the abstraction of territory in graphical terms. The new environment of citizen participation creates unique tensions within this history, and the implications exfoliate in all directions. The final section examines the particular political-economic environment from which Google emerged. This intersection of the neoliberalism regime and the immanent production of Open Source offers a critical tension. Google is located at this nexus, drawing from the political economic conditions that provided an opening for the private sector, as well the minoritarian impulse of Open Source that sought to upend the capitalist model.

In its zeal of making the world's information accessible, Google is overturning many socio-cultural and legal norms and conventions. This has serious consequences, of which Google is largely unconcerned. As a critical analysis, I examine the concept of a microfascism in relation to efforts and investments of individual desire, in order to sketch out a unique impulse within the Web 2.0 environment in which Google stands at the center. Its cultural cachet and the seductive efficiency it provides draw more individuals into the mix, enabling a disparate collection of investments to cohere within the overall milieu. Quite explicitly, I offer an assessment of the contemporary cultural condition as resonating with and moving towards cultural fascism. Google's 'suicidal' line of overturning these norms in order to advance their single minded goal of indexing the worlds information resonates with some forms of fascism, in which citizens actively support and work to advance the larger goal. In the process, they gain a sense of responsibility and ownership in achieving that goal, and Google stands to control it all. As Deleuze says of the control society, there is no need to hope or fear, we just need new tools.

ACKNOWLEDGEMENTS

I would like to thank Bob, my amazing, supportive and tireless advisor, for giving me the freedom to pursue the many threads and loose strands, for believing in the project in all of its nonlinearity, and for sharing the same thought process. We did good work.

I would also like to thank my co-conspirator, Keith, for the many layers of support that you have given me; I am grateful for our ability to challenge each other intellectually. This journey wouldn't have been the same without you.

To this list I would like to add Matt and Julia for the long standing support and a safe haven to work when needed; Tom for the 'sanity' sessions; Ann and our writing vacation that got me back on track; Shannon, Amy and the cast of characters of *Becoming Poor*, all of whom have sustained my intellectual trajectory in different ways and generated many evenings at the College Inn. And to my family, that just 'understood' the radio silence and didn't harass me. And to my father, I'm sorry you didn't get to see this.

TABLE OF CONTENTS

Preface	viii
00 Introduction	1
Emerging research	3
Larger themes	6
Methodological framework: complexity and contingency	21
Conceptual methodological principles	26
Data collection	41
Outline of the present work	43
01 State of Affairs: Google	50
Economic engine and cultural power	57
Corporate culture/ open source environment	63
Public image	66
State of Affairs: Mapping Division	69
Extent of maps	69
Principles guiding the mapping division	74
Cultural relevance of Google Maps	78
Visual quality of Street View	80
Proliferation of uses of Street View	85
Commercial	88
Entertainment	95
Legal	98
Journalism	99
Cultural production	100
Knowledge production	103
02 Photographic Line: Historical Impulses	107
Birth of a practice	109
Oscillating between two poles since 1839	112
Photography's double bind	125
1858: The photographic line of flight	131
Modern concerns; or run offs in all directions	135
Contemporary formulations	140
Photographic practices as the virtual	143

Photographic Line: Creative Practices	147
Photography as a creative process	148
Photography	154
Jon Rafman	154
Doug Rickard	157
Michael Wolf	161
Aaron Hobson	164
Additional lines	167
Entangled aspects	169
Two-dimensional media	170
Performance	173
Time-based work	177
Music video	180
From Here On	187
Molarization	190
Shifting the plane	193
 Photographic Line: Research Practices	198
Systematic social observation	199
Criminology	201
Street audits	203
Environmental perception	207
Participatory planning	213
Typology	221
Cultural practices	228
Online tours	229
Memory and history	233
Concluding thoughts	237
 03 Mapping Line: Historical Impulses	241
Entangled spaces of mapping	242
Systematic documentation, or Royal mappers	247
Mapping and creative production, or Nomad mappers	249
Mapping and knowledge production	251
Mapping as a navigational tool	256
Cognitive mapping and wayfinding	258
An early Street View example	261
Mapping as technology	265
Neoliberalism and hybrid mapping	267
Volunteerism	274

Mapping Line: Contemporary Formulations	278
Environment of 2.0	279
A new minoritarian mapping environment	281
Effects on wayfinding and human cognition	285
We're all explorers now	294
We're all cartographers, too!	301
"Google Maps is Changing the Way We See the World"	308
Critique of the participatory model	314
A conclusion of sorts	321
 04 Political-economic dynamics: Historical Impulses	323
Defensible position	323
Brief history of neoliberalism	324
Present day tendencies and theoretical shortfalls	328
Open source environment	335
Corporate response	341
Open source and neoliberalism: tension and compatibility	344
Desires and motivations	348
 Political-economic dynamics: Suicidal Line, or Pushing Boundaries	350
Trademark infringement	352
Intellectual property infringement	355
Copyright infringement	358
Anti-trust activity	366
Invasion of privacy	375
Concluding thoughts	387
(in other words)	393
 Political-economic dynamics: Contemporary Formulations (Microfascisms)	394
Oppressive tendencies of neoliberalism	399
Authoritarianism vs Totalitarianism	404
Freedom vs Repression	409
Why do we desire our own repression?	415
Microfascisms	417
The insidious nature of the 'bureaucratic' head	428
Speculative conclusion	430
 Conclusion: Towards a theory of cultural fascism	433
 Bibliography	442

Preface

This dissertation engages four methodological approaches of phenomenology, hermeneutics, critical theory and the work of Deleuze and Guattari, in order to develop a multi-layered description and analysis of my subject matter. This implements the methodological approach advocated by Professor Mugerauer (and increasingly accepted by researchers operating in the continental tradition): the synthesis and staged sequence of phenomenology, hermeneutics, critical theory, and Deleuze-Guattari's de/reterritorialization of assemblages.¹ While each of these methodological approaches exist as accepted modes of analysis, for the present work, drawing from all of them enables me to draw from the strengths of each while supplementing some of the established weaknesses.

Mugerauer traces three phases of study within environmental philosophy. In the first phase, the phenomenological approach, strength lies in the thick, rich description of the phenomenal world, which allows for study of concrete phenomena and a means to develop deep qualitative analysis. This method, however, fails to take into account the changes that take place over time. In the phenomenal field, what is present allows for description, but drawing an analysis based on a spatiotemporal change thus becomes a challenge when analysis is limited to an *atemporal* a phenomenal field. Moreover, this abstractness allowed these case studies to serve as examples or confirmed abstract principles.² Mugerauer points to a second shift that addresses this weakness. A hermeneutical layer allowed a way to situate the analysis within a particular spatial and temporal horizon of meaning. Allowing for a richer understanding of how cultural practices change over time, as one example, reveals the progression of a culture while allowing the present phenomenon to retain its rich description. The potential weakness within this added

¹ Mugerauer, "Deleuze and Guattari's Return to Science."

² Ibid, 3

layer is the danger of drawing teleological analyses based on transformation over time. Critical theory, within this interpretive frame thus allows for a more critical engagement against the stable, historical concepts that hermeneutics traces. Moving beyond the tendency of abstraction and linear tracing, critical theory provides a means to analyze detailed case studies against established concepts.

The main thrust of Mugerauer's paper is the robustness that Deleuze and Guattari's work offers, and remains compatible with the previous phases, extending beyond what critical theory lends to a phenomenological-hermeneutical approach. What D & G provide as an additional critical layer is establishing the co-constituting relation between organism and its environment, which eschews both radical autonomy and causal or teleological explanations. Given this co-constitutive quality of interactions between the organism and its environment, fluid movement is reintroduced as discontinuous processes, rather than a traditional, linear, causal account; moreover, it returns a horizontal, non-hierarchical movement that maintains contextual relationships and environments as a key element of development. This destabilizes 'intention' of the organism and teleological 'evolution' and restores contingency and complexity to the machinic process of production in the phenomenal field.

For this dissertation, I draw upon these approaches as a means to describe phenomena as they exist, and to draw upon the stated horizons of the users and the larger cultural horizon of meaning. This maintains the level of contingency and process of 'selection' that exists within the particular conditions of uses of Street View, rather than attempting to draw a teleological or linear narrative to trace its development. Street View's existence or success was neither predetermined nor evident, and proceeded by a series of contingent developments informed by a larger socio-political and economic field. As an emerging phenomenon, a traditional, linear

narrative of the emergence and its manifestation falls well short of giving a thorough account of the various lines of force that are operative within Google Street View. The current user practices in the myriad ways in which Street View is utilized *in relation to* the production of the actual tool produces a unique tension that warrants an extended analysis beyond the facile description of the uses of this visual wayfinding tool. The tension between Google's significant financial and intellectual investment in a service that it offers free of charge must be considered within its historiographical emergence within mapping, photography and the political-economic milieu. At the same time, there is a real need to examine the contemporary condition of the socio-political and economic dynamics in which experimentation and innovation with digital tools are both a direct response to and extend the effects of a 'lean' neoliberal environment of State and Local governments.

The first section presents the user practices of Google Street View as an exploration of the phenomenal field of the virtual environment, offering both a description and analysis of the user practices against stable horizon of concepts. As phenomenon, it gives a present day assessment of Google's activities as well as the ways in which users utilize Street View. Simultaneously, this section also draws upon critical theory in order to understand some of the tensions that emerge as a result of these practices; the longstanding belief in the veracity of the image being one example. The second section provides a historiographical account of the phenomena and the structure from which it emerges, including the various threads of mapping as practice, the role of photography, and the political economic movement that created the conditions for Google to emerge as the leading map provider. Critical theory also provides an important engagement in order to understand how these historical conditions are evident in the present phenomenon. As example, the emergence of Neoliberalism is examined in relation to

Google's unique position. Tracing these lines sketches out the dominant forces of the assemblage of Street View.

The final section provides a critical analysis of the present conditions, in light of the historical forces and the contemporary state of affairs. Drawing from the conceptual toolkit of Deleuze³ and Deleuze and Guattari,⁴ this section offers an articulation of the deterritorialization of historical lines and desires of the virtual and the reterritorialization those lines into a new assemblage, the nature of which changes as Google adds more axioms to its suite of tools.

Deleuze and Guattari's thinking figures prominently within my work, notably as I draw upon the robust theory and focus on the *tension* that exists within the co-constituting roles the social field and individual production have in producing emerging phenomenon and the world in which it exists. Moreover, their work greatly informs both the spirit in which I engage the subject and attempt to maintain its openness as a phenomenon, as well is as a means to understand some of the discrete, singular instances that emerge as points of illustration. In a proper Deleuzoguattarian spirit, the work herein *can* be conceived of as a series of plateaus, which draw from the complex socio-cultural and political assemblage of a phenomenon like Street View.

Stopping well short of an invitation to read in any order, the reader is invited to explore its imbricated and non-linear history and narrative along various lines. Within the lines of research and artistic practices, the history of photography and the role of mapping illuminate the underlying impulses; while the creative impulse reveals a positive or productive potential of Street View as a new digital tool. The research line explores the production of knowledge from representation, one that owes as much to the history of mapping as it does to the neoliberal environment in which government support has been reduced and the era of 'austerity' requires

³ Deleuze, *Difference and Repetition*.

⁴ Deleuze & Guattari, *Anti-Oedipus, A Thousand Plateaus, What Is Philosophy?*.

creative thinking to advance knowledge. Moreover, Google's own success as a company owes much to the rise of the neoliberal condition, both as offering a strong alternative as a business, but also in its ability to fill the new mapping needs created by decreased government support in such efforts.

As a phenomenological-hermeneutical narrative, threads are examined and followed to a natural conclusion. Each plateau explores a particular aspect of the larger assemblage, where particular lines of force intersect and inform the current manifestation of Street View and Google's powerful position that has created unique conditions within the larger cultural field. These lines culminate in a critical analysis of Google as a company, focusing on the threat that exists in the form of cultural fascism.

0_Introduction : *September 04, 1998: Entanglement and experimentation;
or, Cultural fascism and Google Street View*

“Google’s mission is to organize the world’s information and make it universally accessible and useful.”¹

As part of their effort to organize the world’s information, Google identifies the built environment as a critical element to efficiently organize, spatializing search functions and representing the world through which we move. Within its mapping division, Google Street View is a powerful navigation tool. Google’s express indexing goal also includes written texts, and more recently, has expanded into communication infrastructures and computer and mobile hardwares. The comprehensiveness and robustness of the suite of tools allows for integration across all business lines, extending beyond the daily lives of consumers and extend to every industry sector. This includes tools for the classroom to managing resources and facilities of local governments, notwithstanding the established myriad commercial uses. Their youthful exuberance that comes from a “healthy disregard of the impossible” generates efforts colloquially known as ‘moon shots’ have enabled them to build a powerful suite of tools that touches nearly every aspect of contemporary life. Their business style of decision-making and investment defies common corporate wisdom and their products have repeatedly redefined or challenged the legal plane.

Today, Google is a powerful corporate entity that has the market share in search traffic and mapping service. Google maps division includes graphical maps as well as satellite images of Google Earth and street level imagery of Google Street View. It is largely considered the most comprehensive map available online and has more than 1 billion active monthly users.² The

¹ Google; about, <http://www.google.com/intl/en/about/company/>.

² Google, *The Next Dimension*, at 48:50.

mobile market continues to expand with the Android operating system favorably received by the market; and will undoubtedly continue to shift the statistical composition of Google's Empire. What remains remarkable, however, is Google's ability to offer a majority of the suite of tools at no financial cost to the consumer. Their search engine, email and document services, map service, book scanning project, photographing of the built environment, YouTube and blog hosting, among countless other products and resource hungry projects are funded by their advertising revenue. With 2013 earnings estimated to be \$58 billion, past years' revenue reveals that about 97% of revenue comes from advertising, the least resource demanding feature. This surplus enables a reallocation of financial investments that directly contributes to their market share on all fronts, including efforts like the Google Books scanning project, which allows them to analyze linguistic phrases; as well as Street View, which makes navigation and consumer motivated searches more successful.

Their Street View technology documents the street level conditions and augments search and mapping queries. For the average user, it aids in navigation by providing an image of the new destination. For more idle queries, individual users often view places of interest and familiar terrain as a layer of curiosity of what a place 'looks like' online; when searching for houses and apartments, it is frequently used to see the street conditions of the surrounding community and facilitates the housing search process. Commercial driven uses of Street View incorporate the Application Programmer Interface (API) in myriad ways, while some business models rely heavily on Maps and Street View as part of their services, with the Real Estate sector being one primary example. With Google's Map API available for use, more than 1 million developers utilize the portions of Maps as part of their base map.³ While there are numerous ordinary daily uses, more innovative and creative uses have produced a variety of elaborate advertising games.

³ Google *Google I/O 2013: Re-Imagining the Map*, 2013.

As a photographic archive of the built environment, researchers and artists access the photographs indexical reality and creative potential. Researchers studying the built environment find Street View to be a valuable tool to augment existing research efforts, offering time-savings and flexibility in conducting research. Artists are seizing the potential of Street View and using it to inform or augment their individual practices, and in many instances, the photographic archive is re-presented in a new context, composed, edited and curated by individual artists as a new way of working.

Emerging Google research

While many individual producers are utilizing Street View in countless ways, an increasing amount of scholarship and non-fiction trade examines various aspects of Google's production endeavors and the ways in which it transforms existing practices and conditions. To date, however, these examinations are uneven in coverage, with few efforts focusing specifically on Google Street View. Earlier trade book releases focus on Google's meteoric rise as Internet giant, the texts predominantly historicize their rise by recounting key moments in their development as a linear narrative.⁴ The tone is equal parts celebratory and awe of their 'Midas-touch' ability to convert search into profits while also providing what many regard as the most accurate search results. A few recent texts offer a more critical engagement by presenting a more balanced account of the less 'benevolent' quality: Google is a public company that has an financial obligation to its shareholders to increase profits. This complicates the corporate philosophy "focus on the user and everything else will follow" when "increasing profits for shareholders" might not be mutually compatible.

⁴ A number of trade versions have been released, with Vise and Malseed, Battelle, Stross, Levy, among others. Vise, Stross and Levy are notable in that they were all given broader, inside access to the inner workings. Across all the texts, the factual information about Google is consistent.

Two recent texts stand out as the most critical assessment, in which Siva Vaidhyanathan, a cultural historian and media scholar, takes a ‘long view’ of their indexing capacity, or the ‘googlization’ of everything, and highlights the future cultural dangers if we grow complacent or too trusting of Google. In his text, he argues that Google of today may not be the same Google in 20 years, and placing too much trust in its ‘benevolent’ image could have serious consequences when considering the efforts to digitize books. Vaidhyanathan sees the Books projects and the need for stewardship to be of the same order of importance as the Genome project, in which the private and the ‘public’ effort to sequence the human gene were critical for access and public benefit. In other words, some ideas and information should not be owned or vulnerable to being priced out at a premium.

Media and technology scholar Ken Hillis, with Michael Petit and Kylie Jarrett, examine Google’s efforts to build a world digital library of scanned texts in an effort to make Search as comprehensive as possible. The authors specifically focus on the collective dependency on Google’s search tool, and convincingly posit the truism, if it’s not on Google, it’s not worth knowing, thus making Google the de facto moral arbiter of information that is worth indexing. Situating it among a longer historical narrative of the desire to accumulate information, Hillis et. al., convincingly reveal the pervasiveness of Google in our daily lives while highlight the darker impulses that are characteristic of a personality ‘type’ that wants to own and control all information, drawing a direct comparison to HG Wells’s *World Brain*. A recent documentary film, *Google and the World Brain* extends this further with a focus on the historical arc of the Books project. The documentary itself stops well short of asserting a position, but the filmmakers draw upon scholars in the field that have emerged as critical of either Google or the cultural condition of Web 2.0, including Jaron Lanier and Evgeny Morozov.

In scholarly articles, research efforts have focused on specific points of interest. Geography's disciplinary emphasis on publication produces a plethora of mapping articles, ranging from new efforts of critical GIS or participatory action research, while meta-narratives examine the movement as a whole, highlighting the emergence of a new disciplinary focus given the neologism 'neogeography', or spatial data communication via technologies like Web 2.0.⁵ Specific to this emergence, Google's mapping tools and efforts are considered as one tool among many in the new suite of neogeography tools. As such, articles that engage 'surveillance', 'the digital divide', 'activism', 'democratic potential', etc., draw upon Google's mapping efforts as one running example, but in most cases, it is not the focus of a sustained critique or engagement.

Of the work that does engage Google Street View specifically, the foci are varied and uneven. Cary Savage's unpublished masters thesis engages Althusser's concept of the ideological state apparatus in relation to GSV and the surveillant conditions it would further instantiate, if it became more widespread in coverage.⁶ Jason Farman examines the empire constructed by Google Earth through its indexical authority and the community that emerges around its tools, problematizing knowledge and power claims.⁷ Micky Lee engages a political economic critique of Google Maps, offering an account of the company's success as being attributed to the Cold War.⁸ In response to many of these early narrative accounts of the technological conditions, Paul Kingsbury and John Paul Jones argue for a greater acknowledgement of the Dionysian 'intoxications' that continue to propel Google Earth's rotation and development, attempting to locate greater agency and potential for individual

⁵ In the dissertation, I will engage relevant texts when appropriate, but in general, much of the efforts are contiguous but not directly related to the work herein.

⁶ Savage, "Captured by Google Street."

⁷ Farman, "Mapping the Digital Empire."

⁸ Lee, "Political Economic Critique."

meaning making by allowing the phenomenon to remain open to interpretations.⁹ In a more implicit political engagement, Campkin and Ross examine GSV as a mode of urban photography; its utilitarian role ‘has the greatest impact upon how we perceive, and shape, the built environment’, and they offer three new analytic tools of synchronicity, systematization and interface in which to assess these impacts upon the engaged public.¹⁰ The authors draw upon small case studies as a way to think through what new relationships that might be engendered through the mediated environment of Street View and the people, photographs and the built environment. These case studies highlight three salient attributes of the interface as a way to understand it as a phenomenon.

Given its newness, the uneven theoretical engagement with GSV as a phenomenon, as well as the specific foci of mapping reveals a substantial gap in the intellectual engagement that examines the tension between Google and Google maps and its users that utilize the tools. My dissertation thus situates itself as an attempt to suss out the tension that exists between the top down social forces of Google (and its various efforts) and the ground plane of user activity and immanent production that results from various users’ investments.

Larger themes

Within this background of Google’s current production and the ways in which users experiment and use their tools, some larger themes are critical to outline as an underlying force or the historical trajectories or impulses that inform not only how Google works, how users engage its tools, but perhaps more importantly, how the contemporary environment is changed how we thinking and understand the world through which we move. Specifically, the role of technology

⁹ Kingsbury and Jones, “Benjamin’s Dionysian Adventures.”

¹⁰ Campkin and Ross, “Negotiating the City.”

as a cultural concept; navigating the new media space of Street View; the urban environment as raw material of daily practices; the variegated histories of mappings impulses; and finally, the concept of fascism and microfascism as a way to understand the wide spread adoption and enthusiasm at the user level.

The role of technology

Technology has long been the subject of philosophical investigations as it has emerged in the larger social field. The invention of photography has generated 150 years of sustained discussion about the indexical nature of the photograph, with the mechanical printing process extending the potential of the photograph. When placed in the context of ‘news’ and cultural efforts, the politicization of the sociality of technology becomes evident, as the ‘social’ takes place between individuals, and all relations are political. As a subject of inquiry, this quick, but highly relevant, example reveals the potential proliferation of the effects of a given technology in all disciplines. As Bruno Latour states convincingly, science and technology are ‘in the making’ and continually being constituted by the social field and the actors that participate.¹¹ As an emerging phenomenon, the amount of speculation by ‘futurologists’ to predict the social impacts of new technology often fails to account for the likelihood of simply an extension of given existing conditions.¹² Critical here is the myriad, contingent ways in which it can extend a given practice,¹³ and is often a result of political and social negotiations.¹⁴ Traditional explications of technological determinism have reproduced binary thinking and rationalities, with fear and hope

¹¹ Latour, *Science in action*.

¹² Hine, *Virtual ethnography*.

¹³ Elwood, “Citizen cartographies.” Explicitly, Elwood makes the case that technologies like GIS do not produce brand new conditions, but rather extend the current practices.

¹⁴ Haklay, “Neogeography.” Haklay specifically points to the delusion that results from an optimistic engagement with its capability. He highlights Latour’s work of Actor Network Theory and the research that has exposed the negotiation

of the effects of technologies re-inscribing the surveillance societies, or at the hopeful ends, offering liberating potential as a result of the democratization of information.¹⁵ Missing is both an examination of its actual details of how technologies are being employed and the ways in which its usages changes previous conditions.¹⁶ This requires concrete specificities of singular instances, rather than grand abstract theoretical explications that simply extend the structure versus agency argument with its predictable binary cast of characters.

Following Nietzsche's *Birth of Tragedy*, Kingsbury and Jones give this ongoing binary construction an 'Apollonian' characteristic, one that is ordered, sober, rational, subject to control, and dystopic or utopic re-capture.¹⁷ Practices are then understood or theorized within the dialectic machinations of hope or fear, rather than a close examination of the particular states of affairs in which they operate. Rather, the authors argue for a critical counterpoint to Apollonian determinations, or *Dionysian* impulses, introducing uncertainty, complexity and contingency into the technology in question as it relates to the social field. This sentiment is coterminous with the work of Deleuze and Guattari (D & G) and the need to examine both the structural forces in relation to individual agency is a critical endeavor. Complexifying this binary condition of the dialectic with contingency thus allows for more accurate understanding of the specificities at work, rather than the abstractions that are mere approximations of the condition,¹⁸ and the work

¹⁵ Kingsbury and Jones articulate this binary well, as does an earlier article by Thrift, "New Urban Eras." There exists no shortage of articles that seek to examine x technology in relation to y condition, either as a way to reenergize a concept like the panopticon or neoliberal order, or they examine a given topic to see just how this new technology can subvert the same conditions. Thrift, in particular, highlights the prevalence of deterministic argumentation that asserts itself in relation to new technologies, whereby new modes of being in the world will be ushered in as a result of this new technological layer.

¹⁶ Hine, *Virtual ethnography*.

¹⁷ Kingsbury and Jones, "Benjamin's Dionysian Adventures."

¹⁸ Heidegger, "Concerning Technology." To further complexify this nexus, Heidegger argues for the need to 'hold lightly' technology and its capacities, as its malleable and amorphous quality as an 'ends' and as 'human activity' creates an unstable essence in which the meaning must not be taken for granted, nor can we assume a single meaning. As an update to the surveillance society, in "Postscript on Control Societies," Deleuze presciently addressed the technological determinism imminently unfolding, in which he says there is no need for hope or fear, we just need new tools. For Deleuze, the assemblage or force of a particular quality in question is neutral as a

herein extends this exploration. Kingsbury and Jones do not go quite far enough, however. They examine the reception and meaning making that takes place within the individual user, but do not extend the analysis to the larger implication to the social field.

This thread encapsulates a need for technology to function as a true *technology*, an overlay that adapts and shapes existing practices, transforming them in profound, novel *and* straightforward ways. In Heidegger's "Question concerning technology," technology is both a means to an end as well as a human activity, thereby highlighting the both/and nature of its essence, rather than a binary juxtaposition of either hope or fear that results from its transcendent implementation.¹⁹ Above all, technology is not neutral²⁰; rather it is a socially constructed and thus value laden. As production at the social level affects and is affected by individual production, the co-constituted social field is articulated through what D & G describe as the molar, molecular and line of flight. These social norms and individual variations mark the movement that takes place between the two planes, thereby highlighting the tension that is at work: while social forces may construct a particular usage, the innovative and unique ways in which individuals take up technology and adapt it to their needs highlights the contingency at work in the Kingsbury and Jones article. But extending this further through a Deleuzoguattarian lens, these individual productive moments necessarily reenter the social field, altering the intrinsic relations.

concept. In its actualization it oscillates between poles. As an abstract idea, technology addresses particular characteristics, but following Heidegger, it may be enacted as a means-driven application or a human-activity actualization. In other words, it manifests itself as an instance of *pouvoir* (means) or *puissance* (activity) in its affective capacity.

¹⁹ Heidegger, "Concerning Technology."

²⁰ A large debate exists within this discussion, but it is well outside of the scope of the dissertation

The new media space of Street View

In 2001, media theorist Lev Manovich gave language to the new digital media environment in *The Language of New Media*; in the process, he articulated a new field of studies that sought to define the new digital space of creation, made possible by the computer and Internet revolution. Rather than seeing the digital practices as mere extension of previously established ones, Manovich sought to determine the genealogy and archeological lines that informed its emergence. He identified key characteristics that defined the media as being a new type of media, rather than a further blurring of media boundaries. What is particularly important is that this new media space affects all stages of communication as well as all types of media. Its pervasive implementation and consumption across countless sectors and modes of work is precisely why Manovich identifies this new milieu on the same order of importance as the printing press and photography.

For Manovich, the first true New Media was cinema, invented 100 years prior to the digital revolution. It was, for Manovich, a key moment in cultural history in which a wide variety of disparate practices coalesced into one distinct medium. The intertwining of the histories he offers shows the passage or transformation of the various media production and output, and its culmination into this new media space that radically transformed the social milieu. For Manovich, we see this again, 100 years later, with the same intertwining of many different media trajectories, made possible by the computer and digital platforms. Most recently, Manovich extends this new media space in relation to software and software's ability to radically change and transform the media space. While Manovich accords importance to the hardware and the professional development of systems, platforms and the software functionality, Manovich is

particularly interested in the ways in which users expand and experiment in this new media space.

In *Software Takes Command*, one key question for Manovich is ‘What happens to the idea of a ‘medium’ after previously media specific tools have been simulated and extended in software? Is it meaningful to talk about different mediums at all?’²¹ For Manovich, he perceives a lack of interrogation and critical engagement with the role software plays in daily society. It is pervasive in our daily lives, and there are few realms that remain untouched by some form of software and its interface. Critically, given the social production and use of software and the various feedback mechanisms of technology, understanding the cultural and social forces are essential to understanding the shaping of software and the ways in which it is adopted within the larger milieu. For Manovich, he views software “*as a layer that permeates all areas of contemporary societies*. Therefore, if we want to understand contemporary techniques of *control, communication, representation, simulation, analysis, decision-making, memory, vision, writing and interaction*, our analysis cannot be complete until we consider this software layer.”²² It is the social and cultural importance that gives new glimpse into a ‘technology’ as previously described above and the importance in understanding how existing practices are extended and advanced in novel and unexpected ways.

Finally, one key aspect of Manovich’s work is the transformation of what was once considered a ‘document’, or a stable, fixed output in which reception of the object was partially determined by its form, as it exists in the world. While communication theory focuses on whether the message is accurately received and what that failure might mean, more contemporary cultural studies focuses on the agency or flexibility of interpretation of the

²¹ Manovich, *Software*, 4.

²² Ibid., 15 (italics original).

spectator. The meaning making that results, whether intended or interpreted in a different of partial way, is positive and productive, one that is not given the status of ‘failure’ to receive the intended message. Interpretation and the hermeneutical orientation of reception is as important as the intended message originally produced. Manovich’s observation is that both these modes of understanding is predicated on a ‘full’ reception, whether it is the entirety of a song, film, text, etc. For Manovich, what precisely defines this new media space is the ability for the user/receiver to move horizontally and vertically, constructing partial meaning based on fragmented experience. In Manovich’s view, this transforms the stable document into a software performance, as experience and reception “is constructed in real time.”²³

The dynamic quality is critical, both within Manovich’s work, as well as within the present work. This dynamism is activated by the user, often via the extension of the mouse and keyboard. Media spaces receive real time input, where content is altered, space is navigated; “the ‘message’ that the user ‘receives’ is not just actively ‘constructed’ by him/her (through cognitive interpretation) but also actively managed (defining what information s/he is receiving and how).”²⁴ This new media space does not have ‘finite’ boundaries of a stable object; rather this new media space is continually updated, added to or otherwise experienced anew with each discrete engagement with the platform. For Street View, this unbounded space and the users’ ability to construct and manage their experience has potentially profound implications for reception, as the horizontal and vertical movement within the platform provides the possibility of unique points of connection and synthesis, affecting the cognitive/ interpretative layer of experience. This horizontal and vertical movement as a cognitive movement resonates with D &

²³ Ibid., 33.

²⁴ Ibid., 36.

G's concept of absolute 'deterritorialization', which is defined as a intensive cognitive shift that affects not only the individual but impacts the social field.

The optical space of Street View, following the new media space of software, blurs existing categories of media and practices. It brings together a variety of media, from the graphical representation of the map, the photograph as an indexical document, the practice of wayfinding by way of visual and graphical means, the cinematic space of fluid movement, the immersive animated or rendered virtual reality environment of gaming platforms which require the user to move through the environment in a somewhat seamless manner. Within this media space, it draws together "a wide range of already-existing and not-yet-invented media" with Manovich's account and focus on Alan Kay. While Manovich draws from a Foucauldian genealogy by tracing a particular path in history, the present work diverges from Manovich's framework. Rather, I draw upon Deleuze's concept of the virtual, in which the whole of the past (ideas, utterances, experiences) are contained within the whole of the present. The actualization or manifestation of Street View draws from the whole of the past as contained within the social field. This allows latent ideas to coalesce and intermingle to form up these new media spaces as particular assemblage of socio-cultural forces that are unique to a particular time and social milieu.

Variegated history of mapping

Mapmaking is often considered an active practice of constructing and communicating spatial knowledge, one that is tied as closely to landscape as it is to vision.²⁵ It is both an art and a science. The empirical activity of seeing and recording physical descriptions give maps an air of authority, truth and factual information writ large. With satellite technology and GIS, the last

²⁵ Cosgrove, *Geography and Vision*.

50 years have more firmly established mapping as a scientific instrument, rather than an art of cartography.²⁶ Mapmaking is also a considered cultural activity, in which the spatial knowledge represented is unique to the particular community constructing the map, and understanding the map requires knowing the social, historical and technical context in which it was produced.²⁷ It is a way of representing the external world in a graphical form, and it is the image that holds the power of representation to establish an authority, as well as conjure subjective and deep-seated responses. More than merely representing a world, maps also produce worlds, one that produces and affirms a territory, rather than merely giving it representation by graphical form.²⁸ It follows, then, that the entangled nature of mapping impulses defies an easy historical narrative; rather, its history is fully imbricated with competing agendas and motivations.

Within this variegated function of maps, a variety of producers are responsible for constructing maps, both as a legitimated authority as well as an informal attempt to spatialize information. These two distinct thrusts can be organized along majoritarian (legitimated, sanctioned) and minoritarian (informal, immanent) lines. The State has sponsored many mapping activities and have employed citizens to help produce them. Researchers map environmental effects, constructing knowledge that then becomes legitimated through peer review and publication. Artists also map effects, constructing an informal or immanent social knowledge of the environment and the ways in which the distribution of various conditions can be understood as part of a shifting milieu. These mappings exist across many different media, of which photographic mapping then becomes a systematic visual documentation of the built environment, one that can be acted upon, manipulated, interpreted and ‘managed’ in novel and unexpected ways, depending the user of the mapped environment.

²⁶ Ibid.

²⁷ Google, *Next Dimension*, Moore; Cosgrove, *Geography and Vision*, see chapter 9.

²⁸ Wood & Fels, *Nature of Maps*.

The present environment of Web 2.0 emerges at a unique time when many state agencies are disinvesting in the mapping process. This is often due to lack of resources in developing countries, or for the US, establishing guidelines for the private sector to follow. This new media space of software and the ability for a variety of users to contribute content shifts the type of knowledge that is produced through the mapping process. The role software plays here is especially important, as open source efforts consisting of volunteered labor shifts the hierarchical order to a horizontally distributed platform in which content is generated, ranging from a comprehensive to uneven efforts. With this greater distribution of mapping contributors and the means of contributing information greater still, with smart phone technology contributing user data actively or passively, there exists a wealth of mapped information. Any individual or organization that has an interest in spatialized data is particularly interested in harnessing this potential of the crowd, from custom apps to participatory planning and everything in between. Ultimately, the content of the world through which we move offers particular value, either as an object of research, need for wayfinding, or making a commercial establishment more visible to a new potential audience.

Urban as Raw Material

The urban imaginary has a powerful presence in the lives of countless many. As the setting in which everyday life is lived out and political, economic, social, cultural, racial, and spatial practices take place, the built environment remains an important object of study across academic and creative disciplines. With more than 50 per cent of the world's population living in an urbanized environment, researchers continue to focus their attention on the city and its spatial, economic, political, socio-demographic organization. The physical spatial organization of an

urban environment continues to remain important and offers illuminating comparative analyses, not only in ways in which urban environments and the natural world remain resilient in light of increasing demands on natural resources, but also as the complex global financial system exerts influence and stress unequally across the globe.

As a site of common interest, it lends itself to interdisciplinary practices and research agendas, seeking to harness the intellectual resources of different disciplines with the desire of yielding new understanding of an increasingly complex global world, producing new foci like urban ecology and healthy cities. New methodological frameworks are emerging that seek to build upon the confluence of intellectual capacities, with resilience and complexity theory, geophilosophy, assemblage urbanism, mobility studies, among others, and attempt to construct new frames of understanding and sense making.

Architecture and Urban Planning researchers study successful urban case studies to produce better functioning environments that utilize principles of sustainability and diverse or mixed-use developments. Dependence on the automobile remains one of the biggest legacies of the 20th century, and a need design environments that reduce auto dependency are critical, not only for environmental considerations, but increasingly, the urban form and its role in promoting walking has direct impact on the health of its citizens. New partnerships with medicine and public health have found meaningful correlations in healthier landscapes that facilitate physical activity and decreasing the rate of obesity and cardiovascular diseases. Urban planning and ecology analyze local ecosystems in order to develop more naturally sustainable systems, incorporating dynamic systems theory to understand the threshold of resilience. Systems are found to naturally adjust to external influences up to particular thresholds and understanding the

range of demands the urban form can place on the system while still maintaining a natural balance will continue to be an important consideration for future development.

At the same time, geography's focus on spatializing the socio-political contestations make visible the city structure and organization through the mapping process. Human, cultural and economic geography map the different forces as they affect spatial formation; in the process, the need to formulate new theories of the contemporary milieu becomes necessary. Recent discourses on neo-liberalism and globalization attempt to theorize the uneven development in order to assess the political agency that might exist for the inhabitants within the dominant order. Class-based concerns of Industrial Capitalism do not adequately address the concerns of an increasingly global society with a large proportion of knowledge workers and immaterial labor radically blurring class lines and modes of production. Sociology's study of the physical condition of the environment in relation to levels of crime, education and social structure seeks to ascertain what correlation exists between the actual condition in relation to statistics. Attention paid to the structural conditions, the physical condition, as well as the purposive social acts and social control of the neighborhood in question. This results in a broader understanding of how the physical environment might complicate or complement theories of delinquency and crime for a particular socio-demographic area.

As a practice of meaning making, artists have consistently engaged the built environment as an object of study or mode of engagement, running the gamut of straightforward representation, political motivation, artistic interpretation, as well as stable backdrop in which to situate creative expression. The perspectival view of the Renaissance gave rise to an increase of depictions of the physical environment. Since the invention of photography, the camera has been

pointed at the built environment. Its stationary quality enabled long exposures to render the detail, instead of blurred phenomenon that typically resulted from using live subjects.

These range of interests and investments in advancing knowledge and understanding of the world around us coalesce around the visual platform of Street View, which stands as a visual archive of the built condition from which to draw inspiration as well as form ideas and associative understanding within a given research agenda. The photograph provides an indexical document for research, while the platform extends the creative tools of the artist that draw inspiration from the urban image.

Microfascism and the neoliberal subject

Within this particular media space in which the user then manages their experience and meaning making, a final theme within the present work is an attempt to understand the tensions that exist between the larger cultural production of software and interfaces and the adoption and use of the tools by legions of users. The importance of understanding the everyday user rather than the engineers that produce the tools is an important layer to access immanent, or organically emerging, uses across a larger social field. Intention and reception/use are separate conditions within this media space. While an engineer can intend to develop a set of tools from which to create or make practices more efficient, once released out into the world, users have the ability and capacity to manage that experience for themselves.

The larger social milieu of the cultural production of Web 2.0 as well as a neoliberal paradigm both take 'freedom' as a desirable point around which to rally. That web 2.0 provides many point of participation and the social quality of this participation of sharing creates a particular condition in which many participate for many reasons. The enthusiasm that surrounds

this new environment of freedom and managing ones own online experiences offer points of compatibility between the 2.0 subject and the neoliberal subject. The neoliberal subject also is free to manage their own affairs, but it is oriented along lines of being given the responsibility to conduct oneself in the absence of government regulation and oversight. While there are clear instances in which the neoliberal political economic environment produces a particular ‘responsibilized’ citizen, Web 2.0 produces a different kind of citizen that is enthusiastic to seize these responsibilities.

Understanding the tension between a rational, decision-making subject and an irrational, participatory investment of desire creates a cognitive tension within established disciplinary discourses. As a more robust framework, D & G’s concept of Microfascism offers complexity to understanding why users adopt tools so enthusiastically despite the privacy and data trails that build profiles of their activities. Microfascism is defined as an investment in the social field or practice as one in which present freedoms are acquiesced in exchange for better outcome or future. This investment of desire and identifying with a particular movement or social belief confines individuals to a particular positions, in which freedom, broadly defined, comes at the expense of this identification and the subsequent maintenance of this particular adopted belief or investment.

Within this context, it is the enthusiasm to participate in this larger cultural movement of web 2.0 and the user generated content, the hope or investment in this production often is rooted in the potential outcomes of notoriety or employment, whether it is content production of social media or technical production and devotion to an open source project. Google, within this particular condition, carries an enormous cultural cachet for the tools it offers and the visibility it provides, whether as a participant in their user contributed content of mapping or the powerful

integrated search function across all of its platforms. Users continue to participate, despite data it compiles as a result of our search practices and its property claims of data contribution to its mapping, as just two examples.

The responsabilized neoliberal subject fails to capture this willingness to contribute to this larger 2.0 project. The investment of desire by the subject needs a different set of conceptual tools to understand what motivates individual actors to contribute despite the various freedoms they give up in the process. Perhaps most importantly, microfascisms offer a way to understand how disparate individual investments have linked up across a large social field, resonating across the many different subjects as part of a larger socio-cultural shift of content production and a willingness to donate labor for no monetary compensation. I sketch out this larger movement as being a movement towards a kind of cultural fascism, in which nearly every individual users participates in some way, and more importantly, is receptive to the appeals to participate in this larger goal of democratization of information.

For the present work, the exploration of these themes and the ways in which they become intertwined and imbricated is less about a specific new media space than it is about the contemporary milieu, in which this exploration offers one particular view. Rather, this new media space, the role of photography, the history of mapping as well as the interest in the urban realm as the site of everyday life as informing the particular assemblage of Street View. Understanding the success of the particular historical forces must be examined in relation to the present day socio-political milieu and the tensions that exist between the social production at the level of Google and its tools in relation to the immanent social production of the users that

advance these tools in unexpected ways, from which Google draws upon to further develop functionality and new tools.

Methodological framework: complexity and contingency

Given Google's contemporary status and a highly evolving tool and set of practices of Street View, a linear narrative fails to encapsulate the dynamic shifts that continue to occur, both at the level of the company and the ways in which users engage the visual navigation aid.

Contingency and complexity are thus two important concepts and offer the potential to analyze individual instances as a means to separate the 'structure/means to an end' discussion from the 'agency/human activity' discussion.²⁹ The methodological framework employed within the present work is distinctly Deleuzoguattarian. However, there are many points of compatible overlap between Deleuzoguattarian, hermeneutic phenomenological and Actor Network Theory frameworks. Each frame allows for the multiple realities that exist within the phenomenal field and eschew causal or teleological narratives of technological determinism or a simple dialectical analytic. A Deleuzoguattarian approach, however, expands these frameworks in important ways.

Manuel Delanda is notable for his flat ontology and attempt to draw complexity and systems theory into conversation with a Deleuzoguattarian and Deleuzian framework. In Delanda's *Intensive Science and Virtual Philosophy*, his further flattening of this framework explicitly intends to de-privilege the human activity³⁰ that is often privileged in environmental discussions, whereby the intentionality of the human is accorded a different weight of other critical layers of the physicochemical, organic, alloplastic that D&G highlight in ATP. For

²⁹ Bonta and Protevi, *Geophilosophy*. Bonta and Protevi specifically highlight this aspect of D & G's particular interest in exploring the tension, not as a neat dialectical third way, but more akin to a Deleuzian dialectic, an oscillation between two poles, held in tension and mutually imbricated and co-constituted.

³⁰ Delanda, *Intensive Science*, 162.

Delanda, this flattening preserves the machinic production of the lived world. D & G, however, explicitly state that all three layers remain critical to the milieu. While the physicochemical and organic layers are machinically produced, humans necessarily construct meaning and intention from the phenomenal field. Artificially flattening this important aspect is an *actual artificial* flattening and fails to account for the variation that exists in the spectrum of modes of production. While a tree may machinically populate the world with seedlings, humans purposefully populate the world with ‘well-made plans’ *as well as* unconscious desiring production. Retaining this relief is thus critical if we are to attempt to uncover the tension that exists between the level of production of Google in relation to its users that actively use the tools of their own volition, in whatever relative enframement we wish engage this. Therefore, throughout the work I retain the fullness of the Deleuzoguattarian framework, as opposed to Delanda’s adapted version.³¹

Bruno Latour’s Actor Network Theory also engages complexity and contingency in the emergence of an event, such as the development like a tool like Street View. For Latour, once the researcher sets aside his or her ideological agenda and focuses on the actors, this process of uncovering utterances and the interpretive process of sense-making and decision-formation enables a more accurate account of how an event unfolds.³² As a proper ‘ANT’, the researcher sets aside or brackets out their own research agenda and ‘listens’ to the actors. As a Sisyphean task, the researcher follows every trail of every actor. As a truncated attempt, the researcher thus follows actors within set parameters, following what the actors say rather than what the

³¹ Thus breaking with the work of Bonta and John Protevi, whom highlight their use of Delanda’s adaptation in the introduction to Geophilosophy. In *Intensive Science*, Delanda himself explains the points in which he shifts the emphasis of the virtual to diminish the anthropomorphic layer. While this is critical for studies that predominantly study the physicochemical or organic layers, it falls short of providing a full description for a phenomenon like Street View, which resides predominantly within the alloplastic layer.

³² Latour, *Reassembling the Social*.

researcher is hoping to find. In this respect, I draw from Latour's 'following the actor' to fully consider the utterances that emerge as single meaningful statements. For Latour, if the research is conducted in a comprehensive way, the researcher need not interject their own narrative, for a thorough description of the event should explain the complexity.³³ If explanation is needed, then a description is insufficient; adding more actors and their traces thus fleshes out the unfolding of the event without the researcher offering their own frame of understanding. This orientation draws more heavily from a traditional Husserlian phenomenology that attempts to bracket out a dispositional bias and objectively survey the field.

As a method of data collection, the researcher need only pay attention to the utterances, which is compatible with the radical empiricism that Deleuze and D & G employ. What is noticeably different, however, is the *necessity of the utterance* as well as the presumed *stability of meaning* from which the researcher draws. For Deleuze and D & G, however, the 'what-ness' or *quidditas* of a phenomenon relies too heavily on established structures and habit, the representational 'difference' of objects, in which comparative strategies highlight the relative differences. The 'essences' that are key to a phenomenological framework are thus challenged by the singularity of a phenomenon, in which a universal structure cannot (or, perhaps, should not) be extracted as 'essence'. This challenges any stability of meaning or structure of experience when we engage a phenomenon in all of its 'this-ness' as a haecceity. Moreover, for Deleuze and Guattari, utterances are collective utterances of the social field, constructed from a

³³ Notably, ANT has shown to be powerful in uncovering the series of events that produced a dramatic shift. Often used in both the scientist and increasingly in Organizational studies, analyzing the language of the actors as they theorize and event or 'non-event'; it becomes clear through investigation how the message was inserted into the social field. A particularly compelling series of papers looks at the birth of digital photography and Kodak's roll in first suppressing it, then their roll in advocating for its importance- determined by the timing of their own research and development phase. But strikingly, it was the passage of time that gives an event its fully formed status in which to analyze. To wit, the researcher Munir offers a fascination description of the emergence of the first digital camera, an event that took place 20 years prior to his research, when digital had finally fully installed itself as advanced technology. As Latour states of his own theory, ANT is only helpful when the event has passed. GSV as an emerging phenomenon needs more agile analytics to examine the ways in which it is shifting the social field.

confluence of assemblages, concepts and semiotic formations; while uttered by unique individuals, the utterances emerge from a larger social field, the veritable ‘virtual’ condition of *possible* utterances.

For an ANT framework, accessing the virtual is thus a problematic enterprise. If actors did not articulate a particular point of connection, the researcher must follow the trail rather than blaze one of their own. Deleuze’s concept of the virtual restores relief to the present state of affairs, in which all previous ideas continue to circulate, regardless of an explicit connection as stated. In relation to a phenomenon like Google Street View, researchers may draw from the discourses of photographic history that establish the photograph as index of reality, regardless of their understanding the discourses that gave shape to its accepted status. In other words, the veracity of the photograph exists in the social field without individuals explicitly being aware of the historical discussions, and the photograph as documentation is a standard research tool of empirical evidence.

Like a hermeneutic phenomenological framework, drawing from the virtual enables an interpretive circle from which understanding is wrought from a phenomenal field. Both D & G and hermeneutic phenomenology seeks to get as close to the phenomenon itself and challenge pre-conceived notions of meaning. A radical and important difference, however, is that while hermeneutic phenomenology seeks to challenge pre-conceived notions, it is to arrive at its essence and meaning as a structure of experience. D & G, however, seek to challenge pre-conceived notions of meaning *entirely* by focusing on the materialist account of ‘how does it work’, which is critical for identifying underlying forces that may be virtually present but not actualized in a concrete manifestation. This focus on ‘how it works’ is particularly important for the present work. Within the intellectual field of ideas that are unique to particular disciplines,

interdisciplinary work benefits from another mode of analysis that moves beyond a specific concept like neoliberalism to examine the expressed underlying tendencies that are evident in compatible, yet discontinuous, concepts. The underlying tendencies enables identifying compatible drives or forces that may be shared with a phenomenon like Fascism, rather than outright dismissal of a concept as the ‘meaning’ may not be appropriate on the basis of definitional meaning.

As a whole, each of these frameworks enables an analysis of a particular event in its phenomenal richness and complexity, one that draws from the historical forces that produced the conditions of its emergence. While ANT examines the actors and their utterances as an attempted objective study, a hermeneutical phenomenology draws from the interpretive circle and horizon of meaning of the phenomenon and the interpreting researcher, one that is necessarily enmeshed in the given social milieu. These efforts are contiguous with D & G’s analytic of mapping an assemblage. Unique to mapping an assemblage, drawing out the individual forces that inform a particular assemblage formation, the context specificity of the space-time bloc highlights the singularity of the assemblage and how a shift in forces change its nature. However, this mapping negates an ‘essential’ structure as well as reinforces the horizontality of the social field of utterances, rather than according too much weight to individual actors.

As a researcher, however, ‘interpretation’ is a necessary activity. I draw on the hermeneutic phenomenological framework to engage key texts and phenomenon closely to interpret the sense and meaning-making that is happening at a philosophical or meta-level. As one example, the above text by Lee articulates a teleological account of Google’s claim to mapping power as a result of the Cold War environment.³⁴ I engage Lee’s argumentation offered, placing Lee’s narrative in conversation with additional threads such as Mapping, Photography,

³⁴ Lee, “Political Economic Critique.”

Open Source and Neoliberalism, in order to problematize its causal narrative, and thus restoring contingency into a highly dynamic unfolding of technological developments within the social field. This simultaneously draws on ANT and following the trail of the actor, in this case Lee, and examining the series of statements offered therein.

Conceptual methodological principles

The theoretical concepts and spirit of D & G's work inform the intellectual project and its organization as mode of inquiry. As both a ontological and epistemological framework, the present work attempts to stay true to their assertion in what is philosophy: construction of concepts is a creative, philosophical act and to construct concepts requires thinking like philosophers, rather than thinking their thoughts. While many of their existing concepts are useful in terms of understanding a particular phenomenon, it stops well short of simply applying a concept as a mode of understanding. In particular, the following concepts: the assemblage; and Deleuze's concept of the virtual; the plane of immanence; the molar, molecular and line of flight and the cutting edge of deterritorialization; are key concepts in which to understand the phenomenon. The following extended explication of the key concepts are intended to serve as a necessary framing and elaboration of how they work in general and how they are mobilized within the present work.

Assemblage

For D & G, the assemblage is a bloc of space-time that is specific in its construction. It is an ephemeral confluence of variables and forces, 'a come-and-go between different types of

variables, and corridors of passage traveled in both directions.³⁵ An assemblage is tetravalent, or consists of four dimensions, axially defined as the horizontal line of content and expression (bodies, actions, acts and statements, etc.) while the vertical line has an orientation to territory, one that may or may not be defined as a physical place, but also incorporates a socio-cultural milieu. Territory has as its counterpoint deterritorialization (and reterritorialization). The vertical line registers the degrees of intensity with the fourth side of deterritorialization, or a kind of rupture, opening the assemblage to other lines of force. Relative deterritorialization is a shift or extraction from a given set of conditions and territory. In an absolute sense, it represents a dramatic cognitive shift, where the line of flight producing the deterritorialization shifts the entire plane, cutting across the social field in unanticipated ways. Reterritorialization is thus the process by which the initial shift or displacement is placed and accepted into the new field. The fourth side of the assemblage opens on to other formations, what they describe as the ‘cutting edge of deterritorialization.’ It functions as a critical element for society and its ability to change and adapt over time. If assemblages were fixed and constant, like platonic ideals, society itself would be fixed and unchanging, freezing a social order of norms, customs, and people. When an assemblage increases the multiplicity of the lines of force that comprise it, however, the nature of the assemblage changes, keeping the society open to future movement.³⁶

This movement, defined by the lines of flight immanent within the field, engender a machinic composition, in which the co-constituting production of the social field in relation to the individuals that comprise it define the intensity of the deterritorialized edge. The “machinic

³⁵ Deleuze and Guattari, *A Thousand Plateaus*, 100 (hereafter, ATP).

³⁶ For our purposes here, and will be a running concrete example throughout, the marriage assemblage, defined by religious order and rule, is subject to variation as a result of shifting socio-cultural conditions. A fixed society would maintain and mandate marriage as being defined by man and woman as a holy matrimony. A shifting society like the contemporary manifestation has increased the multiplicity of meaning if matrimony to no longer be defined by man and wife, but a union of two people. The nature of the marriage assemblage changes: the state is the arbiter of the union, rather than the church acting as the dominant authority. The assemblage itself persists, however, now radically redefined.

aspect of an assemblage relates ... to a precise state of interminglings of bodies in a society, including all the attractions and repulsions, sympathies and antipathies, alterations, amalgamations, penetrations, and expansions that affect bodies of all kinds in their relations to one another.”³⁷ The precise state can be understood by identifying the distinct lines that comprise the assemblage. The first concrete rule, according to D & G, is to understand the territory an assemblage envelops.

While an assemblage is better described as an amorphous intersection of lines of force, an assemblage is necessarily territorial in nature. The nature of its composition highlights an important element of the assemblage: it does not exist in isolation. This is exemplified by technology, which never exists in isolation, “tools exist only in relation to the interminglings they make possible or that make them possible.” A hammer wasn’t just invented, but rather drew upon the technical advances of fire and materials, the nature of shelter, the need to fashion connections, to advance the stone mallet into a more durable object, ushering in a new ‘era’. While this is an overly simplified account, it highlights the variety of forces that comprise the unique bloc of space-time of the hammer. Concepts are deterritorialized and decoded from various milieu and cohered together in a particular manner, thus highlighting the level of contingency at work in the field of forces from which a particular assemblage emerges.

The Virtual

Within any given milieu, however, not just any ‘assemblage’ is possible. Rather, the *potentiality* of an assemblage is defined by the particular milieu from which it emerges and that from which it draws. Deleuze’s early articulation of the *virtual* is particularly useful here, drawing from a Spinozist ontology. In brief terms, for Spinoza, bodies are comprised of thought

³⁷ Ibid., 90.

and extension. His parallel account of the material world is thus for all bodies, there exists an idea of the body in god, for no material form can exist unknown to god.³⁸ Critically, however, the actual body does not need to exist for the *idea* to exist. Deleuze takes this parallel account of the material world as a way to understand the potentiality that exists, latent in the present condition, whether it is a social phenomena, a human gene expressed or not, etc. The virtual is thus the fullness of time, collapsed into the pure present, in which all previous iterations of bodies or ideas exist as potentialities, regardless of our own held knowledge of them existing.³⁹

The whole of the virtual is ‘chaos,’ and the determination of potentiality happens in two stages. The first layer of determination for Deleuze is described as differentiation, or the selection of content from the virtual field. In human terms, the differentiation of chaos results in the pairs of 23 chromosomes that define a human egg from another species. Within this new virtual field, relative infinite potentialities exist, defined by the potential content of the chromosomes. With two specific sets of chromosomes, the virtual content is thus limited even further, and in the development stage of the fetus, the virtual content undergoes a second process, this time differentiation, in which the virtual content becomes actual, as features and dispositional qualities take shape. The critical element then, is that while an individual may exhibit certain traits, they carry particular genes and features that are not expressed but still remain as a potentiality for future generations, blue eyes being one clear example. As a recessive trait, the individual must have blue gene strains from both parents. If the blue gene is present in only one set of chromosomes, the individual will have brown eyes, for example, but future offspring may have blue eyes, should a future process of differentiation take place. But even

³⁸ Spinoza, *Ethics*.

³⁹ What makes this particularly powerful is it allows the individual to access a collective memory of the social, destabilizing the privileged individual perspective or dominant, continue narrative, thereby allowing for multiple understandings and unfoldings over time.

within possessing both sets of genes for blue eyes, the actual intensity of the blue varies according to the other genetic elements.

While a convoluted digression, the importance here is that within any social milieu, previous concepts, ideas, and conditions remain latent in the present, regardless of the contemporary norms. Slavery as a practice is outlawed, but the idea persists; relationships of domination still exist, and different relations of the dominant master and subservient individual manifest itself in different ways. The impulse to command power and rule over another individual has the potential to reemerge in particular conditions. This latency informs the whole social field, including the assemblages that inform and are informed by the conditions. Contingency, again, is thus a critical factor. While a universal history of ‘capitalism’ might exist, as example, for D & G, the actualization of 20th century late capitalism within a neoliberal environment was neither ‘given’ nor ‘destined’ to emerge as it has; nor has it emerged in the same manner in different socio-political environments.

With a given assemblage, tracing the lines of force that inform its actual manifestation produces a ‘diagram’ or articulation of the forces. This diagram is given the term ‘abstract machine’ to capture the machinic process of the various forces, the shifts in speed and slowness of each line, and the viscosity that results as these individual lines cohere in a unique way. Machinic, to dispel any teleological narrative of its ‘given-ness’, and automated in an unconscious manner, or desiring production. An assemblage emerges from the field of social relations; it is not ‘choreographed’ or installed, but rather is co-constituted from the social field and the individual participation. In other words, it simultaneously makes possible and is made possible by the social field.⁴⁰

⁴⁰ D & G, *ATP*, 90. In particular, D & G make a specific point to say that one mistake of considering technology (broadly construed) in isolation is precisely the practices that employ the tools and alter behaviors or ways of

The abstract machine is thus the differentiating process, with the differentiating process of actualization giving the specificity of a particular assemblage in relation to the particular condition. Capitalism manifests itself in different political environments in relation to the socio-cultural and geographic constraints. An assemblage of ‘single family home’ exhibits a particular quality in the United States; one that does not reproduce the same qualities in a political environment where land speculation is less rampant, or tax benefits not as attractive. An abstract machine is thus the selecting mechanism from the virtual field. The particular social condition is a differentiating determination, and within that context, the actualization of the ‘relative’ virtual content results in a particular socio-cultural and economic phenomenon, individual impulses that can be traced back individually, but in the particular confluence or manifestation, gives the ‘air’ of *invention*. In short, a line of flight or new phenomenon emerges from the social field *because the latent impulses are immanent within the field*.

Planes of Immanence

Given the diversity of user practices of Street View, it quickly became necessary to focus the investigation of particular practices that have the greatest level of social importance. While the commercial activity of advergames are entertaining, the level of importance that can be ascribed to the advertising agenda is diminished when considered in relation to knowledge claims that arise from using the visual archive to conduct research. Drawing from my initial interest in Google Street View as a visual archive of the built environment, this emphasis enabled a natural sorting of the most relevant modes of practices. As organizing strategy of user

practices, I draw from the three dominant planes of thought in *What is Philosophy* - philosophy, art and science- that D & G highlight as being the most critical to shifting a given milieu.

Each plane and its conceptual figure participate in the production of the larger plane of immanence or social milieu. While a philosopher constructs concepts to give consistency to chaos, scientists slows down chaos and the infinite to gain reference, the plane is marked by coordinates and adding functions. The artist creates affects and percepts attempt to bring chaos back to the organized field. Overall, this thinking that is unique to each discipline is though through these categories as a way in which to confront chaos on its own terms. So while the philosopher works with socio-cultural forces, the scientist builds function to understand the phenomenal field; the artist, rather than working with existing forces and phenomenon, seeks to make visible the tensions within the field; in other words, the artist produces blocs of sensation the exist outside individual reception and have the potential to shift the social field. Moreover, the need for all three planes to affect and be affected by the other planes places them in unique relation, in which all three disciplines might engage one event in different ways, thereby advancing understanding.

Within this framework, D & G seek to distinguish the inherent productive quality of the three modes of thought and assert the importance of each discipline and the imbricated and intertwining nature of the production of concepts, functions and sensations. The thoughts intersect, not as 'synthesis', but rather the intersection creates a culmination of points, in which the various modes participate and affect understanding in other registers. Most salient for this particular context, analyzing the invention of photography and the resulting practices makes concrete some of the more abstract elements of their framework. Each discipline confronts the event of photography in its own manner. Confronting 'chaos' and the resulting consistency,

order or sensation cascades and affects each one in turn, a proliferation of effects, rather than a linear causal outcome.

As a scientific phenomenon, researchers sought to utilize the tool to make visible phenomenon that was previously invisible to the human eye. Scientists sought to test the capacity and use its potential for rendering phenomenon empirical, thus provable. With ‘motion studies’ in particular, the photograph was able to isolate human movement and freeze the mechanical functions of the body. This gave medical researchers new understanding and point of reference of how the human body ‘works,’ thereby eliciting the need for new ‘functions’ to be created, such as developing a theory of human locomotion and establishing normative and abnormal motor poles in which to categorize subjects. Edward Muybridge thus offered the scientific community a way to organize chaos into instants of time.

With this same new tool, artists created new blocs of sensations, freezing a particular moment at a particular time, introducing new variations on previously established concepts and ideas. Painting genres of portraiture and landscape were reinterpreted through this new indexical instrument. The fallibility of the human hand in its rendering capacity became evident. At the same time, the objective, mechanical photograph legitimated this human, expressive practice. The photograph revealed its subjective nature through artistic intentions, as scenes captured on film could no longer be assumed to be ‘true’, producing a decisive separation between ‘indexical’ and ‘truth claim’. Artists working at the turn of the century, enamored by the new technological capacity of the modern era seized the same scientific proof of Muybridge’s locomotion. Pablo Picasso and Marcel Duchamp took these single instants of time and collapsed them into a single image. Works like *Les Femmes d’Alger (O. J. R. M.)* and *Nude Descending the Staircase* ruptured the social field with this new mode of representation; no longer the

expressionistic softness of impressionism, the social field was significantly disrupted and the pictorial plane radically altered as a result of human movement frozen and isolated.

Philosophers found opportunity and need to make sense or introduce consistency within this overall field. In socio-cultural terms, a variety of issues emerged, including: the need to determine the merits and claims of the subjective or objective nature of the photograph, its disruption of spatiotemporal understanding, the threat to and potential for the 'aura' of the work of art. In socio-political terms, the photograph's ability to bear witness, the nature of privacy in an increasingly photographic culture of printed journalism; the role of technology in changing conceptions of propriety and public lives, among others. The notion of 'privacy' and in relation to the increasingly mobile camera and the rise of print journalism presented a unique confluence with lasting effects in the present. The early society pages and gossip resulted in an early legal note that considered the various manifestations and implications of an increasingly visual culture and to what degree individuals can expect to enjoy 'privacy' when in the public realm.⁴¹

Photography now gave a 'concrete-ness' to this speculative pastime. Given the 'weight' accorded to the photograph as truth claim, the ensnared result attempted to negotiate the balance between freedom of speech, the sense or limit of the public realm, the role of photography in 'news' and 'muckraking' journalism, among others.

Photography as such an event was engaged by both scientists and artists in different ways, while philosophical concept building resulted from the new practices populating the social field. As the two dominant lines of photography have continued to assert its relevance, the photograph as indexical document of science and the creative potential of the mechanical apparatus for art, these lines have kept the photograph in tension from the moment of its invention. In relation to GSV, as questions of truth claims, claims of authorship, expectation of

⁴¹ Prosser, "Privacy." Prosser updates the important legal note by Brandeis and Warren.

privacy, among others, emerged from its dual nature of objective and subjective capture, artists and scientists have explored its potential to augment creative practices and research agendas. These lines form the philosophical plane of the present work, as well as organize the artistic and scientific uses of Street View. As photography is the driving medium of the Street View platform, organizing practices around the objective and subjective pole of photography draws from the discursive history of photography as it continues to circulate in the social field.

Production thus emerges as a critical element to examine the relation between the large scale, social level of Google in relation to the ‘individual’ user production that engages the tools in a variety of ways, from the ordinary to the experimental and everything in between. Google’s social production is advanced through its stated understanding, aspiration and intention for the role its tools have in our daily lives. Individual users actively make sense and meaning of the technology. As a tissue augmenting their existing horizon of meaning, the ways in which these tools are taken up and utilized can be unique to each user. These practices produce movement within Google’s previously conceived technological plane. Given their advocacy of experimentation, Google happily subsumes innovative uses into the field.

This particular tension between the structuring social production and the immanent individual production of the agent engages the Structure-Agency debate through the Deleuzian dialectic. Rather than employing the tidy Hegelian dialectical synthesis, the Deleuzian dialectic exposes the oscillation between the two poles. What results is a continuous movement of both/and in varying degrees, thereby resisting a fixing of meaning of the phenomenon in question. This tension between structure and agency is thus resolved through the continual movement between top-down forces and bottom-up movement co-constituting the social plane,

in varying degrees.⁴² It is *both* Google's production and constitution of the social plane *and* the immanent participation with their tools that highlights the uniqueness of the particular assemblage of a tool like Street View. According too much power or agency as a result of binary determinations misses the nuanced adoption and adaptation that takes place, which is particularly important given the voluntary nature of the particular tools.

Molar, molecular and line of flight

Understanding the movement between the larger structural formations and the individual practices, their concepts of the molar, molecular and line of flight provide a powerful analytic to understand the interaction and movement that takes place within the social field. I employ these concepts as a way to understand the relational aspect of practices that are shifting, dynamic and highly context dependent. While it might feel 'obvious' to a researcher to test the efficacy of Street View to conduct a street audit, within Google's commercial formulation, this usage extends the potential of the tool; in the process, Google is made aware of its potential as actualized. As it continues to develop the scope of their efforts, understanding the spectrum of current uses opens up the extension into areas previously unknown or not understood as a potentiality. In this way, the molar or larger structural elements interact with molecular or segmented practices. As an assemblage, its discrete parts are assembled from an entire field, which may comprise molar and molecular elements. Its very hybridity is what gives an assemblage is specificity, rather than its universal quality. The line of flight is thus an emergence from the social field, a force that was previously indiscernible to molar and molecular

⁴² Bonta and Protevi provide an illuminating encapsulation of the intellectual debate, and provide a concise explication of how D & G explicitly seek to overturn this dominant binary mode of thinking, 5-7. This spirit is present throughout the two texts, *AO & ATP*, and particularly in their n-1, or the combinatorial power of and ... and ... and.

formations. The relational and contingent contextual understanding provides the malleable and shifting social plane.

As a means of characterizing the concepts, functions, and sensations that populate the overall plane of immanence, D & G give ascribe a consistency to a social field, depending upon the potential for movement of ideas and beliefs. The more *rigidly* cohered the conceptual idea, the less potential for movement, resulting in what is termed ‘more striated’. The more *accommodating* to new ideas produces a plane that is supple, with a move toward a more ‘smooth’ society, or one with fewer constraints. The tension that exists between social production and individual production is most evident in this situation, where ‘experimentation’ ranges from ‘censoring’ to ‘celebration’ of new ideas, perhaps exemplified by the different environments of art production before and during the Nazi regime. The negotiation between social norms and conventions with the heterogeneity of the individual practices generates this movement within the overall plane, as individual desires and social forces co-constitute the milieu.

The extended discussion above regarding the interleaving of planes and the role of individual reception are two critical registers of scale, providing a conceptual frame in which to understand production at the social level and production at the individual level. Within the ‘image of thought’ or plane of immanence, individual planes give it unique shape or ‘relief’ of varying opinions. The manner in which the planes overlap, populated by blocs of space-time of thought, organize the social norms, conventions and ideas, affecting the potential suppleness or variation. A rigid society that abides by strict social norms and moral laws will have less flexibility than an open society built on a tolerance of ‘difference’. At the individual level, production introduces continuous variation into the social field itself, mutually reciprocating and

co-constitutive as a response to the given conditions. It is here where we see Deleuze's longstanding interest in the creative acts of artists, as artists attempt to get a view of chaos and put that 'sensation' out 'into the world,' circulating and affecting various publics.⁴³

Deleuze and Guattari develop 'molar' and 'molecular' relationships in two ways: as larger social structures and as lines that comprise individuals' desires and tendencies.⁴⁴ In the former, they describe the molar as a 'rigid segmentarity'; established social structures, norms within a society, and relations between people. States, institutions and class are examples of contemporary molar structures that influence individual practices, or standard ways of operating based on cultural norms. Identification with these structures and norms at the individual level predetermine perceived choices of relationships, careers, political affiliations, etc., and often cause one to remain in a given assemblage or arrangement out of obligation or sense of commitment. This fixes society, allowing a perpetuation of the culture, but leaves little room for change or becoming for the individual, as the field of potentialities or a sense of 'choice' is constrained by these relationships. Each of the above planes of philosophy, science and art have a 'molar' construction, in which the dominant ideas of the day determine the 'legitimate' production.

The molecular is described as a 'supple segmentation,' where fixed structures are no longer considered in the same manner or have the same authority. External forces shift established relations and reveal interests, desires, fears, etc. at the individual level. This operates outside of conceptual categories like state, class and religious organizations. Conceived of as

⁴³ As evidenced by key works at various moments in the history of art, Picasso's *Demoiselles*, Duchamp's *Fountain*, Serrano's *Piss Christ*, among many others offer a glimpse into the radical potential art has to destabilize the social field as aesthetic and intellectual ideas are radically challenged by the new work. In all cases, these works create an extraordinary amount of controversy as it challenges a societal regime of aesthetic values.

⁴⁴ D & G, *ATP*, 192-231. For the explication that follows, I draw primarily from the plateau "1874: Three Novellas, or 'What Happened'" and "1933: Micropolitics and Segmentarity."

fissures or cracks, acceptance of the practices that go against the dominant social or group formation create movement within the larger social structure. The more structured a society, the greater the number of fissures that exist underneath the surface. This produces volatile lines of flight when the pressure can no longer be managed, perhaps exemplified by the string of protests of Arab Spring and the Occupy Movement. A liberal, open society, on the other hand, allows for many segmentations, creating a supple or accepting environment of a multiplicity of beliefs and practices, rather than a ‘towing the party line’. New interpretations of established concepts produce a molecular condition, in which the social field accommodates –or not – these interpretations. A present day example might be the sea change of acceptance of marriage equality has shifted the molar conception of the heterosexual union to accommodate a union between two people. While some states within the US are more ‘supple’ and accepting of a broader definition of marriage, more conservative or ‘rigid’ states adhere to the traditional, established articulation of a union between husband and wife.

These lines exhibit particular characteristics within the individual, also comprised of molar and molecular aspects. The molar line can be seen as a calculable or foreseen element of behavior, one that is defined and concrete, such as aspects of our lives that adhere to the larger social norms. Individuals that adopt and uphold normative beliefs are considered molar tendencies, and in a basic sense, operate under an either/or decision-making process. Molecular lines are ungraspable, imperceptible, one that is identifiable only when it has past, a line that splinters from the dominant molar line and *creates movement* and suppleness within the overall social structure, such as divergent beliefs that go against the grain of the norm. Individuals within this category continually accept new information within their horizon, and in a basic sense, operate under a both/and framework (or in a Deleuzoguattarian sense: and- and- and- and).

Extending the marriage example, a staunch opponent of gay marriage might proceed in two ways. A molar orientation will uphold their view of the traditional definition, regardless of the proximity of effect. A molecular orientation will shift their beliefs when a family member or close friend is affected by the new ruling, turning an abstract idea into a highly subjective, personal situation that forces or effects a transformation that is neither rationally arrived at nor evident as the transformation takes place.

The line of flight is immanent within the social field and is a result of the tension produced from extant molar and molecular forces. These two different forces constantly react and interfere with each other. The interplay of the two lines results in fissures and cracks within the coherent milieu. Cracks pushed to the limit result in a line of flight. Considered a rupture, the line of flight represents a fundamental shift in the social field, producing ‘run offs’ - divergent social or individual practices - in all directions. This experience produces an altered state or cognitive shift, a deterritorialization, in which a ‘return’ to the original molar structure is no longer possible.⁴⁵ The potential for the line of the flight is marked by the departure from a dominant order, thereby influencing its configuration in the process, much like the first passage of marriage equality paved the way for more States to vote on ballot measures. The inevitable outcome (and possible danger) is that the line of flight will be subsumed or recaptured by the social field.

As general acceptance extends to more portions of the country, the ‘institution’ of marriage is positively redefined, but the ‘*institution*’ itself survives. This recapturing process, or reterritorialization, is necessary, but has the potential to reproduce the same negative effects of

⁴⁵ Specifically, this act of deterritorialization results in an eventual reterritorialization of the subject. However, the plane has shifted, the subject can no longer simply ‘return’ and the existing plane or milieu is altered by this process.

the previous molar structure.⁴⁶ This particular example of social forces and individual desires exemplifies the tension and movement between dominant ideas and ideas that challenge the status quo. That a particular society could shift from an intolerant attitude of homosexual behavior resulting in ‘Stonewall’ to the cascading acceptance of the redefinition of marriage in the space of 30 years is a remarkable illustration of the robustness of D & G’s conception of gradual and incremental changes within a society.

Within ATP, D & G discuss the suicidal line as socio-political devastation as well as a psycho-social break or rupture an attempt to destroy an entire race, overturning social customs and norms, altering the economic foundation, among others. As a psycho-social break, the suicidal line is anti-production at the individual level, whereby an individual is pushed to the limit, and a retreat into an more rigid condition or a rupture of a coherent identity as subject. It closes off becoming and ushers in a tiny suicidal death.

Data collection

I took seriously Google’s early official position in response to my request for information: everything you need is online. As a result, I have limited my data collection to online documentation or other published media. I conduct a virtual ethnography through several avenues of data acquisition. For Google’s activities, I mined the corporate website for official, stated positions as well as their YouTube channel that features product roll-out and corporate information, including press conferences and industry meetings such as the annual I/O conference, both of which are sanctioned events for stated Google positions. For their corporate

⁴⁶ A return to the plane is only possible by overcoding subjects, or in many instances, an axiomatization of the line of flight into the overall milieu. In the marriage debate, this can be seen in an increasing pressure for states to allow voters to vote on the issue, and many politicians taking a stance in support of the movement. No longer seen as a demand by a minoritarian group, the overall plane of support has shifted. While not embraced by all, it is this movement within the plane that allows a society to continue to change.

timeline, the ‘About’ page features a wealth of information and timeline of notable milestones. I interpret its presence as important factual information Google explicitly makes public.

In the first stage of data collection in user practices, I engage radical empiricism⁴⁷ to discover the heterogeneity of uses of Street View, drawing from various sources of ‘Street View stories’. Popular media outlets, journalistic accounts and anecdotal references provide the context of the user practices. I then examine each particular use through additional key word searches to identify coterminous practices of use and scholarship produced in response. Given the ‘relevancy’ claim of Google’s search engine, I survey links for the first 10 pages of search results. Their express goal is to have all the relevant links on the first page; I therefore challenge this assumption to ascertain potential outlier results. I then extend the search to contiguous uses to understand the overall field of user practices of Street View. As one such example, learning of one car game contest street view prompted additional searches that uncovered 5 other automobile manufacturers that had used Street View and Maps in various ways, as well as uncover an entire advertising strategy called ‘advergames’. As published material, these collective utterances then circulate within the social field, entering popular culture through traditional avenues of exposure and consumption. Reception of this material is difficult to measure, but when available, examining user comments in a specific article gives textual support to a volunteered data set.⁴⁸

⁴⁷ Particularly striking during the early stages of research, whenever I mentioned my topic of Google Street View, invariably I would be given an unsolicited account of a particular Street View story, either a strange occurrence, humorous, destabilizing, etc. The richness of this anecdotal information was impossible to capture empirically. The ubiquitous-ness of the personal narrative offered without provocation indicated the pervasive nature of the use of Street View. Rather than measuring this proof based on quantitative occurrences, I focus on the general qualitative richness of the variety of uses. This gives a markedly different account of its adoption, as opposed to a quantitative account according to pre-established categories.

⁴⁸ This has been most evident in popular or cultural efforts that have employed Street View, most notably artists or other interactive efforts that provide consumers with an outlet to share their thoughts. Specific photography blogging sights have provided a rich sample of public discussion, where readers publicly state their enthusiastic, neutral or negative response.

Outline of the present work

Google Street View (GSV) is a photographic mapping of the built condition, one that is re-presented online as a navigable view. In deleuzoguattarian terms, GSV can be conceived as a unique assemblage with many lines of force that illuminate its specific composition. There are three extensive lines to highlight here that are critical for its function.⁴⁹ As a visual object, the photographic line both informs its mode of construction and its value as a wayfinding tool. As a mapping function, the systematic documentation of the built environment tied to an abstract representation gives it a range of use values within the social field. As the engine of production, the particular political and economic environment in which Google is operating directly impacts not only its comprehensiveness as tool; but the company's mapping efforts have also filled a particular niche and need as a result of an opening for the private sector.

The unique assemblage of Street View emerges from its particular socio-political milieu, in which modes of thought and practices are latent within it, either explicitly active or as virtual. With the whole of the past held within the present, historical developments and current practices circulate and inform and are informed by the other. Critical then, is to map an assemblage to understand some of the dominant forces that shape its construction and adoption. Within that mapping, the larger social and structural forces of the political economic environment establish the tension between Google and its production and the users whom adopt the tools.

The organization of the dissertation has four discrete sections:

Section 1: This section focuses on Google as a company and its development of Street View and provides a larger arc of the many kinds of uses of Street View. I first begin with the Google

⁴⁹ Additional lines give specific shape to its intensive use value and give it its dimension of cultural importance. These additional lines will be covered in greater detail in the following chapters that focus on user practices.

phenomenon to establish the cultural position Google occupies, the available resources it has available, as well as the variety of efforts specific to their Mapping regime. It also helps give an initial shape to Google's own plane of immanence and the ideas and beliefs it values and circulate through their production and collective utterances. Establishing the general plane of production is a critical step to understand how Google is able to finance so many tools and offer them free of charge, particularly the resource demanding application like Street View.

Section 2: Street View is comprised of a series of photographs, stitched together to present a navigable view. The initial survey of uses of Street View suggests that understanding the role photography has played over time is important in understanding the popularity of Street View. This section examines the historical discourse surrounding photography and the sense-making that developed alongside the technological invention and development of the photograph. Two dominant threads have coursed through photographic history: a creative tool for artists and as empirical proof for the sciences. In other words, its subject, creative nature has existed alongside the photograph's value as an index or proof of the physical world. Given the wide diversity of uses of Street View, in the remaining section, I focus on the practices that seize Street View's potential (and thereby continuing the subjective, creative line of photography) and the practices that seek to advance knowledge in a more efficient way (thereby continuing the objective, indexical truth claim as a document).

Section 3: Given that Street View is a photographic mapping of the built environment, a second critical line emerges. This section focuses on the transformation of mapping over time, from its early uses to the contemporary uses that have been radically altered by the digital, web 2.0

environment. Mapping has fully established itself as a complex set of ideas and practices.

Throughout its history, mapping establishes territory as well as produces knowledge of that territory, by locating phenomenon from which to build upon and understand relationships, as they exist spatially. A variety of organizations and individuals have produced maps, and a greater diversity of organizations and individuals use maps.

Within this variegated history, the contemporary condition extends these historical impulses in all directions, as technology functions as a true technology and acts as a layer that alters existing practices. This section functions as an important hinge of the present work: while the photographic mapping of the built environment produces a collection of responses, Google's investment in Mapping has significant uses, socio-cultural meanings and implications within the larger social field. The complexity that emerges of the 2.0 layer thus provides a glimpse into the shifting of the larger milieu, one that extends beyond Street View as a phenomenon and captures a diversity of practices that center around an eagerness to participate in this Web 2.0.

Section 4: This section draws upon the Google history as established in section one to understand the larger political economic environment from which Google emerged. Google's unprecedented success as a company- both in terms of revenue and as a cultural phenomenon- is owed, in part, to the tension of a neoliberal environment and the commercialization of the Internet and government's divestiture of mapping as a government function. An alternative or minoritarian line emerged in this computer environment that sought to challenge the pro-business environment of neoliberalism. Google is located at this nexus, drawing from the political economic conditions that have provided an opening for the private sector, as well the radical, minoritarian impulse of Open Source that seeks to upend established conventions and norms.

This section established the historical emergence of neoliberalism and open source, as well as the series of lawsuits against Google. These lawsuits are significant and establish a new legal precedent, and the rulings substantiate Google's practices and shift the social field as a result. The company's ability to affect so many different sectors of the social milieu has significant consequences for future generations and the future of ideas.

The final portion of this section is a critical analysis that pulls forward aspects of the previous sections. It examines the specific tensions that are shared by contradictory movements, like neoliberalism and open source, and problematizes the unique, participatory culture of web 2.0. This section focuses specifically on a critical underlying spirit of D & G, one that has at its core a materialist interest in understanding '*how it works*' as opposed to 'what it means'. I analyze the concept of a microfascism in relation to the various efforts and investments and the individual level to sketch out a particularly unique impulse within the Web 2.0 environment in which Google stands in the center, and its cultural cachet and the efficiency its tools provides draw more individuals into the mix, enabling a disparate collection of investments to cohere within the overall milieu. Quite explicitly, I offer an assessment of the contemporary cultural condition as resonating with and moving towards cultural fascism.

As a more linear explication, these three lines are intertwined and imbricated. As a first line of force, the photographic line informs the assemblage in its particular manifestation. As various practices emerge, the virtual history of photography and the circulating discourses of its value as a technology become clear. As artists extend creative photographic practices as a subjective medium, researchers use the same platform to produce knowledge. In this instance, we see the image as raw, subjective material and the indexical image as objective truth of the built

condition. These two distinct modes of engagement keep the photographic line in tension as one aspect of the assemblage.

Mapping quickly emerges as another important line from these research practices. That a photographic mapping of the built environment exists within this assemblage has its own precedents. Mapping as a practice has a history of establishing a territory and asserting power through demarcation, as well as producing knowledge as a result of an abstraction of territory in graphical terms. Historically, researchers have utilized maps as information as well as produced maps as a result of knowledge gained. Photographically, a range of efforts have attempted to create and map a visual record of the built environment, including the WPA tax records, as well as various artists' efforts to render a physical environment as a particular index. Researchers have also sought to systematically study the built environment and map its particular characteristics. This line was advanced by a researcher that made a video archive of the built condition to study at a later date. This visual archive was 'deemed' a sufficient source for advancing knowledge. With Street View, we see a variety of researchers looking to extend the value of the efficient visual archive along disciplinary lines, such as sociology and urban planning.

As part of Google's production, their overall mapping efforts are second to none. Ranging from 2-dimensional representations of the street layout, incorporating satellite imagery, to ground level photographic approximation, Google draws upon its financial success and cultural prowess and technical ability to build a comprehensive system from which both creative and knowledge production draws. Given maps' historical precedent as establishing territory as well as knowledge production, there is a political dynamic that emerges from their efforts. That Google is able to build such a comprehensive platform and offer it to the user free of charge, an

economic layer quickly forms, one that is inextricably linked with the political dynamics. Within this particular line of force, neoliberalism as a general environment in which the private market assumes a greater role in the provision of services, including mapping, *and* open source's unique response to the pro business environment of patents and property, exists.

In their zeal of making the world's information accessible, Google is overturning many socio-cultural and legal norms. This has a more serious, long-term consequence, of which Google is unconcerned. Their 'suicidal' line of overturning these norms in order to advance their single minded goal of indexing the worlds information resonates with some forms of fascism, in which citizens support and work to advance the larger goal; in the process, they gain a sense of responsibility and ownership in achieving that goal.

Concluding thoughts

As part of this exploration of an unfolding phenomenon, it is worth making several points about the act of reading for the reader and the narrative quality of the present work. My specific interest in undertaking the present work was to sketch out the complexity of an unfolding phenomenon, one that resists a reductionist account or application of a fill-in-the-blank theory or lens with which we can understand it. Throughout, I have attempted to stay true to the phenomenon and have sketched out historical impulses that inform the present condition of its use and construction. Importantly, this does not offer a clear or precise linear history or account of the GSV phenomenon or the overwhelming evidence of the particular cultural regime we appear to operate under.

Rather, sketching out the impulses creates a running narrative through the work and has a series of phenomena that builds upon the previous stage, all of which are imbricated at various

points. This creates a logical linear flow of content for the reader, with general restatements or conceptual guideposts provided between the shifts in scales. Stylistically, this mode of weaving together a series of threads is phenomenological. It draws upon wending a thought and following it to its natural conclusion, picking up another thought in turn. As a process, this shift in focus enables the complexity and entanglement of the phenomenon to remain full. As a mode of exploration, it is a patient unraveling of the phenomenon, and I invite the reader to approach the work in a similar spirit.

01_State of Affairs : Google

“Google’s mission is to organize the world’s information and make it universally accessible and useful.”¹

To date, Google has been making dramatic progress in its effort to organize the world’s information. Their indexing system of unique URLs has long since past the 1 trillion mark, making it, by far, the largest search engine.² Since the company’s inception, Search has been hailed as the most accurate, and provides the most relevant results. This unique position is reinforced by users that conduct search. Its algorithms are designed to continually refine the results based on the selection by the user. Statistically, Google garners the largest market share, with about 67% of US online searches originating with Google,³ while international search is hovering at 80%. In 2013, the average daily number of searches was more than 5.9 bn.⁴ Its search engine is available in more than 150 domains; its translation covers 51 different languages, accounting for nearly 100% of all *online* Internet users. This market share is extended to a variety of mobile platforms, including their own Android iOS and Apple’s iPhone. Google partners with many large online content providers, including yahoo, AOL, NYT, educational institutions, to name just a few. The ‘add-on’ toolbar search can be installed with little effort, with no need to go to the homepage to start searching; users can also select from a pull-down menu to choose Google as their search engine of choice. Its integrated web functions, like the toolbar search plug-in, the bookmark feature, its own browser, Google Chrome, has created a comprehensive plane in which its host of services and applications occupy. The amorphous

¹ Google, About.

² Google, Company Timeline. Given Google’s position of ‘everything is online’, I take much of the factual information Google places on the ‘history’ timeline as being both an important milestone and significant in its development. The company has since reformatted the webpage, making it more visually oriented, but less clear in the timeline information.

³ Comscore.com, “Search Statistics.”

⁴ Statistic Brain, “Google Searches.”

virtual terrain of the Internet is rendered at once both manageable and accessible, yielding accurate results quickly and effortlessly. This accessible virtual terrain also guides a very large portion of our experience of the web.⁵

While the Search function has been their primary focus, since their public offering, Google has quickly extended their intellectual talent and financial resources to numerous other lines. Google has invested heavily in a variety of media initiatives, through either development or acquisition. Their Google News culls headlines from well over 4000 sources with some archives covering up to 200 years of news; the Reader⁶ and Alert allows users to tailor their media intake, following particular sources, ranging from news to blogs, as well as trending topical issues. Google acquired YouTube in 2006, and 2013 statistics boasts staggering statistics of 1 billion unique users a month, with 100 hours uploaded every minute⁷, and more than 4 billion hours consumed each month. Increasingly, YouTube, and ‘CitizenTube’, is a popular location to see significant news and political events unfolding in real time, like Arab Spring and the recent US election. It presented an opportunity to coordinate both print and video from multiple sources to provide a ‘one-stop’ shopping for all things ‘2012 elections’. Culturally, YouTube has broadcast the world’s largest pilgrimage, the Royal Wedding, and the first YouTube Symphony Orchestra. Users upload and consume content free of charge; and with the shifting demographics, more people utilize YouTube for news feeds and election coverage than broadcast TV.⁸ Google TV has also entered the market, allowing users to efficiently navigate the range of media sources through one single device. This draws together Television, web search,

⁵ It is estimated that 93% of all Internet experiences are initiated through an initial search. This statistic, in relation to Google’s dominance as search provider, has caused concern. The perceived accuracy of the search results has the potential to limit or restrict a users pursuit of knowledge, as most users often do not make it past the first page of results. The result is that Google thus becomes the arbiter of knowledge, based on algorithms. This argument will be taken up in greater detail below.

⁶ Google Reader, About, <http://www.google.com/reader/about/>, accessed on May 16, 2014. Retired in 2013.

⁷ Schroeder, “100 Hours of Video.”

⁸ Levy, *In the Plex*, 317-18.

YouTube as well as Google Play, which organizes all of a user's media purchases. Google Play incorporates the purchase of movies, music, ebooks and magazines and the like.

Google Images was first launched in 2001 with 250 million images, and in 2010 estimated the number to be over 10 billion searchable images, with millions added daily. The new Image Search function is an important feature of indexed images, which allows users to photograph elements out in the world and conduct an image search to find more information. Users upload photos to find a match, which is often helpful for identifying works of art or products that have a distinctive visual quality. The free photo editing software, Picasa, allows users to adjust their images and create web albums. It supports 38 languages and is a free downloadable software for both Mac and PC platforms. Purchased in 2004 from Picasa, Inc. Google has continually developed its functionality and is an alternative to Apple's popular iPhoto program, as well as some of the more straightforward photo editing software.⁹ The Panoramio image interface of their mapping division allows users to upload their own geocoded image content to share with a larger audience. Its museum program, Google Art Project, partners with museums from around the world has made tens of thousands of images available to the public for viewing.¹⁰

In the effort to digitize print media, Google is currently working with more than 40 institutions around the world to continue to expand the Google Books project, which scans all the books in the library's collection.¹¹ Google provides the library with an electronic searchable version, while also making the searchable text available to the public in snippet format. It has made thousands of literary works in the public domain free to download, while also offering a

⁹ The target market is consumer driven, rather than the professional market that Adobe Photoshop serves.

¹⁰ Google Cultural Institute, <http://www.google.com/culturalinstitute/about/>. The website functions as a dedicated site for hosting the cultural efforts of Google, from the World Wonders Project to the Art Project.

¹¹ Google, Books, <http://www.google.com/googlebooks/library/>.

way to purchase some copyrighted text. Rare documents are also being scanned, including the ancient Dead Sea Scrolls. In 2010, Google passed the 10 million book milestone, and in 2012, more than 20 million books had been scanned.¹² The original plans to digitize all known books within the decade, 129 m and counting has slowed down from the early brisk pace during its roll out.¹³

Extending their user services, the home/office product lines complements the other suite of services. These tools are available with a user account, which also serves as an email address. They first released their beta email service in 2004 by invitation, and extended an account to everyone in 2007.¹⁴ First offering 2gb of free storage, it has been increased to 15gb.¹⁵ Video and IM chat broadens communication options with other Gmail users. Recent releases of Google Talk and Voice enable domestic and international phone calls to mobile phones and landlines for free or for a low rate. Word processing, spreadsheets and presentation production tools are also free to use with an account. Google Sites offers a free interface to create websites and wikis. A calendar application creates calendars to share with different people. Their social networking products include Blogger, Orkut, and Google Groups that allows users to share websites and other information. While many of the services offered under this category are broadly available by many Internet providers, Google Docs stands out as a unique application suite among its competitors, which offers a free, open-source version of word processing, spreadsheet and presentation software.

Specialized applications and tools continue to emerge, often closely reflecting the current milieu and its attendant user practices. Social networking applications like Blogger, Google +,

¹² Howard, "Google Begins to Scale Back."

¹³ The lawsuits from publishers and authors has likely had a significant impact on Google's original enthusiasm.

¹⁴ Google, Company Timeline. Today, Google has 425 million active email accounts.

¹⁵ Figure current as of February, 2014.

Hangout and Orkut provide an additional layer connectivity, in addition to mail and chat functions. Previous releases like Google Buzz failed to gather the same enthusiasm of other tools.¹⁶ This has left Google's presence in the social networking sector soft.¹⁷ Specialized search functions also develop in tandem with contemporary contexts, allowing users to search certain sectors, including blogs and relevant topics, shopping and local deals, as well as general trends, finances, politics, etc. Dedicated pages to meet particular research demands include Patents and Scholar Search, which provide more refined results through narrower indices. The results provided give more weight to the veracity of the source and its vetted status as source of content, which stands in contrast to the more flexible 'link' parameters defined for the regular search, which merely operate based on the number of links that refer a site.

Google has continually pushed the limits of their philosophy of making all the world's information accessible and useful by extending the 'information' to include the world's terrain. Their first foray into spatial information was Google Local, which offered neighborhood listings as part of the search function and featured a US map. Local eventually became Google Maps, and the North America map was launched in 2005; additional and frequent releases included other continents, with Google licensing the content.¹⁸ While computer map programs had already existed, the presence of an online map advanced the information available to the user, offering different ways of navigating the map by the drag-and-pull method of viewing. The accuracy of the maps was greatly improved when Google began building their own maps, using a

¹⁶ Buzz was seen as the response to Facebook, but many people failed to transition to another platform, despite growing user dissatisfaction. While the social networking site Facebook has received much criticism, it offers a centralized structure in which users sign up for an account, using their preferred email address. Google hasn't quite figured out the site that might finally encourage enough users abandon Facebook, yet. I would argue that Google's insistence on using the Gmail address as log in for all of its services will be barrier to a social networking success, as many people are reluctant to change their primary email address wholesale. While secondary email addresses are common, one generally relies on one address for the majority of their communication, or have a mail program that syncs with multiple email address.

¹⁷ Tools like Orkut remain popular in certain geographic regions, but undersubscribed in others.

¹⁸ Google, *Next Dimension*.

combination of means, including Street View driving data as well as help from citizens through their Map Maker Tool, released in India in 2008 and was quickly adopted in other countries.¹⁹

Google's focus on images has produced an additional line of mapping tools. In 2004, the acquisition of Keyhole, a satellite imagery technology, was eventually launched as the highly successful Google Earth,²⁰ allowing the user to fly around the world to different locations when typing in an address. Google Street View went live in 2007, documenting the street condition, first in a small number of US cities, gradually expanding to include cities of different sizes, as well as mapping country roads and rural communities. They have expanded to include all seven continents, with many countries in Europe, much of Australia, South America, some Asian cities, and in a rare opportunity, even Antarctica.

Their express goal is to map the world. Street View coverage now extends beyond the traditional road system and includes narrow European streets as well as pedestrian streets by transforming the 'vehicle' used to capture a variety of scenes. The mapping apparatuses now include a hand held trolley, bike, snowmobile, backpack, scuba gear and walking stick. The success of Street View has allowed Google to utilize their developed technology to extend that mapping to other venues. Mapping nature trails, ski slopes, national parks, as well as some of the tallest mountain peaks, underwater along the Great Barrier Reef in Australia as well as the coast of Hawaii. They have also mapped UNESCO world heritage sites, 'World Wonders' like Stonehenge as well as world landmarks like the Eiffel Tower; endangered sites like the Amazon River basin, cultural venues like the NASA facilities, sites of popular sports venues, like the 2013 Super Bowl, are just a few. Partnering with museums, Google maps the galleries of a

¹⁹ Google, Map Maker, <https://support.google.com/mapmaker/answer/155415?hl=en>. Today, nearly all countries have access to Map Maker, with notable exceptions being Russian, China, South Korea and Japan, among a small number of others in South America, including Argentina, Chile and Columbia.

²⁰ Google Lat Long, blog, "Google Earth Downloaded." October 2011 appears to be the last time Google kept track of how many downloads of Google Earth, which then reached the 1 billion mark.

number of world renowned institutions; universities partner with them to have their campuses mapped; and local business can contact them to map the interior of their store to help increase business visibility, a virtual window shopping.²¹

Today, all of their mapping services are highly integrated,²² with a zoom feature in maps that takes the user to street view automatically, and a sidebar link will take the user to the Google Earth image, while the maps can display road data, satellite imagery or a combination of the two. In addition, Maps offers street and satellite maps and turn-by-turn directions available for driving, walking, biking and in some markets, transit. Their design of the single search box for their maps provides a seamless bridge with other search functions, making any search highly integrated across many of their tools. The user can conduct a search and is given the option to view a map of a commercial search or regular search links. Within the map interface, the user can also search for a commercial descriptor, like coffee, in relation to location, and the map will produce the results of the commercial business in the area.

As a unique cultural phenomenon, what has emerged is a dynamic plane of organization. The range of product categories and the level of integration extends both horizontally and vertically across the social field. With search as the core engine of the plane, the geospatial organization of search content in relation to the user establishes an increasingly critical relationship between the ‘what’ and the ‘where’ of search. In an era where users are more mobile than ever before, this ability to join this functionality offers rich potential for refining search and

²¹ Google’s ‘About’ page for Street View highlights the various means of capture as well as an evolving gallery that showcases new mapping efforts. This will be covered in greater detail in the following chapter.

²² Google Sketch Up stands as a counterintuitive application within the Geo category. It allows users to draw floor plans and elevations to scale, as well as 3D models of buildings. Sketch Up has a plug-in application that allows the user to place the building within the Google mapping system. The geo-locating software grabs the photo-texture from Street View to represent the building in a quasi-virtual environment, populating Google Earth with a 3-dimensional rendering of objects. However, with Google’s new 2D photographic environment, Sketch Up has been sold as part of the ‘streamlining’ of services. It remains too soon to know how successful the new rendering environment will be and whether a new software might be developed to take its place.

making it ever more efficient. In short, Google predicts a transition to more mobile searches than desktop, and market research reveals direct commercial intent.²³ With their comprehensive search and map features, their ability to meet the bulk of this demand is nearly given.²⁴

Economic Engine and Cultural Power

Google began with little fanfare; two young graduate students at Stanford University. They started working together on a search engine called 'Backrub' in 1996, which operated on Stanford's servers; by 1997, the project occupied too much of Stanford's server space. With the search for a new home, they also changed the name to Google, a play off of googol, '1' with 100 zeroes behind it.²⁵ In 1998, they received their first check for \$100,000 as start up money. With that, they opened a bank account and filed papers and formed Google, Inc. By the end of that year, PC Magazine highlighted the search engines 'knack' for accurate results and it was named the Magazine's search engine of choice. By June of 1999, they announced a \$25 million investment round from Sequoia Capital and Kleiner Perkins. In the press release, the employee who works for Google was coined a 'googler'.

From 2000 on, the business of Google was fast and furious. The accuracy of the search engine earned them much attention, highly coveted partnerships, and a rapidly expanding language search function. They announced their first milestone of 1 billion indexed websites, which made them the largest search engine in the world. They continued to launch elements to their already innovative search function: the toolbar plug-in allowed the user to search the web

²³ Google I/O 2013, Keynote, at 7:00-11:00 especially. Google's depth of data informs its stance on this, and its positioning to the developers at the industry conference wholly demonstrates confidence in growth in mobile users, given only the market penetration potential of over 4 billion users.

²⁴ Goodwin, "Google's Mobile World."

²⁵ Vise and Malseed, *Google Story*. It is frequently stated that 'Google' was actually misspelled, rather than a conscious play off of 'googol'; the error was quickly realized, but googol.com was not available, google.com was.

without going to the Google website, while AdWords was a new online advertising strategy that is focused on accuracy of matching advertisers to potential customers through key word searches. The year 2000 also marked the first April Fool's joke, soon to become a yearly tradition: the first joke announced the release of the 'MentalPlex', which states it can read your mind as you visualize the search results you want to see, a tongue-in-cheek suggestion of just how accurate and omniscient Google aspired to be.²⁶

The year 2001 brought their first public acquisition, Deja.com, an archive of 500 million Usenet discussions, dating back to 1995. Adding a search and browsing features, it was rebranded and launched as Google Groups. By July, Image Search was launched, with 250 million images. By the end of the year, Google had indexed 3 billion URLs and continued to remain the largest search engine in the world; their first international office opened in Tokyo. Year 2002 produced more advances on all fronts: the first hardware plug-in for business was developed, an overhauled AdWords became pay-per-click auction, Google news was released with 4000 news sources, Froogle (later to be named Google Product Search) offered an integrated search and purchase function. Another international office was opened, this time in Sydney; the language count was up to 72 languages, and Google Labs went live. Google Labs was established to serve as their research beta testing site, which enabled them to develop products alongside the search engine and have select users test them and provide feedback. 'Google' was voted the most useful word of the year for 2002²⁷, solidifying its status as both a noun and a verb, having already formed subjectivities, googlers.

²⁶ Google, History.

²⁷ Ibid.

Additional years, additional advancements, additional products, additional acquisitions. Their rate of growth – income, products and acquisitions – has grown exponentially.²⁸ Today, Google’s price per share is one of the highest priced, currently over \$1200/share²⁹, and is currently the 2nd in market capitalization, surpassing Exxon.³⁰ A quick survey of the vast empire that Google has constructed, two brainy men who never finished their Ph.D.’s, is impressive, exemplified in a recent documentary by CNBC News, “Today, they stand atop an empire cast in their own image, audacious, ambitious, and often controversial. It is a company like no other. Thriving on long hours, too much coffee, and something quite elusive: *genius*.”³¹ As a search engine, it has the market share with 65-70% of all Internet searches.³² Its integrated web functions, such as the search plug-in for the toolbar, the bookmark feature, its own browser, Google Chrome, has created a *comprehensive plane* in which its host of services and applications occupy. The amorphous virtual terrain of the Internet is rendered at once both manageable and accessible, yielding accurate results quickly and effortlessly. Search guides a very large portion of our experience of the web and its virtual terrain.³³

Google occupies a unique position, in terms of both their economic engine and their status as the leader of innovative solutions for Internet activity. What makes Google a unique

²⁸ Ibid. Looking at the company’s timeline on the ‘About’ page, the company highlights what it perceive to be yearly highlights or milestones, from inception to 2011. It is outside the scope of this project to relay the company’s history in full, for it has been adequately documented by a range of cultural biographies, cf. Auletta, Levy, Vise and Malseed, Battelle and Stross, among others.

²⁹ As of March 03, 2014. On April 02, 2014, Google’s offered stock split enlarged the number of shares available, resulting in a lower stock price, currently trading at approximately \$520/share.

³⁰ Farzad, “Google at \$400 Billion.” Its current valuation is at 400 billion, and Google is preparing to offer its first stock split, one that, unsurprising has been deemed “creative”.

³¹ CNBC, *Inside the Mind of Google*. A CNBC original documentary; host Maria Bartiromo’s emphasis on and pause before ‘*Genius*’ is explicit in the opening announcement.

³² Siu, “24 Eye-Popping SEO Statistics.”

³³ It is estimated that 93% of all Internet experiences are initiated through an initial search. Ibid. This statistic in relation to Google’s dominance as search provider has caused concern among many scholars as well as popular press. The perceived accuracy of the search results has the potential to limit or restrict a users pursuit of knowledge, as most users often do not make it past the first page of results. The result is that Google thus becomes the arbiter of knowledge, based on algorithms. This argument will be taken up in greater detail below.

player is the wide array of products and services offered to the user free of charge, either through free download or as part of a suite of internet tools, blurring the boundaries between each division with the concerted effort to integrate them. Given its strong presence as a search engine with results that continue to have among the highest level of accuracy, Google's earnings come from the vast number of searches that are conducted daily through the pay-per-click ad auctions. To wit, approximately 96% of their income is generated from advertisements. Advertising revenue for 2012 was \$43.7 bn, up from \$36.5 bn in 2011.³⁴ Its ability to draw earnings of this magnitude allows it to develop and offer a comprehensive range of integrated tools to its users.

This integration allows a user to move through an entire day without leaving the Googleverse. Nearly every facet of an electronic life is accounted for within the confines of Google. With advertisers confident in the accuracy of the search results, the assumption of shared confidence of potential customers as well as an established track record of user statistics, internet advertising through Google appears to be the most logical choice. What emerges from this unique environment are a host of benefits and concerns that register on numerous levels: not only advertisers, but perhaps more importantly, for users and competition.

Google revolutionized the Internet advertisement scheme. Previous advertising attempts focused on pop-up ads. These ads were embedded in websites and users were confronted with the virtual graffiti whenever they left the browser window. It became quickly apparent that this strategy was not only unsuccessful in generating Internet sales, but it proved to be an annoying incursion to the user experience, increasing the chance of alienating customers. Perhaps most importantly, the ability to match the pop up to the user's interest was virtually non-existent. With AdWords, Google was able to better match key word searches with potential advertisers, often

³⁴ Google, Investor, <http://investor.google.com/financial/tables.html>. 2013 figures are only estimates, as its 2013 fiscal year ended January 31, 2014, but as mentioned, total revenue is above \$58 billion.

incorporating simple links into the search experience. Flashing pop-ups disappeared, and users suddenly found themselves with relevant links to their search query. With the arrival of the pay-per-click auction system, this enabled small business to advertise to a relevant audience through key words. This somewhat transparent system allowed them to control their expenditure while also maximizing their results.

Google sets the minimum bid for the ads, so small businesses sometimes find themselves at the mercy of Google's business model, as minimum bids are higher for popular search terms. More often, however, the price per ad is low enough that allows any business to 'try' Google's ad system. Regardless, the most relevant ad will win top placement, not just the company willing to pay the most.³⁵ With the success of Google's search model, more businesses look to advertise, driving up the bidding competition in the process. Ultimately, this eventually has a homogenizing effect, as the larger businesses retain the advertising edge, leaving the user with less 'choice', whether perceived or actual. For Google, however, this is a clear win, as it maximizes their advertising earnings without having to alter their business model.³⁶ These earnings fund not only the workforce talent required to keep Google on 'top', but it provides operating funds to develop additional tools and services in pursuit of their express goal, 'to make all the world's information accessible.' What makes this an attractive business income model, however, also shows its essential weakness and the ultimate contingency upon which the empire is built: operations are entirely dependent upon the advertisement machine that effortlessly generates profits. A viable alternative as search or advertising need only emerge to pull users or advertisers from Google's orbit of efficient operation. Or perhaps more detrimentally, public

³⁵ Google, Adwords, <http://www.google.com/adwords/how-it-works/costs>.

³⁶ Ibid. The online sales page is explicit in giving more control to the advertiser, with four information points: How much you invest is up to you; Only pay for results; You're in control of your cost-per-click; Relevance pays off

opinion of the company's generally perceived force of good may shift, causing reverberations throughout the company if users, advertisers and partners distance themselves.³⁷

Contingency notwithstanding, given this model, Google has the ability to maximize earnings in one area, which it allows them to 'fund' the other services and projects that are free of charge or unlikely to generate profits or 'break even', such as the financial commitment to a project like Street View or the more controversial project Google Books. For the user, the ability to have a greater number of choices without the additional cost is empowering. Microsoft built its company on proprietary software licenses; a model predicated on artificial obsolescence and user upgrades to generate income, either under the guise of compatibility issues or by offering them additional features. With comprehensive software suites like MS Office, or even their Windows operating system, users then pay for a new license that will enable them to continue to productively use their computer.

Google offers a wholly different model, which offers all of its productivity tools and features free of charge. Google has the technical and financial capability to offer competitive versions of products, drawing from the extensive talent pool. Rather than paying for an often overly sophisticated Office suite, average users now have the same basic capabilities, functionality, and often times, more user-friendly tools, free of charge. As Google begins to enter the computer market with their Chrome operating system, the company offers a computer stripped down but net ready, which satisfies most of the users in the developing world. The price point is more in line with the world economy; and with cloud computing, users from India to Africa can have access to advanced technology without additional cost, provided there is internet

³⁷ This recalls Vaidhynathan's argument in *Googlization* that Google's overreaching should be cause for concern, and we cannot 'trust' that Google of today will be the same company in 20 years.

access. And most recently, Google's entry into the 'balloon' market seeks to provide Internet to places where it does not exist.³⁸

Corporate Culture / Open Source Environment

Over the years, there has been no shortage of acolytes or celebrants of all things Google. Google is credited with transforming how we think and live through the efficiency of search and the tools that have created. They have emerged as a fresh alternative to 'business as usual' and early investors and corporate suitors repeatedly expressed the unique qualities that both Page and Brin brought to the work they were doing. The simplicity of their endeavor, together with their intelligence and passion for access and democratization of information, conveyed a real desire to do 'good' by making the best search engine that would make information accessible and relevant. In the process, it put the power of knowledge into the hands of the user. Relevant results were reliable results.

At the outset, Brin and Page thought they could develop Search and sell it to a larger technology company to continue to fund their own education and research. They built their early servers out of cheap computer parts, tying desktop processors together and creating a complex relay system that made processing search queries fast and efficient. They built a search model that was infinitely superior to what existed, but a buyer did not exist.³⁹ The early environment of 'search' did not give much consideration to it as a feature. Rather, hosting sites were eager to retain users on the page for as long as possible. Page and Brin thought Search should do what it was meant to do, to make finding information fast and efficient, regardless of the economic model that might give it long term feasibility.

³⁸ United Airlines magazine, September 2013.

³⁹ Vise and Malseed, *Google Story*.

This renegade attitude can be better seen in their insistence in maintaining complete control over the direction of the company.⁴⁰ While looking for a major investor, their strategy was to court *two* venture capital companies in order to maintain their autonomy, while having the necessary capital to scale the product. The unusual tripartite structure was made possible through a mandated agreement: Brin and Page had to hire a CEO to help oversee operations. Their stubbornness of maintaining control turned away many potential candidates, pushing the limits of the terms of the original agreement. Eric Schmidt emerged as the first viable candidate that seemed to understand their principles and embody similar ideals, but strict boundaries were drawn over his influence on operations.

Similarly, Google overturned the Wall Street protocol by mandating different trading terms when the company went public. This enabled the general public to buy in at the same time as the bigger financial players. Their letter to the SEC had a moral message and laid-back tone, rather than the strict professional and legalese jargon that normally accompanies the offering letter. Having conducted an interview with Playboy, they inadvertently violated advance disclosure agreements out of technicalities.⁴¹ As a result, they were required to include the interview as an addendum in the stock-offering package, taking delight in the idea of forcing many people to read Playboy. Large trading firms were mystified by the audacity of the two young founders; the two young founders were hopelessly idealistic in their ability to do good on their terms, or, ‘a healthy disregard for the impossible.’⁴² Immediately after their IPO offering in

⁴⁰ Vise & Malseed, *Google Story*. This is evident in many of the biographical narratives written about the company, in which an element of ‘awe’ produces a particular narrative style.

⁴¹ Ibid.

⁴² Google, Investor, <http://investor.google.com/corporate/2012/ceo-letter.html>, accessed on May 16, 2014. Larry Page is often quoted as displaying and reciting this as a personal philosophy, and included in the 2012 Investor Relations update.

August, they went to Burning Man. The timing of the offering was based on this cyclical event, rather than according to Wall Street tradition of a spring offering.⁴³

The corporate atmosphere is highly regarded by many. The anti-establishment, anti-cubicle environment allows employees to build their workspace according to individual needs. There are communal spaces of recreation that facilitate exchange of ideas. Personal services and catering are part of the hiring package. Brin and Page give a great deal of attention and consideration to the environment in which people work, and work to attract and retain the best talent in the industry. While it is important to have a product people are passionate about and want to contribute time and energy, it is as important to pay attention to the elements that will keep employees happy and productive. The environment has been so successful and inspirational that it has become a key stop for many high profile people, including the Queen of England and many of the recent presidential candidates, both in 2008 and 2012.

Their early roots as the scrappy start-up include a radical horizontal corporate structure informed by their experiences of Burning Man. These values are reflected in creating an environment of small teams that work together to achieve the level of innovation that Google has accomplished. There is an explicit de-emphasis on ‘levels’ of employees, which enables an open, peer-to-peer environment, rather than one based on hierarchical organization.⁴⁴ They have long been supporters of open-source software. A general refrain of ‘doing good’ is evident in many employees’ accounts of their work at Google.⁴⁵ Google employees can put 20% of their time towards personal projects; if successful, the employee receives the necessary resources to roll out the project at a large scale. This challenge keeps employees engaged and eager to develop an idea that garners support, a position coveted by many.

⁴³ Vise and Malseed, *Google Story*.

⁴⁴ Levy, *In the Plex*, 260.

⁴⁵ This is evident in the many biographies published recently on Google, including Vise, Auletta, Levy, etc.

Google Ventures, a venture capital firm funded by Google is an autonomous company with a team of investors that seek to invest in entrepreneurial companies at any stage. They provide a range of support, blogs that focus on news, practical advice and design, a networked job board, a Startup Lab that provides workshops and talks, as well as a series of interviews with successful founders of other startups.⁴⁶ As part of the investment, Hands-On Teams provide a variety of specific guidance, including design, recruiting, engineering and marketing.⁴⁷ Given their prowess in innovation and a particular corporate culture, they continue to be a magnet for top talent, and signaling incentives to garner the attention of Google remains strong. This particular ethos has generated an extraordinary amount of good will and respect for the company, internally and at large.

Public Image

Google has earned much of the respect and goodwill it receives. The company actively contributes code for other developers to use; it sponsors summer camps that engage students and difficult coding problems, giving students both highly desirable experience and important access to the company. The nonprofit organization, Google Foundation, has an extensive roster of projects they fund under the thrust of ‘technology for social change.’⁴⁸ Its efforts range from the donation of physical technology to intellectual power and financial support for programs that focus on education of technology in classrooms. One aspect of the Foundation focuses specifically on providing free or discounted services for nonprofits, including money towards AdWords, free premium software, as well as marketing webinars to help nonprofits increase their impact and reach. In a separate arena, the company has harnessed the power of its search

⁴⁶ Google Ventures, About.

⁴⁷ Ibid.

⁴⁸ Google.org site.

function with their data collection to generate world trends of flu and other infectious diseases. With a high degree of accuracy, Google has found where flu symptoms are on the rise, based on an increase of search terms by users.⁴⁹

Its efforts in providing critical information during natural disasters has more than cemented their role as philanthropic capitalists. Their debut as a critical information provider occurred during Hurricane Katrina in 2005. The Mapping division had just updated satellite imagery days prior to Katrina, and using post Katrina satellite imagery, Google's Geo services saved thousands of lives. It had the most up-to-date and comprehensive data to help the rescue teams triangulate GPS and structure locations based on satellite imagery.⁵⁰ Since then, Google has been a key resource to assist during natural and manmade disasters throughout the world. Its services range from providing up-to-date mapping information, coordination of Public Alerts, building people finder pages for family members, coordination of news related to the disaster and hosting crowd-sourced maps of relief services, from shelter to provisions. Given its involvement with at least 30 large-scale disasters since 2005,⁵¹ Google has also developed support services to help agencies build best practices for crisis response.⁵² Through case studies, the company demonstrate how its mapping and search tool provides critical support during times of crisis, and work with local law enforcement and fire departments to customize mapping software to fit the needs of the community by overlaying critical infrastructure information.⁵³

Related efforts directly tied to the Foundation focus on specific application of their resources, including a special portal for classroom support, which highlights the tools available to classrooms to engage students, make teaching easier and bridging economic gaps through their

⁴⁹ Google trends, see <http://www.google.org/flutrends/about/how.html>.

⁵⁰ Moore, *Next Dimension*.

⁵¹ Google, Crisis Response

⁵² Ibid.

⁵³ Ibid.

free software tools. This portal provides teachers with additional support, provides information on their products to communities, as well as gives students access to resources, contests, scholarships and awards. Google Ideas focuses on visualization strategies to help map illicit and legal network, including human trafficking, small arms ammunitions, as well as acting as intermediary to citizens of repressive governments. The role in the partnership is to provide powerful technology and mapping tools that will aid identification of networks through visualization.

Google Green is a green initiative within Google that actively streamlines their operations to create better efficiency and a more sustainable business model. The data centers run at an optimal warmer temperature, all technological waste that leaves the facilities are recycled, and the servers are customized to run with minimal script to speed up processing power, reducing electric usage. The campuses operate shuttle service to reduce individual car trips and buildings incorporate sustainable measures and the new buildings are LEED certified. The company utilizes renewable energy sources to power the data centers and campuses when possible. To date, Google has invested more than \$1 billion in renewable energy projects around the world, including wind farms, solar power fields and rooftop applications, as well as clean transmission technology. Furthering their investment in technology and efficiency, efforts to provide free Wi-Fi in some markets, or bring high speed Google Fiber to mid-size markets for less than the cost of traditional high speed provider is a direct challenge to the corporate status quo of ISP businesses. This further extends the company's efforts to make the world's information accessible and useful. Among the 10 things *they* 'know to be true', 'don't be evil' is one of them.⁵⁴

⁵⁴ Google, About.

01_State of Affairs : Mapping

Google's mapping division encompasses a range of services that fall under the product division of 'geocommerce', which brings together all geographic driven information and spatial imagery attached to the base plane of the map. What has resulted after nearly 10 years of development is a highly integrated platform that continues to assert its potential as a powerful tool, both as a base for software developers as well as nonprofit organizations, communities and individuals. These uses extend across a diversity of user practices that range from exploring the world, advancing knowledge and understanding, as well as making visible larger humanitarian concerns by spatially organizing information. Creatively, the potential of the platform is continually pushed to the limits by developers through software development and other creative practices, regardless of native media.

Extent of Google maps- simultaneous development

Google's acquisition of Keyhole in 2004 was a strategic purchase, one that provided Google with an immediate product skeleton and a range of talent that could immediately begin developing the program further, acquiring more data and extending the application to more users. For the founders of Keyhole, Google's acquisition of the company provided them with the critical intellectual and physical infrastructure to scale up their product, as well as provide the necessary financial resources needed to accomplish that.¹ With larger, more comprehensive data sets, the new Google earth was launched, with worldwide satellite imagery, terrain information, physical road attributes, latitude and longitude information, as well as a variety of socio-cultural layers of data.

¹ Google, *Next Dimension*, McClendon.

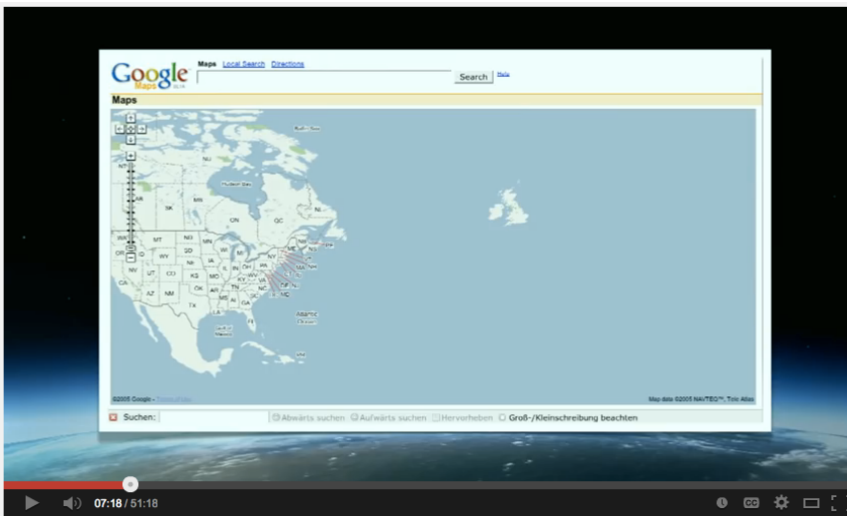
The potential of Google Earth was made apparent during the aftermath of Hurricane Katrina, which struck only two weeks after a satellite update.² The government requested Google's assistance, and over the following two weeks, Google continued to publish new satellite imagery to aid the rescue mission, providing on the ground and helicopter teams geolocated information, critical in the face of a flooded road network that lack the traditional street markers and addressing that make traditional emergency responses organized and efficient. Today, Google's comprehensive satellite and mapping information is continually called upon during natural disasters, where up-to-date imagery is needed for quick response.

Simultaneous to the acquisition and development of what came to be known as Google Earth, the mapping team was developing an online mapping service that would integrate with search functions. The then current online map environment required 'extensive' rendering time³ for individual maps, with many fields of information required to be filled in in order to produce a mapped location, not always producing a successful query. Google's team developed the single search box feature and rendered the map tiles offline. This enabled the user to have greater success in searches at a fraction of the time, greatly improving the usability of the online tool. This improvement was most evident in the functionality, which made for a fluid, interactive user experience, with the pan tool producing an instantaneous new map of the new field of vision.

² Ibid., Moore

³ Ibid., McClendon. It is said that it required about 10 seconds for the user to see a map produced by their query. While this time seems short in relative terms, Google's reorganization of the information made the query results 1000 times faster, arriving in just 10 milliseconds.

Embracing the company's philosophy of beta product rollout, the first Google maps included only US and the United Kingdom. The early online image is reminiscent of the maps produced during the period of world exploration, where known territory is rendered according to the level of knowledge, and the remaining world undefined. Undefined spaces often acquired the term 'terra incognita', giving recognition to an imagined existing landmass, but specific



Screen Shot, *Next Dimension*

knowledge of it lacking. Over time, Google continued to find more sources to license data, producing a larger world map.⁴ Critical for their mapping tool was accurate and comprehensive information. Many sources were not completely reliable and accurate, with many countries without any data sources at all.⁵

Street View functions as the intermediate platform between Google Maps and Google Earth, with seamless transition to Street Level from either platform. With Earth, the satellite imagery gives visual quality to the world's terrain, enabling users to fly over a variety of spaces

⁴ Google, *Next Dimension*, McClendon, at 7:00.

⁵ For advanced nations like the United States, an emphasis on converting physical maps to digitized data took place in the 1990's. More work was produced as a result of having access to technology as well as extensive map collections. For developing countries, lack of access to technology as well as lack of professionally rendered physical maps created the wide gap in data sets, which became apparent with all the information located in one interface.

and heightening the sense of exploration that comes with the path of travel. The user can enter place information and see what the terrain looks like from above. Google Maps now incorporates satellite imagery into its platform, but the movement does not have the same fluidity and dynamic quality of Google Earth. Street View bridges these two formats, providing on-the-ground images of storefronts and streetscapes. Early in Page's graduate education, he videotaped the street environment around Stanford and the Bay Area with a camcorder. Page believed that this kind of information would be valuable with the right interface and scale, and informed the conceptual impetus for Street View.⁶

Its initial launch in five cities served as a beta test for the feasibility and usability of such an archive, converting the physical environment into mappable information, made accessible through the mapping platform. Engineers worked through early crude models that would enable the capture of detail at the street level. The earliest road-viable model had nine individual cameras that took simultaneous images of the surrounding scene, controlled by software that determined the frequency in relation to the distance traveled. Post-production processing ran the batch of images through an algorithm and stitched them together to produce a navigable three-dimensional view in which the user moves through the environment through the data points of image capture.⁷

Subsequent iterations streamlined the capture process of the camera configuration, the vehicle required for recording and the computer equipment required to store the digital information while it was being captured. Overtime, the quality of the capture improved from five megapixel panoramic images of fairly low quality to the present 64-megapixel high-resolution images. The previous version of 9 lenses was increased to 12, and the number of images in

⁶ Ibid., Vincent.

⁷ Anguelov, "Capturing the World".

excess of what is needed to construct the virtual realm allows for better stitching together and editing obstructions, such as moving vehicles, based on algorithmic patterns.⁸ The fleet of cars are dispatched to map new areas and to update previously mapped areas, with global efforts contracted through local contacts. Advancements in technology reduced the equipment footprint required for the equipment. This allowed experimental means of capture. The tricycle was the earliest alternative produced, enabling the capture of narrow spaces like pedestrian streets, bike trails and narrow streets of European cities. This transformed the extent of Street View, opening up the sites of capture to include large developments like university campuses, entertainment complexes like Disneyworld, venues with educational and natural value like zoos, as well as cultural sites like Stonehenge. The trike was placed on boats and trains, thereby giving the world a glimpse of remote places like the Amazon River and the Swiss Alps.



Modes of capture, Google Maps

Extensive testing and advancements in technology have produced additional means of capture, outfitting the snowmobile to document ski resorts and other remote regions of harsh climates, such as the Nunavut region of Canada. Trolleys have been deployed in a variety of large indoor spaces, generating a large gallery of spaces to explore, such as the NASA Space Shuttle; museums galleries through their Google Art project, and historical sites like castles and ruins like the Roman Coliseum. Underwater equipment has been developed to explore coastlines

⁸ Google I/O 2013, Keynote.

and reefs in environmentally sensitive areas. More recently, a 40lb backpack ‘trekker’ has been designed, to map a range of hiking trails and remote natural spaces accessible by foot, as well as other spaces like the Great Wall of China.⁹ The ‘walking stick’ is the most recent capture technology, allowing an individual to map additional trails without the weight of the 40lb trekker pack. Each time the stick touches the ground it captures the surrounding area via trigger mechanism. The information is then transmitted to Google and uploaded and stitched together.¹⁰

Principles guiding the mapping division

In their effort to organize the world’s information, the physical terrain is a logical extension. As embodied subjects, the physical world remains a critical and necessary element of our lived experience. Having indexed information of websites and other forms of knowledge has the ability to make abstract information available and accessible, but concrete information of the built environment produces different considerations and complications. The effort required to build and maintain an archive of a physical world¹¹ that is continually changing produces its own set of challenges that do not exist for other archives, such as making every book available online. Once written, a book rarely changes; scanning the pages once is generally sufficient for the larger project. Physically, the built form continues to change as a result of the forces of capitalism in relation to the needs of the population, while the businesses that populate the structures continue to change over time. This is most evident in developing regions or dynamic cities, where development continues apace and the built environment is reconfigured.

⁹ Google, Maps, About Street View. The ‘About’ page is comprehensive in the range of programs and modes of capture.

¹⁰ There is speculation that this will become accessible through their partner program, but at present, the technology is new and little information exists about it online. The patent application is available online, however.

¹¹ Most recently, Google unrolled its ‘Time Machine,’ which allows the user to see all images from their archive, which shifts it from a navigational tool to a public good.

McClendon, VP of engineering of the Maps division, highlights three primary principles that have guided development of the mapping services and continues to guide the present efforts. Comprehensive, accuracy, and usability have long been the principles that underlie Google's search function and continue to inform its product offerings, and with maps as a navigation tool, accuracy and comprehensive coverage is critical to maintain usability.¹² The early roll out of Google Map and the continual licensing of third party data eventually filled in more of the world map, but there still remained issues of accuracy and coverage.

In 2008, Google launched 'Ground Truth' (GT), essentially rebuilding their base map 'from the ground up.' Raw data collected from aerial and satellite data, road data and data culled from Street View are the key data sets. With licensed data, Google found that it was constrained by the licensed data sets, which limited the range of services it could offer. Building their own maps would give them the freedom to innovate with confidence in their base layer.¹³ The Street



Visual diagram for Ground Truth, Atlantic

View cars have produced two unique types of data that has driven a large portion of GT. The cars' path of travel provides 'proof' that roads are drivable. It also produces the source imagery for Street View, which is used

as visual data to extract information about the environment. Using computer vision, developers write algorithms that extract street signs and traffic signs, which inform turn-by-turn navigation

¹² Google, *Next Dimension*, McClendon.

¹³ Ibid.

directions generated from the deep map data.¹⁴ For countries that have extensive Street View coverage, the quality of the map often surpasses all other online maps available.

Human operators are a critical part of the mapping project. Google employees will massage mapping data not generated by Street View cars, adjusting the road paths in relation to their satellite data, while adding additional networks when evident in satellite imagery. More importantly, Google heavily relies on its users to report mapping problems. When notified, the Google team works quickly to verify the information and publish the update upon resolution. Users often see the updated map within a few minutes. This near real time problem resolution maintains the accuracy of Google's maps, and gives the user satisfaction in identifying errors. Human operators are also critical for adding additional information to the map, or in some cases, producing the actual online map in its entirety. Google developed the Map Maker tool that enables average citizens, or 'citizen cartographers', to put their own local knowledge on the map. The release occurred several years after the launch of Open Street Map, the open source mapping effort, which was well received and successful.

Their launch of Map Maker created a unique role for the user to join Google in their project of mapping the world, "With Google Map Maker, you can become a citizen cartographer and help improve the quality of maps and local information in your region. You are invited to map the world with us!"¹⁵ This production at the level of the user is a key addition to the mapping efforts, with unique local knowledges contributing to the project while generating a resource for the community. As a result, citizen cartographers have mapped many regions with the Map Maker tool, and collectively, some of the maps are the only maps available. In other regions where a base map already exists, users add information that increases the range of

¹⁴ Madrigal, "How Google Builds."

¹⁵ Google, Map maker, About.

information available, including recreational facilities, business listings and other features of the built environment that are excluded from the existing data.

Having on-the-ground informants is part of Ground Truth and is key to building and maintaining the comprehensiveness, accuracy and usability of the maps.

“Google Map Maker allows you to add and update geographic information for millions of users to see in Google Maps and Google Earth. By sharing information about the places you know, like businesses in your town or places in your school campus, you can ensure that the map accurately reflects the world around you. Your updates will be reviewed and once approved, will appear online for people from all over the world to see.”¹⁶

The call for citizen cartographers is infused with the spirit of exploration, to join Google in their efforts to map the world. It appeals directly to individual knowledge and the role of expert, the importance of sharing that individual knowledge with the world, the recognition that comes from being an active member of the community and an opportunity to share Google’s passion of making all the world’s information accessible and useful. “From the moment you make your first edit in Map Maker, know that you are joining an ever-growing community of passionate volunteer mappers as they make the online maps of our world ever more detailed and useful. Get involved by introducing yourself to fellow mappers or find an event near you.”¹⁷ The community is strengthened by organized ‘map-a-thons’ where entire areas are mapped over a weekend by members of the community. The veracity of the work is subjected to peer review before it is published. Together, these efforts - the production of the base map by Google, as well as the citizen cartographers making significant contributions - have established Google as the ‘Number

¹⁶ Google, Map maker, <https://support.google.com/mapmaker/answer/157176?hl=en>

¹⁷ Google blog, Eight Steps Closer.

One' online map, far surpassing computer program and online versions of official mapmakers like Rand McNally, among others.¹⁸

Cultural relevance of Google Maps

Given Google's goal of maintaining 'comprehensive, accuracy, and usability' in their maps, the users that utilize their mapping services are a heterogeneous mix. Maps have a long history and their use value is fully established for myriad reasons. The current environment of internet technology has created a particular condition in which users and producers make use of the same content for different reasons. One as a way to augment a particular production, such as a website that uses Google's API or embeds a URL for the customer. Google's unique status, as internet provider as well as cultural cachet, has benefitted from legions of developers. More than 1 million incorporate Google map APIs in other applications, and the applications are as varied as one might imagine. Even more business owners embed a Google map of their location on their websites, with many businesses licensing rights for Google's maps to power their website and business.¹⁹ The Google Earth software has more than a billion downloads since its launch and offers a free and professional licensed version that provides different kinds of information available. Google's unique KML file has become one of the file standards that allow different data to be incorporated into the application. 'Mash ups' within the Google Earth platform corner the market share, made possible by the comprehensive nature in relation to the ease of use. When

¹⁸ And part of the draw of Google is that there is no subscription or purchase like 'official' mapping software.

¹⁹ Google has a fair-use clause that accompanies their map services. And individual can freely use and reproduce, with appropriate copyright information, for a limited number of access hits. Websites that generate high traffic, such as real estate services like Redfin or online travel sites, like Expedia, have a high volume of map hits, putting them in a different user category.

Street View is added to the suite of tools, Google *begins* to approach their goal of mapping every portion of the world, creating an exact replica online.²⁰

This quick sketch of producers that utilize different points of access of Google's mapping services lays out a comprehensive plane of geo-based tools. Users expand this plane, giving it relief and points of intensity of user practices. Wayfinding and navigation is a standard use for most users, as embodied beings have a need to navigate to places distributed in space. The market for navigation continues to increase exponentially as more smart phone technology replaces standard cellular phones. As Google's maps include more data layers, searching for a type of business, like coffee, in the Maps application provides a clue to how ubiquitous the technology has become. Google is placing a large wager on this sector's growth, offering indoor maps of malls and airports, as well as a range of other experiments, like using Street View technology in commercial establishments. Searching for a particular business in Google will typically yield results that include a website address, an option to view the business on the map and a direct link to Street View, if available. The photosphere of the 'indoor' mapping efforts continue to be the weaker link of seamless integration, as the movement between indoor and outdoor is less than clear.²¹ The viewer can navigate the interior in the same way as Street View, but the coverage is opt-in for businesses.

While using a map for navigational purposes has been around for millennia, having easy access to the image of the built environment is a recent and unique cultural phenomenon. The built environment is the familiar backdrop in which everyday experiences take place, and the legibility of the image allows the platform to augment a range of disciplines and sectors. Having an easily accessible image of the built environment as an integrated layer makes wayfinding

²⁰ Google I/O 2013, Keynote.

²¹ When dropping 'the man on the street' onto a particular location, the user can accidentally find themselves inside a business, rather than on the street.

more efficient. When navigating to an unfamiliar place is informed by an image in advance, our ability to locate ourselves in space happens at a much more rapid rate, as the environment's image forms the base layer upon which actual experiences are built upon. This familiarity offers additional benefits for those that are anxious in new environments, or if the journey for the visual or mobility impaired can be made safer by having advance knowledge. Given the range of Google's mapping tools, it is outside the scope of the work to consider all of the uses across each platform. Focusing on Street View and the rich diversity of uses of the image of the urban as raw material gives a comprehensive view as to how pervasive the tool has become in everyday online activities.

The visual quality of Street View

In the most basic sense, Google Street View is comprised of a series of photographs that are stitched together and then reconstituted online, re-presenting the existing street condition. Deploying an army of vehicles equipped with a camera that captures a series of photographs that provide a 360-degree view, Google's vans objectively capture the city while driving through it, freezing the street condition on a random day at a random time, capturing urban detritus, graffiti, vacancy and the like. To navigate, the viewer can drop 'the man on the street' onto any area that has been mapped. Utilizing the mouse, the viewer can pan the reconstructed view, as well as move along the street by way of directional arrows to navigate and frame the view.

Within GSV, a number of visual disjunctions slowly emerge as the viewer pans within a particular location, revealing how 'objective' the capture truly is. The driver operates the van, the camera is on remote. There is no framing of an aestheticized view; the hierarchy of the photograph does not exist, as sun flares and graffiti are given the same weight as parks and tree-

lined streets. Through movement, directional disjunctions begin to emerge, as vehicles, bicyclists and pedestrians unpredictably enter and exit the frame. Seasonal disjunctions reveal gaps in the mapping process, as various points of the city are connected at a later date by an updated capture. And perhaps most intriguingly, the city remains inexplicably disconnected, as directional arrows do not exist where streets have not yet been mapped, resulting in a representation of a street condition that cannot be traversed by the man on the street. The digital artifacts multiply when the 'print' function is executed. The actual construction of the environment reveals itself. The radical wide-angle optics bend vertical and horizontal lines and the topography of the city is revealed; the framing of the view reveals the disjunction of the capture image in relation to the seaming of the photographs, rupturing the continuous digital smooth space of the street scene.

Screen Shot, Google Street View



Screen Shot, Google Street View

In the most basic sense, GSV captures a slice of time, an immobile section of the built environment,²² as it exists on a random day at a random time; this snapshot of time is reproduced continuously. The method of capture is photographic; the interface renders the built environment cinematic, for the series of images do not have the same hierarchical consideration as that of the still photograph, and the user can survey a scene and move through an environment that approximates movement through time. What results is an uncertain kind of image, one that is static in its essence, but operates far more dynamically than a static photograph. Overall, the level of controlling and managing the visual experience that is done by the viewer firmly situates this software platform into the realm of the new media space, where the various media expressions coalesce into the Street View platform, wholly transforming its visual quality into a performative experience. Deploying the ‘man on the street’, the environment is reconstructed, and moving through space adds movement back to the image, producing a sequence of images that creates a mobile section of duration, in a straightforward, linear and homogeneous sense, tending towards cinema.

As the environment is reconstructed, the ease in which we move through this new digital realm closely approximates our experience of the real world. With the static spatial elements less susceptible to a durational change, we seamlessly integrate our actual experience with this digital representation. From a hermeneutical and phenomenological perspective, we integrate this experience into our horizon of meaning and assimilate the experience effortlessly. Moving through the world, then, is one of habit and anticipation; we understand the order of the environment based on our previous experiences.²³ When experiencing a place for the first time,

²² Within the cinematic excursus of the Cinema books, Deleuze ascribes the single image of a film as an immobile section, one that isolates a particular moment in space and time.

²³ In Deleuze’s book on Hume, he says of duration, “The mind, considered from the viewpoint of the appearance of its perceptions, was essentially succession, time. To speak of the subject now is to speak of duration, custom, habit

larger structures stand out more than details of the environment. It is through repeated exposure or experience that we develop a more detailed mental representation of a particular environment. As Deleuze rightly says of perception, we perceive the elements that interest us; everything else falls away from the image we construct.

These two durational aspects of GSV, duration of movement as it is recorded and archived, as well as the latent psychological durational experience for the individual users, become critical points of investigation as they relate to the actual duration of the GSV interface. The overall duration of GSV is dependent upon a host of factors; from the time of the initial capture, additional ‘mappings’ take place. In some instances, intersections are remapped in order to connect streets that were previously severed. Other instances include areas that were previously unmapped, while a third variation stems from the age of the capture in relation to the kind of environment in question. In commercial urban areas, certain streets are mapped with greater frequency compared to more stable residential sections. These various stages of mapping take place over a period of time, each capture as unknown as the previous, resulting in an uncertain timeline.

An important component of this uncertain timeline for a given environment is the uncertain assemblage of the various captures. It is not immediately apparent where one iteration will stop and another one will begin; the disconnects are only revealed as the user traverses the digital terrain; and when encountered, produce a jarring splicing of time. Visually, what emerges from this assemblage of capture is a montaged environment. From the perspective of the movement-image, the continuity of the built environment is maintained; the physical transition is seamless while the temporal continuity produces a disconnect, where one image may be taken on

and anticipation. Anticipation is habit, and habit is anticipation... Habit is the constitutive root of the subject, and the subject, at root, is the synthesis of time—the synthesis of the present and the past in light of the future,” 92-3.

a gray winter day, and the connecting image on a sunny summer day (and possibly an upgraded optic quality). Or another instance, from one street, a building is standing, but from the adjacent street, a building is being constructed. The destabilization of the montaged sequence, from a Time-Image perspective, presents the impossible, as all iterations may be true, but all cannot be true simultaneously. The sheets of time form a stratigraphic layer of the built environment, revealing the various visual topography as it existed through time, at various points of capture, only further exacerbated when the satellite aerial image is considered; all of which is viewed in relation to a constantly shifting present, or rather, the present from which the viewer's point of reference.

What results from these intervals between one capture and the next is an any-space-whatever, which, loosely defined by Deleuze, and wholly compatible with Manovich's description of new media space, "Space is no longer a particular determined space, it has become any-space-whatever... a perfectly singular space which has nearly lost its homogeneity, and is the principal of its metric relations or the connection of its own parts, so that the linkages can be made in an infinite number of ways. It is a space of virtual conjunction, grasped as a pure locus of the possible. What in fact manifests the instability, the heterogeneity, the absence of link of such a space, is a richness in potentials or singularities which are, as it were, prior conditions of all actualization, all determination."²⁴

As an unfixed and amorphous space, this type of disconnect is immediately recognizable to the casual observer, and therefore subsumed into the cognitive horizon. This takes place at the molar level, where stable habits and anticipation structure our experience. There is another layer of duration which becomes destabilized as the individual users explore the interface, happening at the molecular level, one which is not immediately subsumed or creates a moment in which the

²⁴ Deleuze, *Cinema 2*, 109.

new media space reveals its construction to the user and shifts the cognitive process. For many standard uses of Street View, the molar level is dominant; for the innovative uses, movement at the molecular level gives a new view onto a previously known world or way of working, exemplified in artistic practices, but evident in innovation of existing practices.

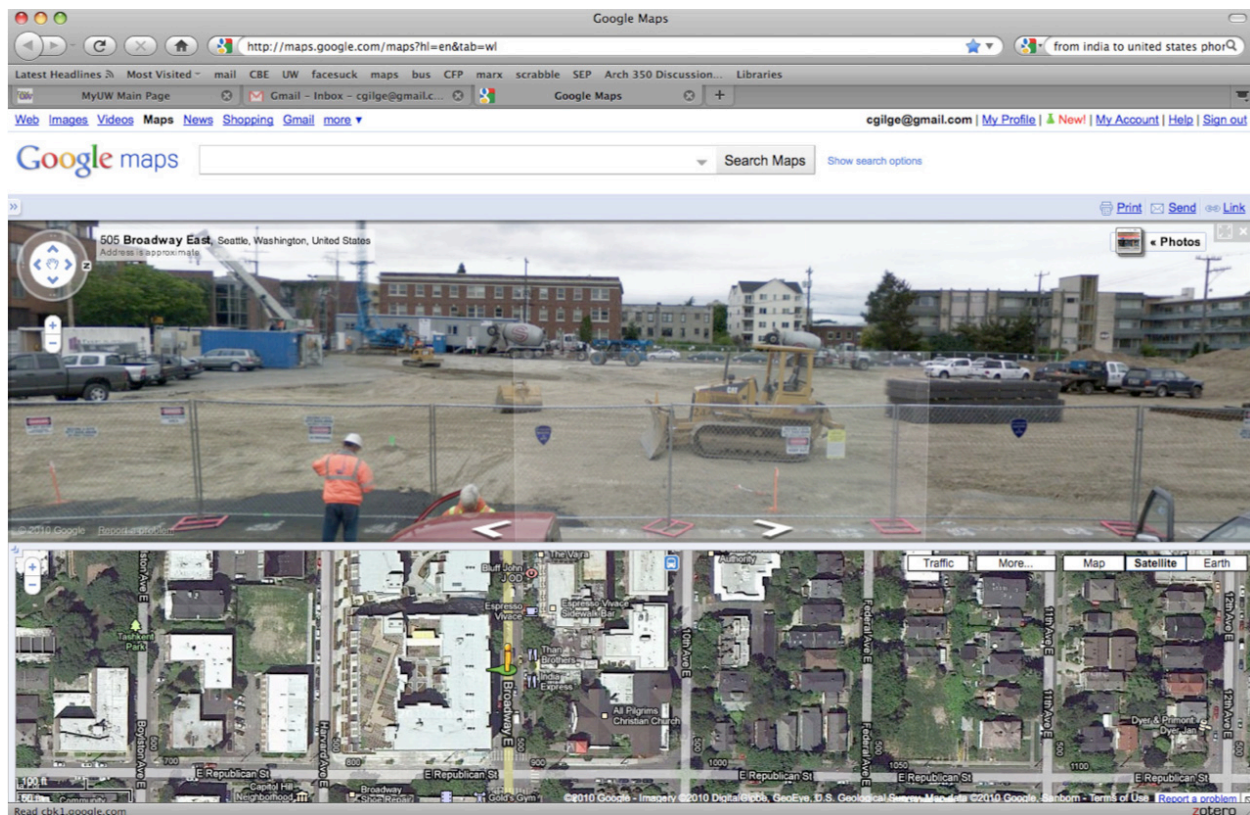
Proliferation of uses

Google's first video that announced the launch of Street View gave wayfinding, travel tourism and general curiosity, as well as parking reconnaissance as imagined or anticipated uses.²⁵ Early user studies reported that the single most frequent use of Street View was viewing one's own residence, followed by work places, childhood homes and other places of nostalgic reference. Comparing intimate understanding of a particular place against the online image is an element of curiosity, but also functions as an element of fact-checking and assessing the accuracy of the image against held knowledge. The novelty of the tool, and the frequency of this curiosity, led many to remark on the changes that took place over time, or if a particular shift in the exterior composition provided 'evidence' of when the image was taken. Anecdotally, a personal assessment of an image places the event in time, 'before a break up' with a car in the driveway, a pile of leaves not yet bagged, a deceased family member crossing an intersection, a different house color, etc. Neighborhood 'fixtures' or local celebrities were noted in their familiar spot, favorite establishments were viewed, pets were caught sitting in the window.²⁶

²⁵ Google, Streetview Launch. Initial promotional video. Other separate, unrelated blog sites also highlight potential uses, such as this one: <http://viking305.hubpages.com/hub/Google-Maps-with-Google-Street-View>

²⁶ This is hardly exhaustive, but this refrain has persisted in online forums and through unsolicited information from acquaintances. The 'cat' became the focus of national attention after the early NYT article by Miguel Helft reported on the roll out of street view. The interviewed woman had been horrified at seeing her cat on GSV, shown in the window of her apartment.

This realization has the potential to produce a range of responses, from wonder and delight to horror at a perceived violation of personal space.²⁷



Screen Shot, Broadway and Harrison, Seattle, Google Maps.

As more users began exploring the interface, a range of idiosyncratic images became evident. Temporal ruptures could be ferreted out, as new construction projects stood in defiance of the online image, often further exacerbated with a different aerial photograph available, yielding 3 distinctly different periods of time, the current one known only to those familiar.²⁸

Those that sought an address and its image were sometimes surprised by a different built condition than the online image. As time progressed and Google updated commercial districts,

²⁷ The above New York Times article assesses this well, as well as Kevin Bankston from EFF, who was photographed smoking, a habit he had been hiding from his family; as well as random stories over the delight of finding a deceased mother, complicated by a bittersweet-ness. Artist Doug Rickard is vocal about his delight in realizing what this visual tool makes available, as well as the amusement one person found of having been ‘caught’ by Google 43 times while on a walk. See Matyszczyk, “Google Street View Shoots Same Woman 43 Times.”

²⁸ This is a rather pervasive phenomenon in areas undergoing rapid transformation. Locally in Seattle, viewing sections of Capitol Hill (ex. Madison & Union) or South Lake Union (ex. Republic & 9th) give many examples of this destabilizing experience of seeing different time captures in one location.

shifts in time, season, weather and lens quality were juxtaposed against held knowledge, creating cognitive shifts unique to each viewer in relation to their own horizon of experience.

An increasingly captivated audience found other idiosyncratic images of captured contingencies. A range of websites popped up, displaying the rare, unusual, the fantastic, the macabre, the illegal.²⁹ Accidental captures frequently acquired ‘viral’ status, with a number of blogs that highlighted ‘newsworthy’ events, with perceived break-in attempts, scantily clad women, casually costumed figures, children hiding, elderly sprawled on the sidewalk, or a young woman appearing to give birth.

Between these two poles of the common, banal use and the sensational views, an overall proliferation of uses exists across this spectrum, from knowledge production to DIY exercise platforms, and everything in between. Since its rollout, a number of articles have circulated in popular media, giving an account of different and creative ways to explore Google Street View, beyond simply looking up an address. Using radical empiricism as a means to uncover the veritable heterogeneity of countless uses, the instances of use can be loosely organized along the following lines: commercial, cultural, entertainment, legal and research, with individual discrete uses blurring the boundaries between entertainment and commercial, or between cultural and commercial, etc. A particularly unique condition of Street View is the role the user, as Street View often becomes a means to achieve some kind of end (beyond navigation), whether it is the base of a mobile app, a visual field from which to base a fictional narrative, or an alternative to studying the built environment. As of one of the frequent refrains of Web 2.0, ‘the users turn producers of their own content’, and is often celebrated as both the democratization of

²⁹ StreetViewFun is one website that emerged at the early point of Street View and currently boasts more than 11,000 images of odd captures from Street View, accessed on Feb 18, 2014.

information and knowledge, as well as the freedom of the individual to produce their own world on their terms, rather than according to the corporate logic of capitalism.³⁰

Commercial

While viewing particular locations is a straightforward and common use of Street View, more creative uses of GSV exists. This includes determining parking availability or restrictions before arrival, recalling the name of a small business, or assessing the ‘character’ of a restaurant or other business before making a destination decision. Businesses recognize the value of having their ‘image’ online for anyone to view, and more businesses are collaborating with Google to have high-resolution photos of the interior online, navigable similar to the street scene. This effectively shifts the definition of ‘window shopping’ and enables a customer to ‘browse’ the online window before committing to going inside. As mobile technology studies have indicate, those conducting searches from their mobile phone are more often converted into purchases than desktop searches. Making Street View available through the Google Maps app gives the user the look and feel of an environment when out on the street, before one commits to the journey.

Real estate has been one of the largest sectors that have voiced appreciation for Street View, with real estate sector in DC heralding Street View as the ‘best new tech’.³¹ Recently, the national association for Canadian realtors have teamed up with Google to incorporate the Street View technology into their business model.³² This follows from several other notable uses of Street View within the real estate market. Looking at rental properties or real estate before

³⁰ There is a wealth of literature that celebrates the new environment of the Internet and Web 2.0. Clay Shirky’s recent text *Cognitive Surplus* and *Here Comes Everybody* looks at the potential of this new environment, while Don Tapscott & Anthony Williams *Wikinomics* and *Macrowikinomics* attempts to identify new ways for business to succeed in this environment, keeping this phenomenon in tension.

³¹ Urbanturf, “Best New Tech.”

³² CTV News, “Google, Royal LaPage.”

arriving to the property is frequently cited as a way to eliminate unnecessary trips.³³ Redfin, an alternative to ‘big business’ of large real estate firms, heavily relies on Google Maps and Street View links as part of the information page of property listings. This efficiency is a time saving measure for both buyers, and the realtors that work towards a contract as their form of income. For those relocating from out of town, getting a sense of a particular neighborhood or street gives a modicum of comfort when the property is sight unseen.

An entire business plan, Pedal-to-Properties, was developed around sustainability, bicycles, and online exploration. This real estate firm prepares clients for house-hunting on bicycle by facilitating virtual tours of the neighborhood, based on the realization that many people consult Street View in advance of touring properties. This model builds on Google’s technology to familiarize clients with the neighborhood, while giving the clients more agency in exploring the neighborhood for themselves.³⁴ The novelty of the business has the potential to franchise and is ideal for temperate mid-size cities. Economical or ‘lean’ business models need to cut costs or save time in a variety of ways, and utilizing a comprehensive, interactive tool like Street View is one such way the image of the urban augments a regular business practice, which provides an important time saver for both clients and agents.

Interactive ads are an increasingly popular way for advertisers to engage their potential customers for a longer timeframe than a standard commercial spot.³⁵ The production level of features and complexity is diverse and is often a reflection of the marketing budget and the

³³ Redfin.com. A visual analysis conducted of the website and range of links made available to users of the site as a way to conduct research or reconnaissance on potential property. Anecdotally, countless many have used Craigslist for apartment hunting, and many admit to using GSV to potentially avoid a trip.

³⁴ Google, *Pedal to Find Your Dream Home*.

³⁵ The level of interactivity from the most basic interactive ad far surpasses the passive visual ad of traditional advertising, with a higher level of engagement increasing with ads that are more elaborate. Coined ‘advergates’, these advertisements explicitly, and sometimes implicitly, promote a given product, with the user engaging the product through a game-like interface. Interactive games for children are generally simple and straightforward, while adverts targeting a tech-savvy young professional more complex in both structure and conceptual arc.

targeted demographic. With the familiarity of the built environment as the everyday backdrop and the ease of use of Google's APIs, certain commercial products have a natural affinity with the content of Street View. These games take different forms, ranging from interactive, customized scenes to games organized around a contest environment.



Screen shot, Unleash Chaos

State Farm's "Unleash Chaos" is one notable interactive game, with sole purpose to advertise insurance products. The user enters their home address, which launches a time-based narrative constructed from animation cells and photographic representation of the surrounding neighborhood, all generated from Google's API. Ominous music plays as animated shadows and effects are superimposed on GSV imagery, locating the user in their neighborhood with neighborhood signage and images of the surrounding streets. As the customized scene unfolds, the user's home, or place entered, comes into view, with a digitalized cross-hairs placed on 'target' of the home address. The robotic machine fires, the residence explodes and the animated mailbox tumbles in the air, revealing the address entered. State Farm concludes the short animation by stating State Farm is there to protect your house from unexpected events. As a first time viewer, the exploding graphic elicits surprise and delight, a moment of deterritorialization.³⁶

³⁶ As virtual ethnography, I was made aware of this advertisement by a friend via a link on Facebook. Having no previous knowledge of the advertisement, I followed the instructions as provided on the screen and watched the scene unfold, as described above. I recall a verbal expression of surprise escaping me, and then I laughed as I realized how effective the advertisement was, when considering the incorporation of the Street View footage alongside the narrative.

A second or third viewing does not bring the same experience and the element of surprise, with the ‘first experience’ registered within the viewers’ own horizon.

Similarly, a British Airways spot for the London 2012 Olympics produced a customized version, written explicitly for the Facebook interface. It allowed the users to enter their British address in order to view the customized spot. Pre-filmed footage of the aircraft is superimposed onto the streets of London; an image from the user’s neighborhood as well as the user’s address is incorporated into the established footage.³⁷ The inclusion of custom imagery is far less extensive than the State Farm advert, but the interactive aspect still produces a customized user experience, with the scene unfolding before the viewer. The anticipation of how their neighborhood image will be included in the stock ad maintains the level of surprise. For many users, the experience of a customized advertisement is a novel one; for those more technically savvy, this particular effort does not live up to the expectations of the potential of the customized interaction.³⁸

The automotive industry is wholly dependent upon the built environment and its infrastructure, and a number of car manufacturers have used Street View as a backdrop in order to generate interest in a new model or general brand recognition. Nearly all are organized around a contest structure, in which the viewer interacts with the gaming environment, seeking to collect or advance through a number of stages, in order to enter their name to win an automobile. The complexity of the environment ranges from placing mapping markers on the interface to a more elaborate interactive gaming environment that rivals videogames.³⁹ Mercedes has perhaps the

³⁷ Somewhat ironically, not being familiar with the UK and not having many addresses to compare, it was not immediately clear to me the different scenes actually incorporated into the footage. Viewing the article from Dailymail, the different points of view as seen through window vignettes becomes more clear, revealing a far more subtle incorporation than the State Farm advertisement.

³⁸ The ‘comment sections’ of various articles express this range of responses.

³⁹ As one of the earlier instances of the automobile company utilizing the gaming interface, Mini’s first advertising game is notable for its initial forward thinking approach to advertisement dollar investments. Based on a Google

most elaborate game, one with a critical meta-narrative that engages the visual phenomena of Street View, making it a particularly sophisticated example of an advergame. The gaming platform directly uses the environment as mapped by Google, with the user navigating the virtual realm as they would Street View, advancing by the same directional arrows that allows the user to move down the street.

The game provides the user a series of choices of paths of travel in some portions; in others, the user is required to navigate the virtual realm while foreign objects are introduced into the scene, producing a different environment to navigate. As a meta-commentary, the game's conceptual premise focuses on the 'capture' phenomenon of Street View. The opening narrative provides a humorous, yet revealing, account of the visual phenomena rendered by the process, pointing to the blurring of faces as being ontologically transformative, and the digital artifacts as a critical condition of the virtual sphere:

(Marie) You don't want to end up like that
 Camera got them
 They've been regulated
 Get in the car

It's just a disguise (removes rubber 'blur' mask)
 So I don't stand out. I haven't been blurred yet
 Trust me, I know the way out of here. Drive.
 Anytime now would be good. Let's go.

We tried to find a way out
 But time works differently here. Look at my watch: it's Wednesday, at 2:00. Now look at it. Friday at 8. I'm one of the last ones. You can find us by the bird.

map platform, the user drives the mini across the mapped plane, with arrows used as directional navigation. In a very recent game, Volkswagen produced a series that takes place in South Africa, Street Quest, with the user 'pinning' as many visible Volkswagens in Street View before the contest end date. A winner is declared each week, with a final event of the weekly winners competing for prizes. The narrative traces the long history that a Volkswagen has in South African society, and the contest seeks to make visible the presence of all the different Volkswagen models rendered in Street View. Citroen has two interactive locative games under the 'Street Seeker' title for two separate model years. In one version, the user engages the GSV interface in order to 'park' the car in certain locations. In the other version, a virtual environment allows people to locate pieces of the car, collecting all the pieces in order to register to win. Both versions of the game require user engagement to follow the progress of the game, in which clues or stages emerge over a period of weeks or days.

I've heard stories of people seeing themselves on the streets. It's like seeing a doppelganger. But it's not. It's you, only in a different time and place, like memories. We call them echoes. It's hard to get your head around it at first, because you bump into yourself, sometimes 4 days ago, sometimes 4 years ago.⁴⁰

The protagonist, not yet captured, is first seen with a 'blurred' visage. She reveals her true identity by removing the rubber 'blurred image' mask from her face. This disguise allows her to camouflage her street appearance when acting 'out of vehicle'. Her need to blend in allows her to encounter the potential copilot, the user, to help her find the way out of the map, and presumably, to a happy, un-rendered life; one made possible by selecting the proper paths in the architecture of the game, with the cockpit of the Mercedes as the vehicle to achieve it.



Screen Shot, *Escape the Map*

The results appear to be successful in Mercedes-Benz's attempt to appeal to a different, younger demographic. The 'campaign' began with a 'plea' for help from Marie, stuck in Street

⁴⁰ Mercedes, "*Escape the Map*."

View, ‘where the sun never sets, a danger place made up of a million photos.’⁴¹ This particularly sophisticated science fiction narrative contest had over 1.5 million unique visitors, exposure time at 5 minutes, a 400% increase in visitors to the Mercedes-Benz website, and an uplift in sales, with the C63 coupe selling out.⁴² While most automobile manufacturers utilize a gaming interface, bolstered by ‘contest’ parameters, the overall thrust of the ‘advergaming’ push is to develop brand loyalties among different demographics.

The early theorization of this branding phenomenon cites the goal to engage users/potential customers for longer than a 30-second spot.⁴³ The advergame engagement generally requires a whole engagement, rather than the distracted state of a television viewer or banner ad at the top of a web page. By cultivating a level of user interest in the interface, the product executives look at pure metrics to understand the scope or breadth of their infiltration of the market. Given the data mining that results from online uses, an active ‘count’ of plays can be monitored and gives insight into the efficacy of the game.⁴⁴ Produced at a smaller ‘price point’ per minute, executives see this as an emerging possibility. Unlike advertisements that often play to an empty room or distracted audience, advergames are active engagements with the interface, thereby eliciting a different consideration regarding potential impact.

Given the compatibility of wayfinding and use of Street View, it then stands as no surprise that several automotive manufacturers are attempting to incorporate Street View into the GPS console. Perhaps the ultimate duplication of information, the driver presumably views the on-board display for information, rather than viewing the actual environment through which they move. While still in the early stages, it remains to be seen how effective incorporating a visual

⁴¹ Digital, 151awards.

⁴² Digital, 151 Awards.

⁴³ Cauberghe & De Pelsmacker, “Advergames.” Also, cf *Advertising, Promotion and New Media*.

⁴⁴ Statistic of BA advergames ‘record’ social media push, “By last night more than 100,000 people had viewed their own customised version, making it one of the most successful ever interactive social media advertising campaigns.”

representation in relation to moving through the world will actually be. Google is working with Audi, Hyundai, Honda and GM to incorporate their platform into the dash displays, which signals that the industry appears to believe it will be a valuable feature.

In another sector, stationary exercise equipment also creatively utilizes Street View as a backdrop. Recognizing their ‘captive’ audience, several manufactures have incorporated the visual platform into the screen display, giving the exercise regime a more dynamic environment through which to virtually move. Several viral DIY experiments have attempted to do the same, either through a Wii console or by way of adhoc components, where electronic triggers are wired to a simulated mouse, which keeps Street View advancing while the user is engaged in exercise. This DIY not necessarily reproducible by the novice computer user, but is rather a sophisticated hack.

Entertainment

A variety of efforts have focused on Street View as a form of entertainment, using the backdrop as a natural ‘gaming environment’. Similar to the ‘advergame’ these games use the APIs of Google Street View to generate an environment to create a particular mash up. Fans of Grand Theft Auto produced a Street View version of the game that enables fans to ‘familiarize’ themselves with the course to improve their performance. Comprised of more than 80,000 screen shots, fans can mostly navigate the course through a street view interface that is blended from in-game images and Street View. Other DIY video games have been constructed from Street View, including ‘Street View Zombie Apocalypse,’ in which the protagonist must navigate neighborhoods in Street View. The user navigates through Street View as normal, with the inset

aerial map alerts the player to the locations of the zombies in the neighborhood, requiring sophisticated synthesis of street level and aerial spatial information in order to navigate.

Google has partnered with Nintendo's Wii and has produced Wii Street U, which allows the user to navigate with the Wii game console and project the image onto the larger screen.⁴⁵ While the 'gaming' intention is far from clear, the virtual environment creates opportunities on which to build, including the exercise Wii interface that takes the individual through Street View while running on the Wii mat. In another vein, two young students created a game for themselves, racing across the country on Street View. Their efforts were non-stop and took 90 hours and more than 100,000 mouse clicks to declare one of them the 'winner'.⁴⁶

In a more macabre twist, a Dutch advertising agency, Pool Worldwide, rolled out their own interactive game called 'Google Shoot View'.⁴⁷ The gaming environment has GSV as a backdrop, with a CGI machine gun at the forefront of the screen. The player moves through Street View, point the gun at various targets. Firing the machine gun produces sound, but no other visual effects. Given the viral nature of the digital realm, the game was an immediate Internet sensation and an excited online discussion ensued. What is particularly notable about this example is Google's decision to pull the rights to its API within a very small window of time, approximately 3 days after its launch.⁴⁸ Google's response of perceived censorship elicits a number of questions and concerns. Given that Google makes their API available, it is presumed that with an appropriate pay-per-use structure, an advertising agency with clients like Greenpeace and TomTom, can pay for the rights to use their API under fair use. Speculation

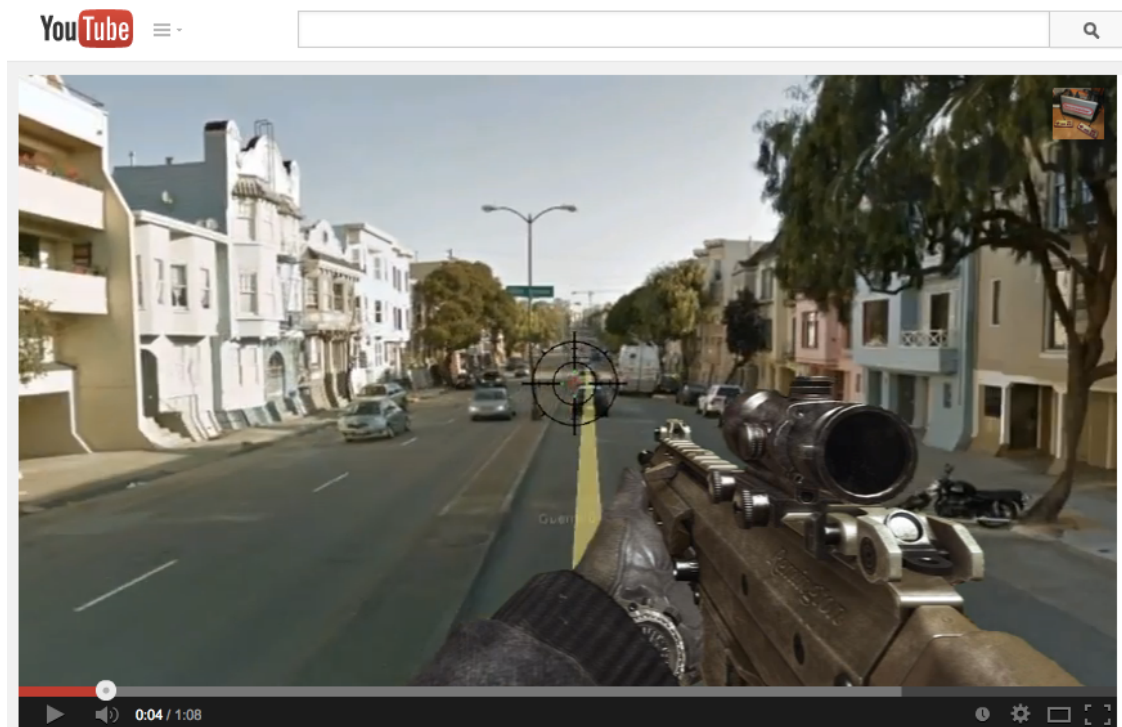
⁴⁵ Slashdot, "Wii Street U."

⁴⁶ Liveleak, "Cars Race Using Google." A time lapse video depicted the environment of the two friends competing with each other and the accumulation of soda bottles around them.

⁴⁷ Grubb, "Shot down."

⁴⁸ What remains online are the archival efforts of users that made screen captures of the game before it was pulled. The preserving screen captures are thus protected as user generated content.

surrounds the take down of the API link, but ‘violation’ of fair use will likely be the reason submitted by Google for its decision to censor the game.⁴⁹ The online terms and conditions for APIs state that Google products cannot be used to promote illegal activities. The public responses submitted from readers across a number of websites understandably range from content-oriented disapproval to an ethically driven argument based on right to censor and freedom of speech. Google has a history of intervening when appropriate, but the intervention is not standardized. This leaves their practices open to criticism and warrants an open debate on their position as moral arbiter of information.⁵⁰



Screen Shot, Google Shoot View

⁴⁹ Ibid.

⁵⁰ Vaidhynathan cites Google’s lack of action on the Jewish/anti-Semite search results, versus actual content censoring as hiding behind computer code, 64-66. Google’s ‘algorithm’ produces the results, not themselves. Google’s own stated position on search results is here: <http://www.google.com/explanation.html>, which apolitically appears to suggest for the user to use better search terms, ie Judaism rather than Jew, as Jew is linguistically considered a slur. This makes it more difficult to determine when ‘sentiment’ is strong enough to warrant intervention, or if there is a balance between website content and content generated explicitly from Google’s own platforms like GSV.

Legal

Given the presumed veracity of the automated photographic capture, Street View has been summoned as evidence for different scenarios with unique legal ramifications. Greece government officials have used Google Earth and Street View footage to investigate potential property tax evasion schemes, with a large number of swimming pools underreported. In New York, police were able to make a drug ring arrest, with individuals caught on Street View providing additional evidence. The corner was already under visual surveillance, with undercover police capturing dealing activities.⁵¹ In a recent building collapse in New York, a reporter provided evidence from Street View that a vertical crack in the building was evident long before the collapse. In Taiwan, a judge sentenced a Taiwanese man for negligence, when an off-leash dog caused a bicycle accident. The defendant claimed that the dog was not his, but a Street View photo from two years earlier captured the same dog in the defendants yard.

For more nefarious purposes, Street View has been claimed to aid and abet criminal activity, making it easier for people to ‘case’ a neighborhood or house before burglary, the platform has been used to highlight prostitution pick up sites, and illegal acts have been purportedly ‘caught’ while Street View captures the street scene, with armchair prognosticators contributing editorial comment.⁵² At a more local scale, many images have surfaced online that have spawned ‘public humiliation’ and ‘invasion of privacy’ as a protective measure, with individuals unwittingly caught in the wrong place in the wrong time. While Google has been blurring faces since 2008, often a likeness is still evident for those that either see themselves

⁵¹ News sources say the capture on Google Street View helped the arrest, as individuals were captured in their usual ‘dealing’ positions. It remains unclear if it was Google Street View that enabled the arrest, or if they were found on Street View and that image was used as ‘source image’ out of efficiency. This practice has become commonplace in news stories.

⁵² Blog and popular press highlight these sentiments within the social field; individual comments often highlighting how ‘easy’ Google is making it for criminals. Whether or not this concern is real is not as relevant as the *perception* that exists.

online, or it is brought to national news media attention.⁵³ Politicians accused of infidelity, public indecency, whether outright (naked in the front yard) or incidental (naked in the backyard), public urination, secret habits and seedy association with adult establishment have circulated online. The accumulation of these instances have led to calls for privacy policy revision,⁵⁴ explicit cooperation with local residents, or a redesign of the capture technology to lower the viewing angle.⁵⁵

Journalism

A number of news media outlets are increasingly using an image from Street View as the ‘photography’ that accompanies the news item.⁵⁶ With the Internet creating a greater visibility of events at the national level, the ability to contextualize the event with an image remains geographically the same. For small budget news outlets or smaller back page stories, the cost effectiveness of not paying the Associated Press and its photographic arm of photo rights is undeniable. Given the nature of the photograph as being an ‘index’ of the world, and the Street View capture as ‘objective’ as it can get, the reliance on this as a faithful representation is unsurprising. With an increase in blogging activities and reblogging as a means to distribute content, new pressures are being created in an industry that has not yet come to terms with the new Internet model. Whereas the old print paper sold advertising to fund the general production

⁵³ Smith, “Naked Florida Woman.”

⁵⁴ See the Political Economic Dynamics: Suicide Line, for a more detailed discussion on privacy concerns in relation to Google.

⁵⁵ Germany is a notable case, in that the government required Google to blur the whole building if one resident wanted their building to remain private. What resulted was a patchwork image of the streets, eventually causing Google to abandon their efforts. In Japan, the authorities required Google to change the camera level to reduce clear views into the single story Japanese houses that are close to the street edge. Other countries have required advance notice, so that residents can plan to avoid being outdoors or, in some cases, to clean up their property out of pride.

⁵⁶ As part of data collection, I subscribe to Google Alerts for ‘Google Street View’. I receive daily email of items that contain Street View, and often the links are there simply because the photo in the article is citing Street View as the photo source.

and subscriptions augmenting that income, the current model is radically different, with online advertising producing a wholly different business model, with free online content resulting in lapsed physical subscriptions and a new advertising model changes the revenue potential. Lean models of production include ‘fair use’ images to suffice for content, while more citizen generated content takes the place of journalism, such as the new effort of CNN and iReport, which invites citizen journalism to contribute, sometimes resulting in the network picking up the story as significant content.

*Cultural production*⁵⁷

The built environment is the content of much of the GSV platform, and thus serves as a ready backdrop and archive for many disciplines that take the urban realm as their object of study and point of engagement. Ranging from artistic uses of all media types, music video production, literary source material, conducting virtual tours of different locations, as well as creating crowd sourced historical projects, citizen outreach in urban design and planning efforts, geotagging instagram photos with the Street View location and other mash up efforts that overlay content against the Street View backdrop. The sheer diversity of practices gives sufficient evidence to the ubiquity of its use-value and the inventiveness that takes place in the cultural field.

Artists have long used the urban environment as raw material, re-presenting the world through their subjective lens. Photographers have re-photographed the Street View images, both as they exist on Street View as well as ‘reinterpreting’ the images by way of manipulation; painters and drawers have used the visual archive as source material, both as production and as a

⁵⁷ What is offered here is a brief sketch of these practices, many of which will be taken up in greater detail in subsequent chapters.

conceptual project, performance artists have inserted choreographed vignettes or their own body into the path of capture, thereby altering the ‘objective’ capture and the status of the archives. Film and video artists have produced work with Street View as the setting and raw material, constructing narratives or as a formal exercise set to music. Musicians have explored Street View as a backdrop for music videos, creating and exploring the potential of both the archive and ‘Chrome’ technology, resulting in an interactive online project. Many writers have accessed Street View to refine their memory of a particular place when including the setting in a fictional narrative. This produces a more realistic account as it gives specific shape to the narrativized environment, rather than vague or undeveloped descriptions that result from a recollection or fabrication.

Another cultural mode of engagement with the urban realm takes place through tours. Urban tours are an informative way to learn about the city through the eyes of local informants, one who often possesses knowledge not immediately accessible to the average person. Several variations on tours have been conducted with Street View, each focusing on different objectives. Established architecture critic, James Howard Kunstler, developed several virtual tours for his radio show, where each tour narrated urban elements of particular locations for his audience. Another tour application, Plott Me, allows the user to build customized tours to share city highlights with friends, with an online component builds the tour through Street View. A more sophisticated program, Hyperlapse, has recently emerged, and enables the user to build their own hybrid video tour by mapping a route via Street View images. The software provides choreographic control for a personalized video set to music. While most uses consist in mapping

a daily route,⁵⁸ its creative potential is demonstrated in the promotional video. The expertise with the software and the film direction of the footage is evident in the effects displayed.

Additional applications bring together the recent development of the Digital Humanities, crowd-sourced movement of citizen involvement and the Street View interface. Two separate online efforts assemble a collective history, one that layers historic photos against the modern day Street View image. Individual users upload historic photos and contribute their own knowledge to the online site, with additional users amending or adding to existing information. The public can see how areas have transformed over time of a particular neighborhood while producing an organic cultural history.⁵⁹ Another project, Rephotography, utilizes Street View to locate architectural photographs from the 1920's and 30's. Using a 'mash up' with the mobile phone app, Instagram, students at Rutgers Social Media Information Lab developed an app called The Beat. Images uploaded to Instagram generate a Street View image based on the geocoded information of the image, producing an additional layer of meaning and potentially enriching the cultural value. While the categories are open, one can view '#bikinibeat' and #citybeat in succession through key word search, revealing the motivation of users uploading photos and those in search of them.⁶⁰ The site restricts the information that can be gleaned from the pairing. The larger movement of digital humanities explores the narrative capacity, drawing from all of Google Maps API, including regular maps, Earth and Street View.⁶¹

Bridging the gap between cultural production of crowd sourcing and knowledge production, urban design and planning agencies are also bringing together the citizen participation of Web 2.0 and the popularity of Street View in an effort to solicit community

⁵⁸ Email exchange with firm, dated April 28, 2013

⁵⁹ This is particularly interesting in relation to Google's recent 'Time Machine' release. The continuity between the historical photo mapping projects in relation to Google's decision to make all years available is unmistakable.

⁶⁰ Or, as technology blog Gizmodo headline states, *This Instagram-Street View Mash-Up Is a Stalker's Wet Dream*.

⁶¹ University of Delaware, <http://www.udel.edu/udaily/2014/oct/digital-humanities-102113.html>

responses to vexing design or planning problems of communities, with the effort to reduce the participation burden. The online interface environments each provide an interactive element according to the design objective, either as digital post-it or as comparative feed back, through use of GSV as raw material. The Web 2.0 environment and tools offers planning and design professionals another way to access a potentially wider audience and understand the image or representation to which citizens respond. This strategy exposes residents to different environments and expands their design vocabulary and aesthetic preferences as an effort to develop more successful urban environments, at the same time, it provides a snapshot of community concerns and a direct measure of what might preoccupy residents the most.

Knowledge production

In tandem, a variety of researchers are exploring the potential of Street View as a means to augment research and knowledge production. Social scientists studying the urban environment have sought utilize this constructed visual archive, either as a means to facilitate research, create analytic tools or as an efficient means to communicate information. Disciplines like urban planning and architecture regularly use images of the urban environment throughout their process; researchers conducting street audits, analyzing building typologies, and qualitative perceptions of an environment have found value in the digital archive.

Many of these efforts draw upon an earlier study conducted by sociologist Robert Sampson, who published influential study regarding the accuracy of a video archive compared to in-person street audits. Expanding on this study, researchers have conducted similar studies using Street View, rather than creating their own video archive. Studies have examined correlations between environmental conditions and social conditions, conducted neighborhood assessments

of amenities and infrastructures, as well as a typological algorithm to draw out common visual elements that might define a place as being geographically and culturally distinct or assessing how the public responds to images as a means to assess perception of the environment. For many studies, the use of Street View demonstrated high levels of concordance for many elements, thus making it possible to function as part of research design. In comparative studies, image pairing asks the viewer to select between two different images via qualitative prompts, such as ‘which place looks more lively?’ with an opportunity to select the equivalent of ‘about the same.’⁶² The study seeks to quantitatively measure urban perception of different environments against qualitative characteristics.

While these disciplines have a natural affinity with Street View as a visual archive, additional researchers have found innovative ways to use Street View technology to augment their research. As a pedagogical tool, many teachers have employed Street View to augment lesson plans and giving students access to another layer of information to the textbook.⁶³ Special education environments have found value in preparing students for field trips, as way to mitigate the stress that can accompany exposure to new environments.⁶⁴ As a surrogate form of research, marine ecologists have discovered a new pygmy sea horse, as a result of Google’s underwater mapping of ecologically sensitive areas. Natural scientists studying invasive species are able to analyze tree health in relation to the online image, as a result of the geography and seasonal capture. Ornithologists are asking whether Street View can provide access to cliff habitat, not

⁶² This is data on images captured from a vehicle, and hence, represent the way cities look from a car. Moreover, most of the images were captured early in the morning, and hence, show images of cities with empty sidewalks, little traffic, and many of the shops closed. Also, the images of each city were chosen randomly within a boundary defined manually

⁶³ A well-subscribed Google Group is geared toward sharing knowledge and innovative ways of introducing Google’s suite of tools and other technologies into the classroom.

⁶⁴ Special education instructor, Christina Smith often uses Google Street View to educate her students, in relation to field trips, as well as a means to help students understand important current events, like the recent earthquake in Japan. Interview conducted in July, 2012.

normally visible on satellite imagery. A medical doctor has sought to use the idea behind Street View technology to incorporate into new colonoscopy studies. Together, these range of experimentations with the archive as a means to augment research reveals not only the cultural relevance of the archive, but also its potential to shift existing practices in innovative ways.

As a larger conclusion, the level of production that has utilized this visual archive has a diversity and range of applications that supports the importance of Street View as a cultural phenomenon, one that has gained traction across a variety of sectors and uses. No longer limited to wayfinding and house hunting, the sheer diversity outlined above far exceeds the scope of the research herein. Each line of use warrants additional examination of the use in context and what the implications and opportunities might result. More specifically, the nature of Street View as a photographic mapping of the built environment serves as the organizing principle for exploration moving forward. This exploration can be extended along two distinct lines or *poles*: the creative, subjective potential of the technological tool and the photograph as an index of reality, one that has the historical weight of facticity, veracity and objectivity. Both result from the recording of light as reflected on a surface. With the former, it is *the ability to manipulate the conditions* in which this recording takes place; with the latter, it is the objective nature of *light reflecting* that gives a photograph its indexical truth. The creative potential of a tool that ‘writes’ with light, produces an immense visual archive from which creative practices begin; one laden with subjective qualities, complexified by duration, framing decisions and lighting considerations in relation to the intentional aspect of producing the image. Research practices identify the photograph as a reliable representation of the environment from which to conduct studies and produce knowledge. Both lines or poles are informed by a rich history of photography as an art

and a science; the creative practices explore and exploit the subjective nature of space-time bloc of capture and the objective means of capture of the Google apparatus, while the research practices seek to legitimate or ‘molarize’ the innovative tool to advance knowledge production.

02_Photographic Line: Historical Impulses

The photograph is the result of the inscription of light reflected off an object, recorded on a light-sensitive surface, the final image is determined by the focal length of the lens and the framing of the view. It is within this formulation that photography is considered an 'indexical document', rendering the world in full. At the same time, this formulation reveals the subjective and creative nature of framing and light manipulation. From the beginning, a discourse of competing photographic wills sought to establish it as faithful copy, and thereby 'truth,' as well as a creative tool for artists. Over time, these wills continued to assert their legitimacy, with optical empiricism standing in as truth, while the malleability of the medium as a creative act identified an artistic 'vision' or genius that enabled artists to re-present the world in their vision, one subjected to the subjective elements of composition.

The photograph itself transcends disciplinary boundaries. The professional, amateur and hobbyist; the researcher, artist, journalist, parents: they all take pictures. It is a method of research, a mode of communication, an advertising tool; it bears witness, is a creative effort, and encapsulates memories. We have seen a dramatic transformation of the 'photographic' with the advancement of technology. As the digital supplants the analog, there has been a proliferation of the image in all aspects of life. With its ubiquity as an object and mode of representation, its materiality has diminished with the digital realm. With social media, Web 2.0 and smart phone technologies, we have seen the image move around the world with a speed and efficiency not possible in print; the viral nature and the electronic transmission has the ability to mobilize the masses at an unprecedented scale and speed.

The built environment has long been the subject of photographs, a stable object on which to fix the camera lens. The first photograph by Joseph Nicéphore Niepce is from an upper-story window, the captured scene depicts a portion of a building with open space in the distance. The viewer makes sense of the partial scene by mentally filling in the missing elements. This cognitive act, informed by the viewer's horizon of meaning, forms an idea of the 'whole', based on what is represented, or gestalt theory. An equally famous photograph by Louis Daguerre is of a busy street scene. He improved upon technique and technical apparatus, resulting in an image that had sharpness and clarity that Niepce's lacked. While the exposure was dramatically shorter, it was still long enough that only stable objects were sharply rendered, save the figure in the lower left: a man receiving a shoeshine. The remaining scene appears devoid of inhabitants and life of the bustling urban environment. Since then, the built environment has been documented in countless ways, from formal documentation of tax assessment to street photography in various artistic styles. For our particular interest, it is at this intersection of the urban as a site of contestation and the photograph as means of documentation that we can situate Street View in order to understand its widespread adoption as well as range of uses.

The simultaneity of different photographic practices and subject matter bifurcated the developing photographic plane. The exploration of content was informed by existing practices and advancements in the various technologies of image making. This continued to provide greater flexibility, ease of use and success. At present, the new media space that exists within the digital environment of Street View offers even more flexibility and access, individual users can frame the view for themselves. At the level of production, the various experimentation sketches out the individual desires for making visible the world around them. At the social level, the invention of photography gave rise to a new discourse, as a variety of voices attempted to make

sense of the information and implications of this new light writing tool. Of particular value is the lineage of “two chattering ghosts” haunting photography since the beginning: bourgeois science and truth of appearances and bourgeois art and the reconstructed subject qua artist.¹

Birth of a practice

These two early photographs offer a glimpse into the transformation of emerging photographic technology. The first photograph by Niepce shows an image of buildings and a field in the distance. The building edges are defined but not sharp, while the rendering of light quality is flat. The tonal differences of the field are rendered clearly, but the shadows that might result from direct sunlight are noticeably absent. The exposure time was more than 8 hours, which flattens any shadow definition that might exist, as the sun travels continuously. With the photograph by Daguerre, the edges of the buildings and the details are clearly defined, showing clearly exposed beams, window pane details, as well as clearly defined chimney stacks in the



Niepce, *Window at La Gras*



Daguerre, *Boulevard du Temple*

distance. The exposure time was significantly shorter, with shadows rendered and directional light captured convincingly. The shadows beneath the street trees give an indication that the sun was overhead, as the shadows do not extend for long distances. A third photograph emerges at

¹ Sekula, “Traffic.”

the same time as Daguerre's, one that has clearly defined edges and details, but lacks the pictorial quality of Niepce and Daguerre. William Henry Fox Talbot sought to develop a drawing aid, and using existing technologies of the camera obscura and the camera lucida, his first print is of a botanical specimen, the English wild vine. It created a very clear formal description of the plant, including the delicate tendrils and leaf variegation.

With these initial efforts and rigorous written documentation of the chemical and exposure process, the photograph as a discrete object and process was announced to the world. Immediate efforts to make the invention available to the public enabled the daguerreotype to fully establish itself as an object and an idea, while Talbot's drawing never gained the same level of popularity. Almost immediately, the daguerreotype was employed to capture a variety of subjects, with buildings and their environment a common, stable subject. With daguerreotypes still requiring a long exposure time, most street scenes remained devoid of inhabitants, save the occasion ghosting of moving figures, giving the impression of people without the specificity of individuals. Photographs of the built form around the Seine and the Thames, the Roman Forum, Venice, and other architectural buildings proliferated, including important monuments and historical structures. As a document, it recorded the process of construction of a number of built works as well as the conflagrations of built form. In the process, it constructed a conception of a visual archive. Early architectural theorists like John Ruskin was aided by the photograph to produce the important text, *Stones of Venice*, in which his carefully detailed drawings were aided by the daguerreotype, rather than painstaking hours of drawing in the field.²

As images of the Roman ruins and images of Egypt began to circulate, a market of buyers of this *kind* of image emerged. The 'Grand Tour' of sites of historical and cultural significance

² Hacking, *Photography: The Whole Story*. The editor provides a comprehensive timeline of the development of photographic technology as well as aesthetic content. I draw from this timeline as well as the original source writings from Trachtenberg, ed., *Classic Essays on Photography*, as well as my own education in photography.

had long been established as a social rite of passage, and the photograph made those images available as mementos, but increasingly, as a substitute for those without the financial means to travel. A cottage industry was born. Optician Noel Paymal Lerebours commissioned photographers to come back with daguerreotypes of these environments and their monuments, which he then sold in his shop.³ This supply was finite, however, as the daguerreotype was a unique object. Seated portraiture was also popular and produced a whole industry of its own as well. Given the personal nature of the portrait, the reception and market for this kind of image was limited and specific, while images of the world had a broad appeal, fueled by wonder and curiosity about exotic places.



Talbot, The Haystack

Meanwhile, Talbot continued to develop his own technology, eventually producing a pictorial image of a haystack, capturing the texture of the straw and strong shadows of the light conditions. While the daguerreotype was unique object, Talbot's efforts were reproducible. The calotype was a 'negative' process, the paper negative produced positive prints. He subsequently patented the calotype, with several licenses sold for use of the patented process. Glass negatives

³ Hacking, *Photography: The Whole Story*.

were developed shortly thereafter, and without restriction of a patent, the glass negative grew in usage, eventually phasing out the daguerreotype and the calotype. The general interest generated from the early images of the built environment and study of subjects in their environment was greatly extended by the new ability to reproduce images. No longer finite as objects, this transformation enabled a greater spread and proliferation of the image.

These simultaneous technological developments in photography enabled the use of the photography in more contexts. Photography's ability to provide an eyewitness account allowed this mode of documentation to extend in all directions throughout the social milieu. Wars, the California Gold Rush, and the civil unrest of Paris were all documented as images. The human condition and attendant emotions were cataloged, as well as ethnographic studies of people and their environments. Scientists and researchers also utilized its indexical quality, with early efforts capturing the moon. Natural scientists used the photograph to provide an account of plant typologies and human forms alike. With the photograph still in its early stages, it was not until the second stage of technological development did the uses proliferate at an unprecedented speed and scale. While the glass negative proved to be more durable than the paper negative and easier to work with than the daguerreotype, the flexible film negative ushered in the modern process and practices.

Oscillating between two poles since 1839: birth of a discourse

Returning to the two early photographs by Niepce and Daguerre, the images simultaneously point to the photograph as faithful copy and the subjective nature of the medium. On the one hand, we see a relatively 'unmediated' representation of that which was placed before the lens at a particular moment in time. Not subject to the 'talent' of the draughtsman, its form

and shape rendered accurately by light according to the mechanical apparatus. On the other hand, we see how the passage of time records only certain elements. We see the inevitability of the camera to edit out information, purposefully or accidentally, the bounding frame of the image writ large. The viewer makes assumptions about what is not there, subconsciously or consciously, drawing from their own horizon of meaning and the context of the photograph itself.⁴ Contingency and time-lapse affect the way in which we understand the image. We are confronted with an otherwise empty street scene, and it is *only* through the narrative process that we become aware of how it *might* have looked, were the exposure shorter or a horse drawn carriage a bit more idle.

This particular oscillation described herein has been circulating in photographic discourse since the invention of the photograph itself. The camera obscura had long served as a drawing aid for artists, ushering in the perspectival visual normativity of the Renaissance era. By 1800, efforts intent on ‘fixing’ the image on a surface were reported in many geographical regions. By the time *View from the window at La Gras* was taken in 1826, many efforts were purportedly ‘close’ to capturing an image. It was not until Niepce’s partnership with Louis Daguerre that any substantial advancements were made, and it was well after Niepce’s death⁵ when *Boulevard du Temps* was taken in 1838 and subsequently recognized as a significant achievement of national and international importance.⁶ This turning point also marks the birth of photographic discourse and its “shuffling dance between technological determinism and auteurism, between faith in the

⁴ Gallagher and Zahavi, *Phenomenological Mind*.

Gallagher and Zahavi cover *gestalt* as it pertains to general perception, though not specifically the photograph.

⁵ Trachtenberg, *Classic Essays on Photography*. Niepce son, Isidore, took over his father’s role after his death, but it is Daguerre that is given ultimate credit for the development, and namesake, of the daguerreotype.

⁶ Arago, “Report.” Arago’s report to the commission made the case for the country to purchase the rights, making the technology available to the world. In no uncertain terms was this inventions conceived of as anything but an important development.

objective powers of the machine and a belief in the subjective imaginative capabilities of the artist.”⁷ It is here that marks as good a place as any from which to begin.

Author and photographer, Allan Sekula, is among many whom highlights the dueling natures of the photographic impulse. His search for a new critical theory of photography is one that is located in a Marxist tradition of identifying key points in history, working backward to establish the history surrounding its development. Specifically, he identifies three photographic utterances in the field that establishes photography as a ‘universal language,’ and increasingly, a particular *kind* of universal language that is eventually put forward. His argument, rather, is that photography is *not* a universal language as such, it is wholly informed by the machinic processes of the milieu in which it is constructed, “Photography, however, is *not* an independent or autonomous language system, but depends on larger discursive conditions, invariably including those established by the system of verbal-written language. Photographic meaning is always a hybrid construction, the outcome of an interplay of iconic, graphic, and narrative conventions.”⁸

That photography *is* constructed, and the three movements he highlights, enables him to present an alternative to a classic Marxist dialectical resolution, his interest in developing a contemporary photographic theory gives equal weight to the universal ‘scientific’ foundation and the universal foundation of aesthetics. In the first two discursive moments, Sekula emphasizes that in both, an underlying belief shares the same epistemological roots with a certain faith in the objectivity of science: the ‘optical empirics’ of the image and the transparency of representation. While the original report by Dominique Françoise Arago focuses on ‘acquisition’ of this new technology, the key text by August Sander is grounded in an argument of ‘distribution’. Both highlight the truthful nature of the photograph. Arago is arguing for the universal application and

⁷ Sekula, “Traffic,” 15.

⁸ Ibid., 16 (*italics original*).

use value of the photograph while Sander is arguing for the universal human features that defy racial categories of exchange value, and instead focusing on social categories in relation to physiognomy.

In the third example of the dialectical account, the universalization of ‘man’ effaces difference. The face of the image of humanity as a universal, beautiful vision is, as Sekula rightly points out, one curated by a white, privileged male, in which the image that recurs most frequently is the modern nuclear family as an advanced and efficient social structure.⁹ With corporate support and enthusiasm for the exhibition as ‘valuable marketing and public relations tool’, for Sekula, it comes as no surprise that the types of venues in which it was shown appeared to be chosen for their status as political ‘hot spots’ or cold war ‘ally’ sites. The promulgation of a single message, fusing a “universal subject and universal object in a single moment of visual truth and visual pleasure a single moment of blissful identity” is one that especially rings hollow.

For Sekula, placing the shift towards a global, universalization of capitalism from a system of exchange value in proximity to the conversion of the image to a universal, homogenizing message of ‘formal equivalents’ is particularly dangerous, recalling Walter Benjamin’s own uncertain relationship to the ubiquity of the photograph, and its potential for revolution equally as possible as passive reception. With Sander’s particular agenda, the ‘public’ (acquiescing) deemed Sander’s efforts far more ‘palatable’ than the Nazi racial typologizing, *Rassentheorie*, that took place. Sander, in his attempt to eschew racial categories, created correlations between socio-economic categories and a physical appearance that served as iconic representations, instead of the racial determinants that ‘sorted’ in, ultimately, a similar manner.

What seemed to be the crux of the discussion was the ‘means’ versus the ‘ends’ of different scientifically sorting processes. While the Nazi project sorted based on race, Sander

⁹ Ibid., 20.

sorted based on socio-economic stations of class. For Sekula, it makes little difference of the ‘end’ sorting result; what is critical is the desire to sort based on physical markers. In particular, this emphasizes that a photograph stands as proxy in two ways: a faith in science and empirical evidence, and b: an image is a faithful, impartial representation that isn’t coded by social meaning held by the viewer. Bordering on a digression here, Sekula emphatically points to the ease with which we move between different socio-political categories as a means of justification, “The larger questions that loom here concern *the continuities between* fascist, liberal capitalist, social democratic and bureaucratic socialist governments as modes of administration that subject social life to the authority of an institutionalized scientific expertise.”¹⁰

Sekula points to the work and curation of Steichen as emerging as a palliative dialectical resolution, in which the *kernel* of humanity might be distilled in the image. In its darkest potential, this presents the quintessential image of ‘man’¹¹ from which everything might be judged. The efficient and advanced symbol of man becomes the nuclear family. As Sekula points out, such a ‘benign’ message warranted (and received) little critique, for what ill might be exacted at a global scale from such a benign image, crystallizing a ‘single moment of visual truth and visual pleasure’? Potentially, failing to socially reproduce this image gives rise to judgment and critique. As part of a global regime that attempts to administer social life through family normativity, the assumed neutrality of the image was part of the larger assumption of the ‘universal language’ that had been constructed. What emerged from the exhibit ‘Family of Man’ was a convoluted visual truth with which to judge all of humanity, unleashing perhaps the largest

¹⁰ Ibid., 19 (emphasis added).

¹¹ Man here indicates mankind, or humankind. I use the word and meaning as it was originally used and intended, rather than a gendered position.

bureaucratic agenda of authority over social life, coming so quickly after the darkest moment in which such authority wrought much devastation over the same realm.¹²

This particular excursus of Sekula's influential essay from 1981 gives evidence to a then emerging debate, one in which he framed within his Marxist critique of the visual image as commodification. His argument complicates a traditional Marxist resolution, in which he criticized the perceived dialectical manifestation of Steichen's efforts, while his own 'third way' resolutely argued for the both/and paradoxical reality of the photograph, in which *any* critical theory of a 'universal' language must be one of multiplicity. While several key points will continue to be salient for the present work here, fully engaging the discourse that developed alongside of photography in its formations deserve a more considered and thorough recapitulation. Without giving a full account of the many voices that produced the photographic discourse, what continues to occur throughout much of them is the constant larger 'shuffling' that Sekula so accurately points to in his three examples. However, it is precisely the *continual*, persistent shuffling, or *oscillation*, to recall D & G, that denies the stark clarity of the dialectical argument that Sekula wishes to make.

As a general restatement, the facticity of recording light reflected from an object onto a light sensitive surface has accorded the photograph the status of an 'indexical document', one that objectively records the world placed in front of it. As a truth claim, this objective capture gives great significance to it as a discrete object, when compared to artistic renderings that sought to portray the same scene. With its development, the photograph resolutely demonstrated man's 'inadequate' ability to faithfully reproduce an image of the world, but this very process of

¹² Ibid., 21. Specifically, Sekula gives an account of the traveling itinerary as an agenda of 'political theater', one that advances a peacetime narrative of 'family'. At writing, Sekula sees the exhibit as proffering a particular ideological liberal discourse that collapses the political and familial dimensions.

‘capturing’ the world through reflected light presented mystical and metaphysical qualities, far from ‘scientific’. An artist-cum-genius could re-present the world with an individual flair, or serve as the ‘medium’ or conduit through which nature could present herself. While early prognosticators surmised that the amateur could use it as a drawing aid, aspiring artists sought to transform the scene in front of the camera, calling into question the very objectivity of the image. It is the particular tension between the objective, indexical nature of the photograph as documentation in relation to its simultaneous use and reception of a subjective artistic artifact in which manipulations of light and framing produce alternative realities that is of interest.

Daguerre was one of the first visible writers on photography, recording his process of developing the daguerreotype and the imagined uses generated and supporting his research while also preserving his social milieu for posterity. Among Daguerre’s primary concerns was improving exposure time so that shadows and objects would be rendered more clearly without need for mechanical supports (such as a head clamp for portraits) to secure the position for the duration of the exposure. Niepce’s photograph purportedly took 8 hours to render an exposure, thereby flattening the scene and removing the shadows, leaving only stable objects and fixed elements sharp, like buildings. Daguerre theorized that this tool would have broad appeal and be suitable for the everyman, “the imprint of nature would reproduce itself,” and the operator need be neither a chemist nor an artist, “the manipulation is simple and does not demand any special knowledge, only care and a little practice is necessary in order to succeed perfectly”¹³

Daguerre already saw its multiplicitous nature, “Everyone... will make a view of his castle or country-house; people will form collections of all kinds, which will be the more precious because art cannot imitate their accuracy and perfection of detail.”¹⁴ And perhaps most

¹³ Daguerre, “Daguerrotype,”¹²

¹⁴ Ibid.

importantly, “it will not only be of great interest to science, but it will also *give a new impulse to the arts*, and far from damage those who practise [sic] with them, it will prove a great boon to them.”¹⁵ This ‘boon’ was a precise concern for those who earned a living by producing ‘likenesses’, whatever the level of ‘skill’. Moreover, ‘skill’ no longer needed to even be considered, for chemistry and nature did all the work, “not merely an instrument which serves to draw Nature; on the contrary it is a chemical and physical process which gives her the power to reproduce herself.”¹⁶ Here, ‘drawing’ is subordinated by the new automaticity of the light sensitive plate. There is no subjective hand involved. And importantly, it is not simply another instrument that can make a representation. Rather, this new representation is nearly ‘unmediated.’

The first public pronouncement on the merit of purchasing the patent of the Daguerreotype was by Dominique Francoise Arago, on behalf of French interests in supporting the discovery and making it available to the world. He gives a report on the cultural and scientific merit, from which more experiments must be conducted. His modest argument is contained in four questions:

1. Is the process of M. Daguerre unquestionably an original invention?
2. Is this invention one which will render a valuable service to archaeology and the fine arts?
3. Can this invention become practically useful?
4. Is it to be expected that the sciences may derive any advantages from it?¹⁷

From the outset, the burden of proof to establish his argument moves from the facile question of ‘originality’ to the more ‘significant’ concerns of the sciences. In other words, it may be original and of use to the fine arts, but will it be practically useful, and will knowledge production result?

¹⁵ Ibid. (emphasis added).

¹⁶ Ibid., 13.

¹⁷ Arago, “Report,” 15. Arago precisely outlines these four points for the report presentation at the outset.

His argument is resoundingly clear, not only does photography give important visual aids to the arts, but it will prove to be a valuable means of documentation, inherently significant for the history of culture. His articulation for building an archive of important artifacts is evident,

Everyone will imagine the extraordinary advantages which could have been derived from so exact and rapid a means of reproduction during the expedition to Egypt; everybody will realize that had we had photography in 1798, we could beautifully possess today faithful pictorial records of that which the learned world is forever deprived of by the greed of the Arabs and the vandalism of certain travelers.¹⁸

Of the then present concerns, the ability to document and preserve ancient statues, tombs and symbols was significant. Not only could it document hieroglyphics quickly, but it could be done single-handedly, and *accurately*. The daguerreotype “replaces those which are now invented or designed by approximation. These designs will excel the works of the most accomplished painters, in fidelity of detail and true reproduction of the local atmosphere.”¹⁹ The ‘unimaginable precision’ predicted by Daguerre and reported by Arago gives the photograph great *potential* use value as a national enterprise. And for the artists whom might find their financial security threatened, Arago commissioned M. Paul Delaroche, a ‘celebrated’ painter, to give professional opinion for the report. Delaroche found only positive uses to aid the painter in studies, which would make painting more efficient and of ‘great service’ to artists. Having heard the expert opinion, Arago made no attempt to further elaborate on artistic practices, “We will not presume to add anything to such testimony,”²⁰ though neither the painter nor Arago contemplated other potential artistic uses: notably absent is the photograph as a work of art.

¹⁸ Ibid., 17.

¹⁹ Ibid.

²⁰ Ibid., 18.

There was, however, great speculation for the potential scientific uses. The preparation of the plate alone was one of exacting science, nearly an art itself, with “the perfection, delicacy, and harmony of the picture images are the result of the perfect smoothness and incalculable thinness of the coating.”²¹ Once the process could be made efficient and reliable, great strides in science would be made, “we can only hazard a conjecture. The facts, however, are clear and obvious, and we need not fear that the future will discredit our statements.”²² Astronomy will see great advances; observation and calculation of light, photometry, will be made accurate, as intensity can now be ‘recorded’ with this new light sensitive surface. This will render new knowledge of the solar system from the light emitted. More unknown discoveries abound, but the examples lack concreteness. Arago points to other ‘accidental’ discoveries like the telescope and what was eventually made visible by the new optical system. Speculation for the photograph should be accorded such optimism, in his opinion. It might aid meteorologists with possible ‘documentation’ of the visible air; other phenomena might be captured that currently remains a mystery, aiding the fields of physiology and medicine. Arago passionately concludes with a call to nationalism and pride, and the need for faith and willingness to fund such an endeavor, in the name of the potential discoveries that will eventual emerge with further research. It is without coincidence that Arago calls to fund buying the patent and providing a pension based on the unfounded speculations for science and the use value of documentation, but little imagination is given to possible artistic applications, aside from serving as an aid.

Ironically, or somewhat *unironically*, at the same moment, William Henry Fox Talbot, an accomplished mathematician, scientist and linguist, was *precisely* searching for this sort of

²¹ Ibid., 20.

²² Ibid.

drawing aid.²³ In 1833, Talbot explored the ‘camera lucida’ to aid his drawing, but its effects were imprecise, and served as no ‘*aid*’ for drawing. One must first master the trade of draughtsmanship in order to benefit from such a tool, one casting ghosted images onto the page through an optical device in relation to the object, “it baffles the skill and patience of the amateur to trace all the minute details visible on the paper; he carries away with him little beyond a mere souvenir of the scene.”²⁴ Perhaps as a true scientist, Talbot was searching for exactitude while on his buoyant honeymoon trip, rather than a mere *souvenir*; or perhaps he was enamored by an image and wished to reproduce the image that arrested his gaze. “I found that the faithless pencil had only left traces on the paper melancholy to behold.”²⁵ His intention seems to be more motivated by ‘wonder’ than a determined scientific reproduction, “the ‘inimitable’ beauty of nature; the camera makes ‘fairy pictures’ upon the surface, where the physical tracing is inferior to the image of nature. This leads to a wondering of ‘fixing’ this image “how charming it would be if it were possible to cause these natural images to imprint themselves durably, and remain fixed upon the paper!”²⁶ These exclamations and musings were not wrought from scientific exploration, but rather a wonder in the world around him and a *desire* to capture it, given its comeuppance with the fallibility of man.

Talbot’s theorizing what ‘would result’ from light exerting an action on a substance that was light sensitive encapsulates both his scientific mind and his sense of wonder in the world, “suppose, then, such an action would be exerted on the paper; and suppose the paper could be visibly changed by it. In that case surely some effect must result having a general resemblance to the cause which produced it: so that the variegated scene of light

²³ Talbot, “Historical sketch,” 28.

²⁴ Ibid., 29.

²⁵ Ibid., 28.

²⁶ Ibid., 29.

and shade might leave its image or impression behind, stronger or weaker on different parts of paper according to the strength or weakness of the light which had acted there.”²⁷

This realization, that one might be able to fix that which was in front of him, hit him ‘forcibly’, in his words. This moment of destabilization, or deterritorialization, to recall Deleuze and Guattari, was wrought by frustrated attempts congruent with wonder, resulted in a cognitive shift that shifted his previous trajectory and sent him on a multiple-year long investigation of obtaining this image. His pursuit of this ‘fixing’ was given tenacity by the scientist in him. The dogged attempts of one chemical pairing to another brought different results, of which he assiduously recorded, giving empirical weight to the evidence of the experiments.

Talbot and Daguerre were both prepared to present on their findings in the same year. Daguerre, a friend of the enthusiastic Arago, garnered the attention of the public and State support, while Talbot, an Englishman in search of a drawing aid, found his invention ignored for many years, despite its ability to make ‘prints’ from its negative, unlike the Daguerreotype. While Daguerre’s method became known as the ‘photographic technique’, giving the sense of its useful nature as *a tool*, Talbot’s invention became known as ‘photogenic drawings’. The dueling nature of the drawing versus the tool established the strong division and sentiment over its purpose and value. Talbot subsequently published *The Pencil of Nature*, a quarto of his images, after advancing his process significantly, but the legal mechanism of patents kept his invention out of the hands of many people whom might have advanced its significance, while the State support of opening up the Daguerreotype to everyone, compensating Daguerre with a pension, established itself quickly and widely.

Observing these two phenomena, taking place at the same time in two different countries, it could be speculated that the difference lay between the home countries of the invention and the

²⁷ Ibid.

vocal supporter that made such a statement on Daguerre's behalf. Talbot had no strong advocate for making his invention widely known at the time, and he protected his own research through patent, which insured a modicum of financial return. It is equally plausible that the orientation of the invention, one that oriented itself toward advancing sciences was called a 'photographic technique', while a drawing aid for amateur artists was called a 'photogenic drawing'. In interest of financial returns, it comes as no surprise that the former was well supported, while the latter was sidelined as a novel art form.

There were certainly no shortage of supporters for the scientific value of the photograph. Edgar Allen Poe hailed it as the "most extraordinary triumph of science,"²⁸ albeit one with a great indebtedness to the mystical nature of wonderment that results from such a 'black box',

"All language must fall short of conveying any just idea of the truth, and this will not appear so wonderful when we reflect that the source of vision itself has been, in this instance, the designer. Perhaps, if we imagine the distinctness with which an object is reflected in a positively perfect mirror, we come as near the reality as by any other means. For in truth, the Daguerreotyped plate is infinitely more accurate in its representation than any painting by human hands."²⁹

Poe is eager to dispense all scientific knowledge of its functioning and behold its magical truth value as a mirror of the world. Like Arago, he waxes philosophic about the unforeseen discoveries and truths that await the photographic technique.

²⁸ Poe, "Daguerreotype," 37.

²⁹ Ibid., 38.

Photography's double bind

While Sekula points to three distinct periods of establishing photography as a universal language, I would suggest that Lady Eastlake's essay, "Photography," complicates its status, one that has a strong analytical element as she examines historical documents in relation to the practices that exist. She writes from a position of critical distance and antagonism. Not only does she have 15 years of production to consider: the medium, its potential and to analyze its claims; but she is also a writer from an elite class, with her husband a society painter. Her acerbic criticism is concise and pithy. She makes three broad assessments about the nature of photography: it's a great social leveler and is available to the masses, it does nothing very well, but improves many things, and it fails as an art form.

Eastlake characterizes the enthusiasm that has established photography as a true cultural phenomenon, despite its diminutive scale of representation. "It is now more than fifteen years ago that specimens of a new and mysterious art were first exhibited to our wondering gaze...they showed no attempt to idealise [sic] or soften the harshnesses and accidents of a rather rugged style of physiognomy... nevertheless we examined them with the keenest admiration, and felt that the spirit of Rembrandt had revived."³⁰ This widespread interest brought the Daguerreotype to all spectrums of society, with shops and traveling photographers bringing this new cultural artifact to all corners of the country, from large cities to small towns. All 'walks of life' could hire a photographer to take their portrait, and as objects, they were found in a range of establishments. Its use in many sectors was also highlighted, "since then, photography has become a household word and a household want; is used alike by art and science, by love,

³⁰ Eastlake, "Photography," 40.

business, and justice; is found in the most sumptuous salon, and in the dingiest attic...in the pocket of the detective, in the cell of the convict, in the folio of the painter and architect...”³¹

Not only had its invention given birth to a new industry and profession, with a new legion of cameramen and the supply industry shaping the economy, it created a new social milieu, one replete with new subjectivities and new practices. “Thus, where not half a generation ago the existence of such a vocation was not dreamt of, tens of thousands (especially if we reckon the purveyors of photographic materials) are now following a new business, practicing a new pleasure, speaking a new language, and bound together by a new sympathy.”³² In short, while the industrialization, modernization and rational thinking had produced a new scientifically oriented society, this new mystical medium generated wonder and delight in the most sober souls,

“The was believed to have grown sober and matter-of-fact, but the light of photography has revealed an unsuspected source of enthusiasm. An instinct of our nature, so scarcely so worthily employed before, seems to have been kindled, which finds something of the gambler’s excitement in the frequent disappointments and possible prizes of the photographers luck. When before did any motive short of the stimulus of chance or the greed of gain unite in one uncertain laborious quest the nobleman, the tradesman, the prince of blood royal, the innkeeper, the artist, the manservant, the general officer, the private soldier, the hard-worked member of every learned profession, the gentleman of leisure... the fair woman whom nothing but her own choice obliges to be more than the fine lady?”³³

These extended string of quotes illustrate the sweeping adoption of photography that took place in society. The selections portray some of her scorn for the wide-ranging enthusiasms that had

³¹ Ibid.

³² Ibid., 41.

³³ Ibid., 41.

taken up this new technique, one that not only faithfully captures all unfortunate physiognomy, but also one so fickle in nature that creating a successful image is likened to gambling.

The level of importance photography is accorded in society is treated with a similar spirit, with small advancements garnering inflated attention. It can cause the most sober gentleman to move from “the driest facts, the longest words, and the most high-flown rhapsodies,”³⁴ one that is cause to stir the most unlikely range of affects, including sympathy, resentment, and normal dispositions of sobriety and reserve shift to unbridled excitement. Rather, Eastlake argues, photography has well moved past a ‘society’ and has joined the ranks as ‘institution,’ its proliferation of clubs and societies across the country and the world, with officers and exhibitions, discussions and lectures, as well as education. It has engendered a sense of ‘fellowship’ across political borders, and international contests have been created, open to all nations, with two cash prizes from a French nobleman.

She is unapologetically critical of its quick adoption. The development and advancement of the technology occurred through wonder and experiment, not scientific advancement; its fickleness in obtaining exposure is equally unscientific, owing success or failure to “something in the air is absent, or present, or indolent, or restless,”³⁵ a failure for ‘repeatability’ of scientific experiments. Its ability to capture scenes is determined by the quality of light, and its inability to control visual focus and exposure for natural scenes neither produces a scientific image, nor does it have the nuanced focus of art. As Eastlake describes it, “The action of which upon distance and middle ground does not keep pace with the hurry of the foreground.”³⁶ Eastlake does not specifically entertain potential scientific uses per se, though she does highlight several previous inventions that now have an actual use now that photography exists, including the stereoscope.

³⁴ Ibid., 42.

³⁵ Ibid., 55.

³⁶ Ibid., 64.

Photography is the natural medium of the stereoscope and producing two near exact images, for no artist would ever possess the “requisite ability and stupidity to execute the two portraits, or two groups...identical in minutia of the most elaborate detail, and yet differing in point of view by the inch between the two human eyes.”³⁷

Eastlake, as an elite agitator, confidently calls a spade a spade. This new ‘art’ is nothing more than a disinterested creator of artifacts of historical interest, “Photography takes her legitimate stand. Her business is to give evidence of facts, as minutely and as impartially as, to our shame, only an unreasoning machine can give.”³⁸ The photograph gives us these facts, willingly, objectively. The camera and light sensitive surface bares witness without protest, “She is sworn witness of everything presented into her view. What are her unerring records in the service of mechanics, engineering, geology, and natural history, but facts of the most sterling and stubborn kind? ... pictures of life unsurpassable in pathetic truth?”³⁹ So while she does not discount its ‘veracity’ as documentation and index of reality, she stops far short of celebrating this as full of potential.

But it is not without merit, this new art form. Eastlake sees the potential of photography to remove all the painful amateurish ‘bad art’ from the field of legitimate works, perhaps one of the most damning critiques,

And it is not only in what she can do to relieve the sphere of art, but in what she can sweep away from it altogether, that we have reason to congratulate ourselves. Henceforth it may be hoped that we shall hear nothing further of that miserable contradiction in terms of ‘bad art’—and see nothing more of that still more miserable mistake in life ‘a bad

³⁷ Ibid., 53.

³⁸ Ibid., 66.

³⁹ Ibid., 65.

artist' ... as what she does best is beneath the doing of a real artist at all, so even in what she does worse she is a better machine than the man who is nothing but a machine.⁴⁰

And its true strength is capturing the surface of the world, the texture of rocks and bark, the individual waves of the ocean. As a society emerging from this mechanical vision, Eastlake points out the enamored gaze that beholds the reproduction of the world perfectly, achieving the exactness and level of detail that the human hand never could.

The main thrust of her argument is to disprove photography's claim as an art form. *Real* artistic control is asserted, confident, executed. Photography is borne from sunrays and the fickleness of the chemistry. The artist can choreograph the gaze of the spectator, with the artist rendering important areas in the painting completely, allowing less detail in other areas. With photography, the artist cannot draw attention to an important part of the picture. The camera focuses equally on everything in the same visual plane, leaving the viewer without interpretive direction. Painting enables an improvement of aesthetic features, while photography unapologetically captures ill-shaped or other aesthetically undesirable features. "If further proof were wanted of the artistic inaptitude of this agent for the delineation of the human countenance, we should find it in those magnified portraits which ambitious operators occasionally exhibit to our ungrateful gaze.... The best magnifying lenses can in this case only impoverish in proportion as they enlarge..."⁴¹ And for formal and tonal considerations, photography fails as well. Its inability to handle the tonal variations of a scene, such as a rendered sky and rendered shadows is too objective and automated. Its ability to capture what is in front of the camera, indifferently

⁴⁰ Ibid., 66-7.

⁴¹ Ibid., 61.

and accurately the ‘sharp perfection of the object’ is ‘exactly as detrimental to art as it is complimentary to science.’⁴²

In short, the photograph is used for both art and science; in her estimation, it does neither very well. She is making two statements, one explicit, the other implicit. The subjective nature of the artistic rendering allows the artist to choreograph the elements through composition and style, showing the direct hand of the artist (genius). Photography is not an art form; each technological advancement that moves the photograph closer to a faithful reproduction places it further from the status of art, based on her criteria she outlines. The hand of the artist is not present in the image, but merely the effects of the sun, chemistry and the object placed in front of the camera, representing a mere indexical document.

Simultaneously, the photograph is not only *not* a faithful reproduction, given its inability to control exposure and focus, and it is also a fickle result of many external conditions, many of which are difficult to reproduce, thereby refuting its importance to science. Far from advancing science, Eastlake points specifically to the contents of much of the photograph image as a ‘fact’ existing independently of ‘art’ and this scientific ‘description’ so celebrated. Rather, she establishes it as a new form of communication, portraits stripped of their life by the mechanical process, faces converted into “landmarks and measurements for loving eyes and memories”⁴³ establishing a truth and certainty, by its nature of giving an accurate description to the mere surface of things. In her commitment to fine art, she stakes out particular territory, and rather than arguing for its universality, she appears to argue more for a neither/nor element, rather than an either/or *or* both/and, which was the dominant discourse until then. She adeptly points out its value as approximation, for which she has little respect. Photography occupies an uncomfortable

⁴² Ibid., 62.

⁴³ Ibid., 65.

position for her: it reproduces the world more accurately than the artist hand, but of what value is that to artists? Or to anyone, really, other than it possesses historical interest, at best. A true artist should not desire to reproduce the world, but rather choreograph the aesthetic experience.

1858: The photographic line of flight⁴⁴

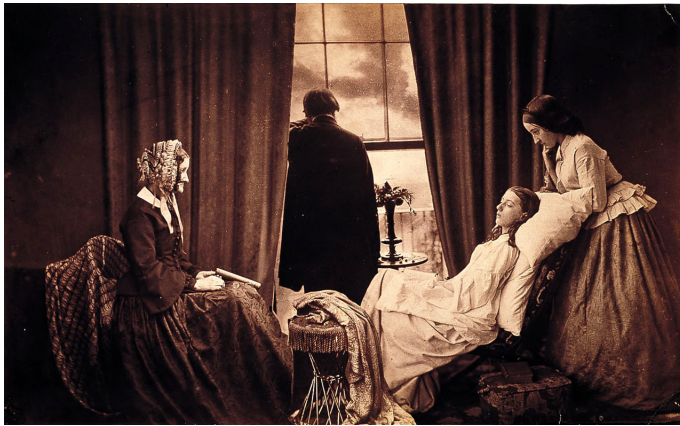
Eastlake's essay was published in 1857. A year later, Henry Peach Robinson radically altered this contentious plane of photography and its discursive debate between the merits and value to science and art as documentation. His photograph, *Fading Away*, challenged all of the established sentiments above. But more importantly, it inserted an element of *doubt* into the social field: the mechanical image could no longer be assumed to be an indifferent but precise record of the world. Rather, the index may be truthful and accurate, but the world itself might be constructed.

Robinson's photography depicted a somber environment with a young woman lying in bed, surrounded by concerned individuals. It was unclear whether she had just died or was taking her last breaths and death was imminent. Until then, the common portrait photography was upright family or individual images, often serious; 'smiling' for the camera had not yet been established as a cultural idea. Robinson's photograph, however, offended the Victorian sensibility and propriety, with the scene too dark and morbid for comfort.⁴⁵ Robinson had been developing his skill of printing techniques, and had become successful at combining multiple negatives for one scene. As Eastlake remarked, the inability of film to capture different elements

⁴⁴ Arguably, the first line of flight might have been Hippolyte Bayard's staged photograph in 1840, in which he appeared to drown himself over the emergence of photography and not receiving proper credit, <http://www.getty.edu/art/gettyguide/artMakerDetails?maker=1876>. The world was much too enamored by the phenomenon itself, rather than having expectations of truth be challenged, for it to create as much sensation as Robinson's photograph.

⁴⁵ Meyers, *Classic Essays on Photography*, 91.

in one scene was well known; in conjunction with advancements in film substrates, Robinson was able to rendering all the elements successfully through combination printing. With *Fading Away*, the scene was a constructed from five negatives, and the scene as such never took place in that precise manner. Various publics were offended, the content deemed inappropriate, the falsifying of the veracity of the photograph caused much consternation, and the while the artist's 'hand' could still not be seen, it was evident that it could be *felt*.



Robinson, *Fading Away*

Working in an era under rapid transformation of the industrial society, his essay “Idealism, Realism, Expressionism”, Robinson places these ideas in conversation, directly challenging the general sentiment that the photographer can only objectively capture the world, and there exists no possibility for a mental or conceptual layer. Robinson points to the paradox and contradiction of a photograph being both an index of reality and nothing like reality.⁴⁶ A passion for realism is the “affectation of the hour,”⁴⁷ with realism coming to be defined as a specific aesthetic quality and portraying honest ugliness of the world. Robinson, rather, posits that the images produced are indicative of civilization, not the component of ‘realism’. Robinson points to a confused understanding and reception of ‘realism’, in his effort to reestablish the full conceptual idea, within which photography as an art might be located. A pure ‘unadulterated’

⁴⁶ Robinson, “Idealism,” 92.

⁴⁷ Ibid.

photograph might be a perfect example of realism. But given its plasticity or malleability at every stage of the process, there exists much room for the hand of the artist to add idealism in order to provide true artistic expression. “But I think it has often been very clearly shown that photographic pictorial effect *depends entirely upon the man*, and that he is not limited to prosaic actuality.”⁴⁸

Changes in all photographic technology: lens, camera, film, chemistry, print support produced a great degree in flexibility at each stage, and the photographer was limited only by his own imagination and interest in pushing the medium. When viewing a collection of photographs, the ‘veracity’ of the photograph begins to reveal the very subjective nature of the role of the photographer in relation to these technological advances. “They were as individual as the works of the most mannered painters, and represented not so much the subject which was before the camera as the photographer’s individual impression of the subject.”⁴⁹ Robinson’s early photographic made him one of the most famous English photographers at the time.⁵⁰ His realistic images directly challenged the established conventions and assumptions of its veracity. At the same time, he asserted the conceptual and creative potential that might result from manipulating the scene in front of the camera, either as it was photographed, or during the printing process.

Charles Baudelaire goes perhaps further than Eastlake in criticism and dispels any recuperation of realism by Robinson. Baudelaire likens the current craze to be ‘a form of lunacy’; veritable sun worshippers, forcing people to hold unnatural poses and expressions for extended periods of time.⁵¹ He denigrates the idea that ‘history’ could even *be* represented and photographs are a double sacrilege, insulting both painting and the actor. The spectators of the

⁴⁸ Ibid, 96 (emphasis added). This indicates the subjective quality of framing the view.

⁴⁹ Ibid.

⁵⁰ Meyers, *Classic Essays on Photography*, 91.

⁵¹ Baudelaire, “Modern Public and Photography.”

image are even further denigrated in their rational and informed status, “It was not long before thousands of pairs of greedy eyes were glued to the peepholes of the stereoscope, as though they were the skylights of the infinite.”⁵² Baudelaire, the ‘flaneur,’ could not *imagine* having a two dimensional representation serve as a stand-in for the world around him. Moreover, Baudelaire considered men ‘fools’ to believe in photographs as mirrors of physical facts; photography was best served to aid man’s memory of events, rather than serve as an ‘index’ of the world. He puts photography in its ‘proper’ place: the handmaid of the arts and sciences. It is just a tool and should not be considered a medium for creative expression. It is good for travel, for the naturalist, the astronomer. “Let it, in short, be the secretary and record-keeper of whomsoever needs absolute material accuracy for professional reasons.”⁵³ It is good for documenting and preserving, but it shouldn’t impinge upon the “sphere of the intangible and the imaginary.”⁵⁴

There are countless voices supporting this range of sentiments, including both the claims of Eastlake and the efforts of Robinson. While fascinating and humorous, examining the corpus of historical writings will take us too far afield in the current work, which examines the indexical and artistic merits of the photograph, particularly in relation to the built environment, its long-standing, stable and patient subject. As photographic developments and socio-cultural considerations continued to throw into relief the photographic plane established by these distinctive poles, additional hybrids emerged as a result of its factual claim on reality *as well as* the newly apparent malleability of the medium in relation to the subjective influence of the artistic vision.

⁵² Ibid., 87.

⁵³ Ibid., 88.

⁵⁴ Ibid.

The changes in technology continued to assert the importance of the photograph as tool of documentation, as images became sharper with lens advancements, exposure times reduced, and exposure latitude increased. Science could still cling to its facticity, with its ability to capture a slice of time that the human eye was unable to isolate. With Robinson's image, artists began to realize the potential of the medium: it no longer was merely an objective indexical document, the scene could be constructed for the purposes of artistic expression as documentation. A continuum was effectively established between the two poles of objectivity and subjectivity. With that shift, the assumption of 'truth' was thrown into question. It may be true, we may believe it is true when it is not, and we may not believe its truth claim, when it is, in fact, an objective capture of the scene, with points in between. Moreover, the photograph is taken from a particular position in space, one that affords a unique perspective, and one that is merely one point in space among an infinite number of possibilities. But despite the assumption being questioned on a philosophical level, the indexical document and its use-value to knowledge production and scientific exploration continued to dominate, as its ability to consistently and reliably capture that which was before the camera had a greater utility and offered compelling evidence to a social milieu that was regularly subjected to new discoveries that greatly impacted daily life.

Modern concerns; or, run offs in all directions

As the Victorian era gave way to the Modern movement, photography had firmly established itself as a practice and a discourse. The pace of discoveries and idle experimentations continued to affect the photographic plane, with new uses expanding an increasing dynamic plane. As a 'secretary and record-keeper', photography continued to be invaluable for countless

projects in the sciences and social sciences. In the arts, photography established itself as a legitimate art form and helped usher in the advent of cinema, while socio-cultural production increased and the carefully composed image moved between art, social critique and documentation, further blurring the lines between use of the photograph as discrete object.

In that vein, photography proved an invaluable tool for motion studies. Edward Muybridge proved a wager based on the photographic evidence. A wager was placed on whether or not all four hooves were off the ground at one time. Faster than human perception, the camera was the trusted arbiter of truth. The ‘proof’ incorporated a series of cameras that were triggered by movement through the path of capture, with one of the frames capturing the moment when all four hooves were, in fact, suspended. The ‘bet’ gave rise to an encyclopedic documentation of human and animal ‘locomotion.’ With exposures reduced to a fraction of a second, the camera was able to isolate everything from blinking to the human figure running, and everything in between. This encyclopedia served as an indispensable resource for medical industries and artists alike. Along with Jules Etienne Marey’s chronophotographic studies of human motion, this ability to isolate movement and make visible ‘instants of time’ altered artistic production of the modern movement as well as produced a wave of photographers that was enamored by light and time in the image.

Visually, the experiment included 24 exposures in quick succession, and when printed, a sense of movement could be seen through the frames, paving the way for advancements in cinema.⁵⁵ For the photographic image, an instant becomes a fixed or ‘immobile section’ of movement, for the single image isolates the action and removes movement from the image. With

⁵⁵ The Zoetrope also served as an important optical device that included a series of photographs in a drum, each scene separated by a slit in the drum. This created a ‘blank’ between each image, allowing the brain to register each image as a separate image, but continuous enough to give the sense of constant movement. Speed of turning the drum is critical for the ability of the brain to register the phenomenon in the ideal manner. The motion study of the horse was incorporated into the zoetrope apparatus, producing the first instance of cinema.

the development of cinema, a series of images presents movement, or a ‘mobile section’ of the passage of time, or *duration*, in which the sequence of images restores movement to the photograph, based on kinesthetic studies of the precise number of images that render the appearance of continuous movement for the human brain. Duration is bound up with movement in the image, with the sequence of framing, panning and montage altering our sense of duration, severing the continuity of a perceived whole. This ability to dissect movement and time to create a new sense of a whole, requires a great deal of synthesis to construct a narrative from assembled parts. The tension of the photographic process to isolate movement within a single image and restore movement to the single image will continue to reverberate throughout the 20th century as artists exploit this conceptual paradox or double bind.

Harold Edgerton was eventually able to isolate the impact waves of a drop of milk and the impact waves of a bullet piercing an apple from Muybridge’s studies. The development of ‘strobe’ technology extended the lighting conditions significantly, enabling the camera’s shutter mechanics and film speed to fire in short enough succession to render ordinarily imperceptible phenomenon in concrete visual form, further extending the scientific claim on the veracity of the photographic image. In short, the enthusiastic, early celebratory speculations for the role photography *might* serve as a record of empirical proof gained purchase with the advancements in celluloid and mechanical technology.⁵⁶

As a document of social and historical importance, the camera and the photograph continued to bear witness to significant events or milestones. Surgeries, wars, famine, squalor were equally documented producing a new field of ‘photojournalism’. The early documentation of human facial features gave rise to controversial fields of study like ‘eugenics,’ in which

⁵⁶ The range of applications in the sciences are too extensive to review here, but advancements in lighting, lens and film technology have produced a range of medical x ray films, microscopic images of cellular construction, astronomical documentation of galactic formation.

typologies could be organized and individuals could be assessed in comparison. The photograph also produced the ‘mug shot’ and the visual criminalizing process of flat frontal and profile portraits. Documenting the radically shifting urban environment increased exponentially. With technological advancements, automated or streamlined production, transportation changing the very composition of the urban form itself, as well as the various spaces that would emerge to meet these competing changes, the stable Victorian landscape gave way to modernity. The material practices and attendant businesses that provided for an increasingly obsolete way of life were significantly altered. With that transformation, a range of artists and social scientists sought to capture these changes and render them visible for the general public. The urban poor, marginalized by the new capitalistic mode of production, were given new visibility. Jacob Riis and Lewis Hine politicized the conditions of tenements and child labor, eventually resulting in changes in laws to protect marginalized populations. Photographers like Henri Cartier-Bresson and Eugene Atget preserved a rapidly changing social and urban fabric in light of new economic forces, simultaneously preserving for posterity a way of life as well as isolating idiosyncratic vignettes that populate the visual field.

Artistic production proceeded apace, giving rise to a variety of aesthetic styles and impulses. Every aspect of daily life was aesthetically documented or subverted aesthetically, from the tonal variations of Edward Weston’s peppers to the Photo-secessionists that sought to reclaim the aesthetic content of the objective image. Stylistic monikers were thus given to the burgeoning field of artistic photography, with ‘still life’, ‘straight’ photography, ‘street’ photography developing in tandem with fashion and celebrity photography, sociological endeavors of the body, class-based stations of August Sander, as previously mentioned, and societal depictions in general. This pictorial realism was greatly contrasted with the

experimentation that resulted from the responsiveness of a light-sensitive surface in relation to objects placed upon it, giving rise to photograms, or studies in light itself as formal composition. The idiosyncratic images of Cartier-Bresson and Atget fueled the production of Dada and Surrealist explorations, both of which sought to ‘make strange’ ordinary life, thereby producing a different orientation to the environment, either in an antagonistic spirit or dreamlike state.

The aestheticization of politically-weighted events and conditions, instantiated with Lewis Hines’ artfully composed documentation of child labor conditions, also produced a new lineage of photographic documentation from the ‘front lines’, including Robert Capa’s famous war photographs and the beautifully rendered photographs of the Great Depression, funded by Federal WPA. Artists like Dorothea Lange and Walker Evans encapsulated the conditions, aesthetically framed for the American imagination.⁵⁷ The WPA sponsored another pragmatic documentation of the built environment, one that was ‘project ready’ and easily deployable to put people to work. For purposes of governmental tax records, photographers were commissioned to systematically document the façades of the built environment, with administrative documentation of addressing information added to the photograph and part of the permanent parcel record. This documentation is now part of many municipal historical archives and provides one of the most comprehensive visual archives of the built environment, circa 1940.

Despite the experimentation that took place with light as ‘content’, the carefully framed photograph continued to attest to the indexical nature of the ‘event’, as captured by the camera. With the increasingly abstract quality of painting and sculpture, the recognizable and stable nature of the photograph grounded the social milieu and the socio-cultural conditions with a representation of the world that reflected, at the very least, a visual approximation of a shared

⁵⁷ Later ‘controversial’ discoveries of Lange’s mediation of the *Migrant Mother* further complicate an entrenched belief of the photographic as truthful documentation and the need for a ‘photo op’ condition, fabricated if necessary.

understanding. This ability for the camera to ‘neutrally’ record that which was placed before the camera produced a relative ‘truth’ of the present conditions.

Contemporary formulations

The post-war environment accelerated the bifurcation of artistic styles sketched out above, as well as continued to inform various lines of research. It continued to bear witness to the civil rights issues, gender issues, war protests, as well as documented street life and culture comprehensively, yet haphazardly. Photojournalism, long since folded into the socio-cultural production of ‘news’, was accorded factual status, with correspondents ‘impartially’ reporting on world events. Historians culled photographs for new interpretative clues of earlier environments. Social scientists researching conditions of society, either the urban environment and racial or economic distribution or ethnographic case studies of foreign territories, presented seemingly unbiased representations of the conditions they sought to articulate, illustrated with a new methodological tool of systematic documentation. Popular magazines like *Time*, *Life* and *National Geographic* generated a renewed interest in exotic cultures and societies in the post-war years, as well as made visible natural disasters and the decimation of the built form, capturing the imagination of countless many.

Artistically, radical experimentation with light as content appeared to exhaust its potential. New formulations of pictorial realism fueled another wave of artistic production. ‘Shooting from the hip’ emerged as a ‘style’ of street photography, one that appeared to remove the subjective nature of framing while relying on the contingencies of the situation. The photographer was able to objectively capture this precise bloc of space-time of the present conditions, the conditions of the new ‘decisive moment’ inextricably linked to the specificity of a

new situation to ‘bear witness’. Too numerous to name them all individually, photographers like Berenice Abbott, Robert Frank, Garry Winogrand, William Eggleston, Steven Shore, etc., all descended upon the streets of the new modern city and sought to convey the new modern conditions wrought by modernism and the buoyant optimism of the post-war years of conspicuous consumption and capitalistic expansion of the urban environment. Each offered their own interpretive lens of the environment they documented, each realistically portraying a facet of the condition of the then present milieu, each serving as an approximation of representation.

Yves Klein emerged as another line of flight from the complacent and slowly reinstalled representational plane of photographic images. His image, “Into the Void” evoked a similar sentiment as Robinson’s “Fading Away”. Poetic yet dramatic, grounded in realistic pictorial conventions, pulling at the imagination and heartstrings of the present social formation. The image depicted him leaping out from a second story window of a Parisian flat, with nothing below him, save concrete, representing the greatest leap of faith in the modern condition and its built environment. It was published in the daily French newspaper and circulated as flyers, with the public accepting the apparent truth-value of the suicidal descent from his bourgeois confines. The image itself garnered a great deal of attention. Darkroom ‘trickery’ of printing two negatives, one with an empty street, the other with Klein jumping safely into a tarpaulin, were combined in one realistic and shocking image. Produced long before concerns of digital photography and photo manipulations, the image challenged veracity of the photograph once again, updating and advancing the ability of the artist to *construct* a photographic document.

The contemporary condition of the new media environment continues to blur the ability to construct a photograph. With software tools making post-production more efficient, artists are

challenging the veracity of the photo to even greater degrees. Discontinuous objects can be seamlessly placed onto the canvas for effect, digital tools can erase compositional elements; with sophisticated algorithms to compile digital photographs, a virtual world can be constructed with a series of images, allowing a composited 360 degree view. The software can discern strong formal elements and manipulate the pixels to soften the distortion that results from the shifting the angle of a precise position. This provides the appearance of continuous environment, and when viewed within a platform that allows navigation, the user is able to manage their own experience, precisely as Manovich suggests.

GSV is an example par excellence of this new media space. In the most basic sense, GSV captures a slice of time, an immobile section of the built environment, as it exists on a random day at a random time; this snapshot of time is reproduced continuously. The method of capture is photographic; the interface renders the built environment cinematic, for the series of images do not have the same hierarchical consideration as that of the still photograph, and the user can survey a scene and move through an environment that approximates movement through time. What results is an uncertain kind of image, one that is static in its essence, but operates far more dynamically than a static photograph. Deploying the 'man on the street', the environment is reconstructed, and moving through space adds movement back to the image, producing a sequence of images that creates a mobile section of duration, in a straightforward, linear and homogeneous sense, tending towards cinema but stopping well short of a cinematic experience. Given this new media space and the complexity of both movement and synthesis it affords within the photographic image, it stands unsurprisingly that both artists and social scientists are seizing the platform in order to augment and expand their existing practice, both for the

creativity it allows and the empirical, objective environment captured, where an out of frame ceases to exist in the same way as a static photograph.

Photographic practices as the virtual

Today, the production of the photograph is as uncertain in its status as it was in its early formation. The sciences, hard or soft, maintain its facticity of its indexical reality of the world, while artists continue to subvert the 'indexical' truth claim by eliminating and introducing idiosyncratic elements, with professional software giving the artist the ability to produce seamlessly stitched together fragments from different worlds. The 'joke' is on the believer, long ago alluded to by Baudelaire. Artists have long since established the 'true' subjective quality of the photograph, easily manipulated through framing, passage of time and lighting conditions. Elaborate scenes and situations are constructed, for the sole purpose of the camera to 'bear witness'⁵⁸; [crewdsen image] unfolding situations are often 'dramatized' for their potential inherent 'news' value, and documentation effortless, based on user generated information.⁵⁹ The public, depending upon the 'context' of the situation and the forum through which the image is received, falls victim to perceived truth or subjective nature of the photograph.

A recent text on the history of photography attempts to convey the complexity and simultaneity of these developments. In *Photography: The whole story*, the accumulation of practices is not conveyed as a simple linear history. The editor, Juliet Hacking, attempts to convey the development graphically, with a single timeline for each significant period containing

⁵⁸ Gregory Crewdsen remains one contemporary photographer that became famous for his elaborately staged photographs, in which the 'truth claim' is no longer considered a threat, but actively blurs the boundaries between fact and fiction; its elaborate construction and scale in which they are produced moves its status as a photographic image far closer to the status of a painting.

⁵⁹ This is particularly evident at times of natural disasters, where citizens upload images to the NYT and other online news sites. A more recent such event was Hurricane Sandy, but many other news stories employ the same strategy: on the ground news reports via digital photography.

individual lines that emerge at different points in the overall development. Each line or practice has its own particular duration, but the lines *participate* in a single whole of photographic time, the very essence of the virtual. Giving a greater sense of the overall movement and participation in the history of photography, Hacking identifies individual durative movements of discrete organizing practices, such as the efforts that sought to ‘picture the world’ in relation to the photographers that were more distinctly engaged in ‘street and society’.

The complexity of the history of photography is conveyed in the text itself, as the intertwining narratives and efforts complicate a neat single trajectory. Graphically conveying the number of variations at any slice in time, such as 1880, reveals that ‘picturing the world’ with the daguerreotype had faded from the field of practices, while an interest in aspects of society had developed and remained strong for an extended period of time. The history is one that is multi-layered, complex and mutually constituting of contemporaneous practices in relation to the socio-cultural concerns; established practices as they enter the discursive field influence and inform practices to come. While an antiquated technology, the daguerreotype still exists as a concrete idea and unique object, while ‘picturing the world’ through travel photography is as strong as ever.

Allowing the relief of the individual practices in relation to specific concerns, giving equal importance to intensity and extent, sketches out the virtual plane of photographic practices. Today, all of the past utterances of photographic practices remain held within the present condition as the photographic ‘virtual’ field. Within the context of Google Street View and the proliferation of uses, the potentialities of the urban as raw material circulate and inform the various ways in which users seize the archive. While these practices may exist outside of the conceived realm of what Google *imagined* the uses of Street View to be, the uses are fully

enmeshed within the history of the photographic image. As a result, the contemporary utterances of the photographic practices of Google Street View draw forward some of the lines of practices articulated here, from the longer photographic history in its heterogeneous, multilayered and complex condition.

In tandem, the sense-making continues to occur at the level of the social field, attempting to situate these efforts in relation to this visual tool and the uses and needs of contemporary society. The relay of engaging emerging phenomenon against an existing horizon of understanding indicates the original site of the development of the photographic discourse and the legitimation of the various practices that proliferated.⁶⁰ Recalling Sekula's 'two chattering ghosts,' cultural prognosticators and writers of cultural production organized along the two distinct lines of truth claims and creative license. Like the historical practices of photography, these discursive lines are also intertwined. A constant refrain of these two dominant claims continually engage the other in a spirited discussion and continues to stake out legitimation today.

How is it, then, that since the modern movement, artists have sought to destroy the truth-value of a photograph, exploring and exploiting every manipulation in order to give rise to an uncanny, expressive image? How is it then, that scientific scrutiny still gives weight to the very same material object as satisfying the burden of proof? Today, the 'truth value' of the photograph in an art setting rarely emerges as an element of consideration. The intention of the author and the reception by the viewer determines its success. This Janus-faced paradox is unresolvable in its production. The photograph and its technical apparatus is thus merely a tool,

⁶⁰ Original in a fundamental sense, the point at which an image circulated and meaning constructed through formulated thoughts and opinions.

and it is the production of the photograph by the photographer-subject, and the reception by the viewer-subject that gives rise to the complexity of the shuffling between the two.

02_Photographic Line : Creative Practices

With Street View functioning as a photographic archive of the built condition, I focus on the practices that work with this virtual representation and organize the practices along the two previously sketched photographic lines. The subjective, creative production seizes this visual archive to explore the limits of its potential as a creative tool, and the use of the objective representation in knowledge production. Both lines introduce different forms of movement within the overall plane or milieu. In particular, this double articulation both constitutes and further striates the overall plane. The creative uses embody the spirit of the line of flight, and reveal a moment of absolute deterritorialization within the producer; scientific uses re-instantiate the photograph as ‘proof’ via scientific studies. More importantly, these individual creative practices open the larger milieu to the potential for even more moments of deterritorialization at individual levels of reception, while published findings of exploratory studies establish Street View as a reliable substitute at certain stages of research. As artists insert continual variation into the plane of composition and continue to challenge individual practices and stable social concepts, scientists adds another point of reference to the plane.

The diversity of artistic practices that employ Street View is evident in the variety of media strategies used in its application. Nearly every medium explores its potential in some fashion, ranging from drawing and painting, photography, performative works, literary works, and video artists, as well as musicians that engage the interface when developing a music video. The various conceptual strategies of each artist extend this production along intensive lines. Using GSV as raw material to construct a larger curatorial project, this act claims authorship over the images that are re-presented, having framed the representation according to their

aesthetic and intention. Still others take an antagonistic approach, either seeking to directly engage GSV or through critical narrative of the project. Still others take advantage of the visual archive to produce works that challenge existing conceptions of what constitutes ‘art’ or to produce projects that might have otherwise been Sisyphean in nature to complete.

Within this production, of particular interest is the way in which the various projects elicit responses from the public as acts of reception. These moments of reception provide a glimpse into the social field and the various ideas and concepts that are challenged as a result of the individual works and the use of Street View. On the one hand, artists that employ Street View as a tool for an original project, such as a painting, video, or significant manipulation of the image, the responses are predominantly positive and supportive, enthusiastic about the potential of the tool. On the other hand, artists that use the platform in order to generate their own photographic body of work, a clear division between positive and negative opinion reveals the tension between existing concepts and the challenges these artists introduce into the photographic plane, thus providing key points in which the social field may be shifted.

Photography as a creative process

To recapitulate some key points from the photographic history, the camera has been pointed at the built environment since the invention of photography. Its stationary quality enabled long exposures to render the detail, instead of blurred phenomenon that typically resulted from using live subjects. Perhaps one of the most famous early examples of photography is a street scene, *Boulevard du Temple* by Louis Daguerre, a photograph of a corner of a bustling street. The environment was rendered in full, while the street was seemingly devoid of inhabitants, most moving too quickly to be recorded by the slow exposure. Advances in

technology, in camera lenses and emulsion supports, soon enabled faster shutter speeds, easily arresting the human figure within the environment. The 20th century is full of examples of street photography that depict both the environment and the inhabitants moving through it. As photography has become more transportable, an informal archive of the urban environment has grown exponentially, with the shift from large format cameras to portable, and often disposable, 35mm cameras.

More recently, the digital revolution encompasses nearly every format, from professional medium format to consumer level point and shoot and digital SLR's to mobile phone cameras, fully saturating the field. Nearly everyone owns some form of camera technology.¹ Without the expense of buying and processing film, the rate of photographic capture in the digital era has also increased exponentially, with countless internet sites and apps geared towards sharing digital images, regardless of the photographic motivation of capture. A Google search reveals the ubiquitous nature of the image: to wit, typing 'sunset' into the Google search box and clicking on 'images' reveals that 472,000,000 images are currently tagged 'sunset' and searchable online.² In the era of online journalism and blogging, social networking of sharing content, image inflation exceeds numerical representation, as the viral nature of the photograph and the ability for the digital image to multiply across sites and then indexed by search engines, like Google.³

¹ The ubiquitous nature of the photograph is well documented by Martin Hand in *Ubiquitous Photography*. In this text, he traces the development of its digital nature and the pervasiveness the image has in our daily lives and the potential of the image to have a global impact. It is through the proliferation of the camera technology that has enabled the image to become so pervasive.

² Keyword search conducted October 12, 2012. Likewise, artists have initiated a meta-commentary on the proliferation of images, like a sunset, and have produced bodies of work based on conceptual strategies of appropriation, where the work is a work comprised of countless sunset image place together to create a coherent whole. This new strategy is addressed by a recent exhibit, *From Here On*; discussed at the end of the chapter. As addendum, As of February 26, 2014, Google has changed the 'search' function, and it no longer gives indexed image number results.

³ In more comprehensible terms, it is estimated that more than 200,000 photos are uploaded to Facebook every minute, see Limer, "Next 60 Seconds." Or in other words, more than 350 million photos uploaded a day, see Smith, "Facebook Users." Yahoo estimates 880 billion photos will be taken in 2014 if the trend continues, see Horaczek, "How Many Photos?"

From a theoretical position, photography has frequently occupied the role of documentation. From the beginning, the photograph has been considered indexical, as reflected light from the scene renders a near exact duplication on the emulsion, offering a stable ‘truth’ previously unobtainable by the human eye, and freezing a unique condition at a particular point in history. As a static representation, the photograph as documentation and evidence has given it a contentious position within the fine arts. The realistic representations and truth claims of existing conditions are not subject to the human hand, establishing ‘documentary photography’ as an art in its own right, as a result of technical virtuosity or its ability to affect the social field. Social reformers like Jacob Riis and Lewis Hine raised awareness of dangerous conditions, government-sponsored WPA employed artists to portray the dire conditions of the Great Depression. In each case, the projects gave a ‘face’ to the millions that were living in substandard conditions.

Henri Cartier-Bresson depicted the ephemeral nature of the urban condition at the turn of the century, treating poverty and *jouissance* with the same level of care. He made visible the ‘decisive moment’: an ephemeral moment within a bounded frame, freezing and preserving a slice of time that would otherwise have been forgotten, one long since filled by an unrelenting, continual present of visual information. Eugene Atget is another key early figure, documenting the architecture and street life of Paris, setting out to systematically documenting the buildings of Paris.⁴ This act of capturing the ephemeral nature of the urban scene has grown exponentially, with ‘street photography’ establishing its own school, adherents of the ‘man in the crowd’ ethos, a process that objectively captures the scene, later subjected to subjective editing and

⁴ MoMA.org, Eugène Atget.

distillation.⁵ This particular process has bifurcated over time, as artistic lineages and various aesthetics emerged and developed, all operating under the larger ‘street photography’ umbrella.⁶

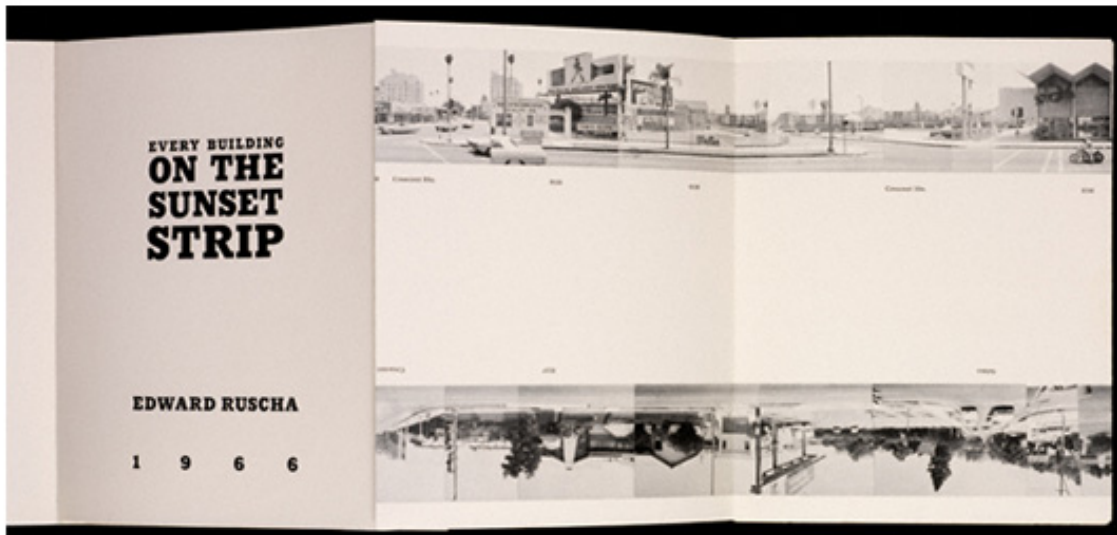
Pointing the lens at a particular place at a particular time renders concretely a particular kind of event condition that might otherwise be invisible to those present, much less those not present to witness. This indexical nature marks the construction of a narrative, often motivated by a political agenda, implicit or explicit. Rendered as a discrete framed view or increasingly, a narrative is constructed through the seriality of images. Notable examples among countless many are Robert Frank’s *The Americans*, which seeks to locate a contemporary, post-war culture in America through a highly edited body of photographs, while Garry Winogrand’s prolific body of street photographs, having neither a defined scope nor politics, presents a larger image of the urban condition of New York (and later, Los Angeles). As a recording agent enmeshed in the world, Winogrand ceaselessly (and machinically) captured what was in front of him, only editing at a later date. Or, somewhat more poignantly, leaving behind some 10,000 unprocessed rolls of film after his death.

Additional photographers that serve as notable examples of capturing the street condition are Edward Ruscha’s series, *Every Building on the Sunset Strip*, which portrays, precisely, every building on the sunset strip.⁷ Photographed methodically, and conceptually displayed in a manner to view both sides of the street simultaneously, Ruscha’s work emerges as an early example of conceptual photography that evokes popular culture with a dry sense of humor. He

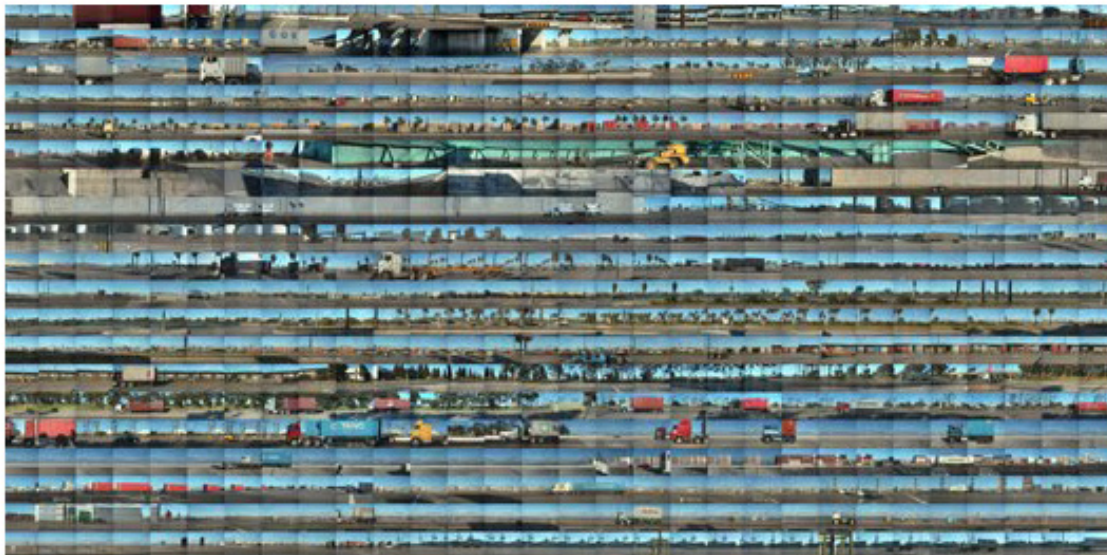
⁵ Phrasing comes from a monograph collection of Garry Winogrand’s work, *The Man in the Crowd*, which is a curated collection of street photography, and who was known for being immersed in the street scene, shooting ‘from the hip’ without framing the image, simply responding to the environment and shooting thousands of images.

⁶ The irreverence of a figure like Garry Winogrand and his ability to shoot from the hip, captured awkward and playful situations, or Helen Levitt who grounded physical conditions as a backdrop for socio-economic concerns. Figures like Diane Arbus eloquently and troublingly captured street characters, in addition to socially-driven documentations by artists such as Mary Ellen Mark, Danny Lyons and Nan Goldin. Each engages a different psychical element of the street scene and its characters that inhabit it. By no means exhaustive, the history of photography is rich in examples within this one particular genre.

⁷ And as one recent article posits that perhaps Ruscha ‘invented’ street view, see Walker, “Ruscha Vs. Street View.”



Ruscha, *Every Building on the Sunset Strip*



Flick, *Trajectories*

gives adequate attention to the banal 1950's street culture and architectural form ushered in by the newly sprawling, automobility of a post-industrial city like Los Angeles. Somewhat more contemporaneous, Robbert Flick's work depicting the street condition of Los Angeles does not convey the dry humor of Ruscha's concise conceptual project; rather, it inundates the viewer with a 'contact sheet' layout of images of LA streets, taken from the automobile. While each provides a documentation of the urban scene at particular moment in time, Ruscha's work

methodically documents the built, with care given to the formal street edge condition within each image. It is the sheer volume of the banal images of Flickr that renders a wholly different response within each viewer; each individual image lacks a purposeful framing of the bounded frame against the existing condition.

Within the early formulation of photography, outspoken opinions of those of Lady Eastlake saw photography as secondary to the creative act of traditional media. Sculpture and traditional two-dimensional works like painting were the forms of art; with the introduction of photography, it altered the visual field. Those that saw its value to artists were from the position of a 'drawing aid', one that would make the important creative gesture more efficient or produce greater likenesses. The need to take the easel out into the landscape was diminished with the transportability of the photograph, first through the actual medium, and then as mass produced material of print, enabled the studio artist to work from images to build all or part of the painting. While the rise of modern art and abstract representation has changed the aesthetic style in different ways, there still exists a large variety of artists that work within the pictorial tradition to produce realistic representations.

Since that time, photography has been a visual aid for drawing and painting, as well as a source of inspiration. The photograph and reproductions function in different ways in relation to the technology.⁸ Beginners of drawing are instructed to create a grid on a photograph that matches the ratio of the grid on their drawing support. This method enables students to capture

⁸ This is evident in early, formative works, where artists typically work from a photograph, either through a gridding of the photograph against the canvas or paper, as a means to develop technical skills of the medium itself. By having perspectively-rendered content, the ability to transfer that image into a image onto the canvas releases the artist from not only imagining their own content and producing it, but it frees the artist from the demands of taking a three dimensional object and converting it into a 'realistic' two dimension representation. Learning how to manipulate paint, whether light, tone, or variety of blending techniques, often prove challenging enough for the novice. Today, many studio artist use projectors in order to incorporate precise objects and ideas into works that produce a bricolage of elements not ordinarily seen in the world as a collection of objects. Postmodern art expresses this bricolage best, where images from different eras are put into conversation into one image, aided by projection of a photographic representation.

the proper proportion while developing confidence in eye-hand coordination skills. Advanced artists also work with the photographic image, and it remains a standard studio practice to incorporate various photographic source materials to produce an overall composition.⁹ The urban environment has continually served as a backdrop for modern painting and drawing, with early impressionist paintings rendering an atmospheric quality to the urban condition of the modern, industrializing 19th century city; throughout the late 20th century, the city has remained part of the artists' visual production, either as backdrop, as an imagined reformulation, or as a conceptual material.¹⁰

It is here where GSV as documentation of the built environment intersects with the artist engaging the raw material of the urban environment that a range of work emerges, each drawing from various threads within the virtual field of photography. Within this context, Street View creates a rich repository of visual material that stands as an approximation to a given street scene, used in numerous ways. The lineage presented here sketches out a terrain of artists that have engaged the street condition, whether the culture that inhabits the streets or the forms that provide the backdrop. While these practices are organized by medium, the selected works herein challenge the creative plane in unique ways.

Photography

Jon Rafman

Jon Rafman was one of the first artists to have his images go 'viral' as a distinct project

⁹ The conceptual content of much of this visual work stands in contrast from traditional still lifes that work from photographs. Abstract works remains an abstraction and are excluded from this assessment; much of the visual work with pictorial representation draws from photographic source material. As an efficient means of representation, the artist is able to focus on the symbolic or conceptual content of the image, rather than focusing on the accuracy of the representation.

¹⁰ It appears that this particular history/survey has yet to be written, as well as a history of artistic practices that have explored 'new' technology when it first emerged, specifically exploring it for its potential; not simply a history of video work, for example. These histories are well outside of the scope of this work.

that culled from the archive of Street View. In 2008, Rafman started collecting images from blogs that highlighted unusual images and from his own exploration within Street View. His excitement of exploring this new virtual realm was multifaceted: the amateur aesthetic of the image quality; the street conditions contained an ‘urgency’ he associated with some of the early street photographers and the stylistic efforts they produced; and its honest, seemingly ‘unmediated’ representation of the environment. For Rafman, it was compelling to see the objective capture as ‘truth’. “It was tempting to see the images as a neutral and privileged representation of reality—as though the Street Views, wrenched from any social context other than geospatial contiguity, were able to perform true docu-photography, capturing fragments of reality stripped of all cultural intentions image as the ultimate photo documentation.”¹¹

As a recent graduate from art school, Rafman was versed in sophisticated argumentation of the role of the photograph, its indexicality, the contextualizing power, the role of the viewer in interpreting and attaching meaning to the photographic object, where none might not otherwise exist. Rather, he saw this objective archive as offering the potential to explore its multiplicitous nature, “This infinitely rich mine of material afforded my practice the extraordinary opportunity to explore, interpret, and curate a new world in a new way.”¹² For Rafman, this particular platform offered him an opportunity to work within a set of established constraints, the imagery that Google produced and the quality of the image, to produce a series of interests that were informed by different aesthetic motivations.

For a photographer, the camera is often seen as an extension of the body, and the act of bringing the viewfinder to the eye establishes an habitual relationship and way of seeing. For many famous art photographers, an inherent aesthetic develops within the image. Beginning

¹¹ Rafman, “IMG MGMT.”

¹² Ibid.

photographers exhibit significant stylistic variation. As a photographer becomes more attune to their own way of thinking and seeing in relation to the camera, they intuitively and instinctively respond to content in a similar manner, unique to their own sensibility and personal trajectory. One can often view an image and assess the authorship, or the school of aesthetics the artist follows; critics and artists alike pride themselves on discerning stylistic variations among photographers and the stages of their careers, as if the image represents a genetic imprint of the artist himself.¹³

For Rafman, Street View presented an opportunity to shed this subjectivizing practice of picture making. Educated by a top-tier graduate art program, he could effortlessly see the styles in the various Street View panoramas and respond accordingly,

“Within the panoramas, I can locate images of gritty urban life reminiscent of hard-boiled American street photography. Or, if I prefer, I can find images of rural Americana that recall photography commissioned by the Farm Securities Administration during the depression. I can seek out postcard-perfect shots that capture what Cartier-Bresson titled “the decisive moment,” as if I were a photojournalist responding instantaneously to an emerging event. At other times, I have been mesmerized by the sense of nostalgia, yearning, and loss in these images—qualities that evoke old family snapshots. I can also choose to be a landscape photographer and meditate on the multitude of visual possibilities. Or I can search for passing scenes that remind me of one of Jeff Wall’s staged tableaux.”¹⁴

One year out of graduate school and in the thick of a new art project called ‘nine-eyes’, named after

¹³ Given the representative nature of the photograph, what emerges as or defines stylistic qualities are compositional or framing strategies, the actual subject matter, as well as the film/lighting conditions. Much of Winogrand’s work can be viewed within his dynamic ‘framing’ of the image that results from his quick shooting style and his being predisposed to comical or curious scenes that he gravitates toward in both shooting and editing. As a pedagogical tool, however, the studio education often has students produce ‘bodies’ of works, a series of images that hold together in some manner and can be discussed as a whole.

¹⁴ Ibid.

the lens construction of Google's Street View camera, Rafman's essay offers an unusual view into the inner workings of an artist, written when it was still too soon to see the cultural impact of this body of work. Rafman embraces the 'pure present' of Google Street View, each scene he encounters taps a different 'name of history' of photography, all residing within the virtual of photographic plane and way of seeing, latent within each image. While the images from Google have an unmistakable 'framing' and 'signature' that communicates the author of the image, Rafman takes liberty with the content and culls images in a haphazard fashion and without conceptual framework guiding his selection. He files them under the title 'nine-eyes' as the larger conceptual frame. Today, Rafman's name is widely circulated as *the* 'Street View' artist with an uncanny ability to find the sensational images. The viral nature of the Internet and the circulation of visual content defy 'authorship' of the image, however. With images surfacing in multiple sites and multiple artists offering an 'interpretation' of Google, the voice of the artist is diffused and displaced, with the 'genius' status uncertain.

Doug Rickard

The work of Doug Rickard is one practice that exemplifies the line of flight as a single-minded focus or vector. Personal financial constraints forced Rickard to find different ways to produce a body of work without travelling. He first experimented with using key word searches to construct image collages, until he stumbled upon Street View. He describes his decision to use street view as an epiphany.

So I remember the day that I discovered street view, I dropped into it, and I was just floored. Like, immediately, the wheels started turning. I'm talking within, like, a day. I started to drop into it, and I couldn't believe that I could go navigate on the street of any place in any city. So I started to do that for the first few days, and the wheels are turning,

and I found that I was only looking at communities that were outside of view for the most part.¹⁵

He quickly shifted gears and set off down the virtual road; every step and image a quiet nod to the rich history of photographers that sought to portray the fabric of America. He streamlined his process and machinic-ly combed the streets of American cities, looking for clear evidence of economic devastation of another American people. What resulted from this incessant photographic process was a vast collection of photographs that he began to edit into a carefully considered narrative, each image depicting moments of devastation or alienation. The inclusion of his Street View project, *A New American Picture*, in a recent survey show, *New Photography of 2011*, at the Museum of Modern Art in New York catapulted him from relative obscurity to high profile status.



Doug Rickard, *A New American Picture*

As a self-taught photographer with a sociology background, issues of race and poverty in America drive his work. His selection of images is based on his understanding of what a place

¹⁵ Pier 24, *Doug Rickard*, 1:54.

like Detroit might look like, or the architectural style of the South, “I spent time at first going where I think the mythology of the place attracted me most, Detroit being the first place. You know, what every one thinks of when they think of the broken down American Dream.”¹⁶ His knowledge of the lineage of photographers is also self-taught, and his framing decisions within the Street View interface is both a conscious attempt to represent the sociological issues that he seeks to locate, as well as is informed by the photographic conventions of ‘documentary’ photography. 15,000 images later, Rickard’s single-minded focus of scouring the streets via this new medium appears to have been mostly unreflective of the inevitable controversy that would emerge from his use of the automated capture.¹⁷

A variety of issues surfaced as a result. Many people questioned his status as *the* ‘photographer’ rather than a mere curator of images; others highlighted the invasion of privacy and the contradiction to ‘bearing witness’ in documentary photography. Instead, they saw cowardice in not ‘confronting’ his subject on the street; the passive state of the viewer in the gallery even more removed. Rather, Rickard was accused of safely surveilling the seedy streets in the comfort of his studio. “It is a hypocrisy of the documentary tradition that audiences demand to see the poverty at home and abroad without physically taking themselves there. The insult, of which Rickard is presumably aware, is at play doubly in ‘A New American Picture’; as a photographer, Rickard never set foot on those streets and the Google cameras recorded the people and environment with mechanic indifference.”¹⁸ Rickard, however, earnestly sought to portray this slice of society that is often overlooked in many cities, particularly in places that

¹⁶ Pier 24, *Doug Rickard*, at 3:30

¹⁷ What is particularly striking about this mode of capture is its digital ephemerality, as opposed to the 10,000 rolls of film that Winogrand left behind. Moreover, the *actual* ephemerality of capture has been radically disrupted with Google’s implementation of Time Machine.

¹⁸ Brook, “New Breed of Art.”

present a different image to the world, such as Fort Lauderdale: home to beach tourism *and* economic devastation.

I would argue that his lack of formal photography or fine art education enabled him to pursue a project that he felt wholly committed to without dwelling on whether or not it would be viewed as a legitimate body of work by the art world and photographic community at large.¹⁹ In other words, there is no evidence of ‘analysis paralysis’, but an unmediated enthusiasm for compiling the images and the pure joy that came from looking for his own ‘decisive moment,’ however it was encountered.

The recognition, of seeing the possibility, coming upon it; and the elation that I would find as I moved this into a scene, this of the man in Watts holding the hose. I saw that coming as I was going down the street, and as soon as I get there, I turn on it, I just, it’s just that it’s a sense of satisfaction for me, this project, akin to any sort of manner of satisfaction that any photographer has gotten.²⁰

His engagement attests to his act of looking and framing the view, the quintessential function of a ‘photographer’, thereby rendering questions of ‘curation’ somewhat moot. His voracious appetite for the history of photography and the maintenance of his highly regarded website, “American Suburb X” gives the project the foundation on which it stands, both in terms of a perceived conceptual intention and a knowing ‘nod’ to the photographic greats, like Cartier-Bresson, Walker Evans and Robert Frank, that came before him.²¹ While much of his

¹⁹ As product of a professional education, particularly at the Masters level, a sophistication and understanding of stylistic motivations is emphasized, particularly in relation to the history of photography and ‘school’ from which one draws influences. Understanding one’s place within that history inevitably causes a larger discussion around production, i.e., ‘it’s been done before’, that leads to an analysis paralysis in making work one believes in *and* can defend in front of a group of peers.

²⁰ Pier 24, *Doug Rickard*, at 0:05.

²¹ Blog discussion forums illustrate the level of respect that Rickard has earned among his photography peers in relation to his own blog, American Suburb X; conversely, users are also debating whether it is art or not, and if so,

enthusiastic musings happen post-production, his initial foray and his single minded focus was far less cognizant of this history and its eventual place within it.²² Prior to 2010, his exhibition record is nonexistent and no bibliography is listed. Nevertheless, the unique conceptual framework of the project and his established presence as a connoisseur of the history of photography garnered the attention of major museums and galleries. On the whole, the predominant sentiment of the art world today considers it a legitimate body of work, having earned large solo shows and a publication re-released as a trade book.

Michael Wolf

Michael Wolf is a figure whose practice exemplifies the line of flight as shifting the social milieu. His project, “A Series of Unfortunate Events,” is culled from Street View and highlights strange occurrences as captured by the Street View car, similar to Rafman. The confluence of Wolf’s interest in Street View coincided with his move to Paris. Having spent time in Asian cities, Wolf was uninspired by the stable urban landscape of Paris. This shift in work habits accompanied idleness and an unfamiliar city. Wolf first learned of these ‘events’ as an online phenomenon, in which blogging sites would highlight sensational captures, with many images going ‘viral’. Wolf became intrigued by this new virtual environment in which he was no longer confined to his physical location, and began to explore further.

I discovered various websites which were also referencing interesting things happening on Google which I then looked up, and then I found this whole world of strange events, of people falling, people standing naked in windows, cars crashing, cars burning, and I

whether it is his work or Google’s. Regardless, the continuous mention of his blog site continues to lend it legitimacy, given his exhibited level of knowledge of the history of photography.

²² While he is not on record for stating this, his enthusiasm in recounting his first experience and the manner in which he switches to theorizing his relationship to the history of photography is a marked shift.

thought it would be a wonderful project just to collect these, I call them ‘a series of unfortunate events’.²³

Having a penchant for ‘newsworthy’ events, Wolf’s transition to finding dramatic captures is in keeping with his overall journalistic photography practice, but his *openness* to exploration and a new way of working is evident of his art photography. The underlying tendencies of both aspects of his work collided in this project.

Wolf shifted the photographic plane in 2011 when he submitted his Street View images for consideration at the annual World Press Photo awards. He received ‘Honorable Mention’ under the ‘Contemporary Issues’ category. The heated debate that ensued exposed the cracks in the molar categories of ‘Journalism’ and ‘Photography’, as well as the definition of ‘news’. Like Rickard, Wolf’s work highlights the role of the photographer versus the curator of or appropriator of this collection of images. His work also raises these same questions of legitimacy and authorship, emerging as a controversial figure within the Media world. Wolf is quick to assert the artistic merit of his work, “It’s a real file that I have, I’m not taking a screenshot. I move the camera forward and backward in order to make an exact crop, and that’s what makes it *my* picture. It doesn’t belong to Google, because I’m interpreting Google; I’m appropriating Google.”²⁴

The discourse that surrounded this award, evident in blog and newspaper comment sections, points to concretely defined molar expectations of journalistic photography and the role of the photographer.²⁵ Seemingly ‘overnight’, this creative line advanced important critical

²³ PetaPixel, *Michael Wolf*, at 3:40.

²⁴ Brook, “New Breed of Art.”

²⁵ An exchange is documented on the DVA Photo site is a good example of the debate that ensued, with a litany of user comments to one article by Lutton, “Some thoughts on Street View,” followed by a response by guest writer, Donald Weber, “Picturehead” and a range of responses from the readers of the blog. Together, the voices that emerge point to a critical threshold within the journalistic establishment and the photography community at large.

questions for the photographic field and points beyond, not only about how we understand a photograph to function, but also challenges questions of authorship, ownership, the difference between creating and editing, the social value of conceptual work in relation to an existing archive to which everyone has access. Perhaps most importantly: *to what degree* must the journalist bear witness?, and what, *precisely*, constitutes ‘news’ emerged as a heated discussion. The world of photojournalism prides itself on being at the scene to capture news events, capturing what might potentially become a significant moment in history. Many members of this establishment were outraged by the award, arguing that not only was it not ‘news’, but Wolf was not even there at the scene to take the picture, defying the established definition of ‘journalism’.

What marks this practice as distinctly different from Rickard’s is that Wolf was an *insider* and wholly enmeshed in the journalistic establishment and its machinations.²⁶ As an already established photographer and winner awards of excellence in journalistic photography and an accomplished gallery artist, Wolf *knew* his submission would draw attention. He is less concerned with the negative press he has received and is more excited by the ensuing dialogue that resulted from his award. “If you look at the blogs, very strong reactions, mainly con, very few pro; but it doesn’t matter. For me the thrill of it all is that there is a dialogue out there now and the people are discussing this whole topic, which would have never happened had World Press never given me the honorable mention.”²⁷ While he was surprised by receiving the award, he credited the jury as being ‘forward thinking’ and praised them for being liberal-minded in

²⁶ This ease is evident in his video interview with PetaPixel, where his stance is confident and he is articulate about his intentions and how he conceived of the project and its potential reception. This is a stark contrast to Rickard’s nervous enthusiasm for the project, and his overly considered attempt to list as many photography giants as possible, likely overcompensating for his background, suddenly brought to the fore with his project.

²⁷ PetaPixel, *Michael Wolf*, at 0:25.

their willingness to recognize the merit of the project, and in the process, advance the overall discourse that surrounds photographic journalism.²⁸

Aaron Hobson

Aaron Hobson marks another notable presence of photographers using Google Street View. Hobson is also a self-taught photographer, first known for his series entitled ‘Cinemascares,’ in which he staged dark scenes for the camera, portraying tension in human relationships.²⁹ The process of making was defined by Hobson as one of self-exploration, an attempt to confront his checkered past of dark moments, the images intended for himself and his closest friends. Hobson was hired to direct a film in Los Angeles, which proved to be a pivotal moment. He remotely traversed the streets of LA via Street View in search of suitable locations and was surprised by vast terrain covered by Google.

He describes this discovery as a transformative moment for his artistic practice, shifting his contemplative interior Cinemascares to an outward pointed investigation, “I decided to turn my gaze outward at the world and the isolation of other people and places through the Google technology. This process is about the amazing technology of Google Street View and the places it has allowed anyone with a computer and internet access to explore.”³⁰ From that point, he began to obsessively travel the world, often dropping the ‘man on the street’ on a random street, and moving down the road for miles, hours evaporating without even realizing it.³¹ “As boring and tedious as it is, just drag that little guy from town to town—continuing North or South for

²⁸ Greg.org, “Michael Wolf wins World Press”

²⁹ Starr, “Beauty captured”.

³⁰ Spiegel Online, “Places of isolation.”

³¹ Ibid.

hours and hours.”³² He slowly compiled a selection of images in which he shared with his friends via image sharing sites.

One aspect that marks Hobson’s work as unique, compared to Rickard’s or Wolf’s, is the personal nature of Hobson’s project. Both Rickard and Wolf conceptualize their efforts as part of a body of work in which the imagined audience is the art world or similar venues in which work is consumed. Hobson never intended his images for anyone other than himself and his closest friends, intended to be viewed in a darkened room on a computer screen. Both Rickard and Wolf discuss the method of output as part of the working process. The conceptual project is part of a larger established dialogue for both Rickard and Wolf, whereas Hobson’s endeavor is an idle virtual tourist, travelling the world and sharing his postcards. Another aspect that marks Hobson’s work as unique is his manipulation of the visual image of Street View. Hobson stitches together several images to create a panorama, and his careful editing of images reflects a particular mood across all the images, one that extends the underlying thrust of his earlier cinemascares.

While Rickard and Wolf both insist on their artistic voice in the framing of the image, neither of them alter the street view images to a great degree. Hobson describes his process as ‘touching’ the images, images previously ‘untouched’ by the automated capture, “automated and aesthetically-neutered google street view cars.”³³ The artist-creator brings to life the latent potential of the archived built environment, the raw material is transformed into Fine Art through careful selection and manipulation. Hobson’s imagery has garnered much enthusiasm and support from the general public, with his images hauntingly beautiful with their moody atmospheric quality. Media outlets have predominantly celebrated this as ‘Fine Art,’ but Hobson

³² ABCNews, “Enchanting World.”

³³ Peppetta, “Artistic side of GSV.”

is not completely immune from questions of ownership and authorship of the image, but those questions come up far less frequently. The overall aesthetic of Hobson's image stands in stark contrast to Rickard's grainy, blurry images and Wolf's tightly cropped, pixilated selections. Beauty is regarded first. The *collective enchantment* with both the kind of images he has produced as much as the surprise that such an image could be found within the Street View platform, dominate that discourses that surround his work and have placed him as one of the central artists that have emerged as a result of adopting the use of Street View.³⁴



Aaron Hobson, *Cinemascope: Google Street View*

He credits the viral nature of the internet for bringing a degree of notoriety to his 'Cinemascope' project and received a few photography shows as result of using publicly visible platforms like Flickr. The GSV travelogue he was compiling of images of far off places, he also shared them with his friends, 'eating some cheese and grapes and drinking a glass of wine'.³⁵ Having already acquired a following from his earlier work, the viral nature dramatically increased the exposure and reception of his Google Street View cinemascope series. After a series of media outlets covered his work, often through simply 'reblogging' one of the original

³⁴ Like the other artists, the discussion forums of many of these popular press and blog sites are vocal and offer their thoughts, in no uncertain terms.

³⁵ Spiegel Online, "Places of isolation."

stories, the internet server hosting his website crashed on countless occasions from the traffic directed from a rapidly expanding presence online.

Additional lines

While the aforementioned photographers can be characterized as a long-standing investment in Street View as a means of exploration and making work, additional photographers who have utilized Street View for a single, discrete project. Mishka Henner self-published an artist monograph, *No Man's Land*, depicting the sites of rural prostitution, as captured by GSV. Henner found locations of prostitutes on rural country roads in Europe via male online forums that disclose the location of sex workers. Using Street View, Henner found that many women were *also* captured incidentally when Google was driving through the terrain. Some have expressed outrage at the content of the work, and contribute the work to his status as a privileged, white male.³⁶ Henner insists that the conceptual strategy of using Street View is not one of passive voyeurism, but a commentary on the impersonal status of these women and the role of surveillance today.

Sophie Groot Dengerink explores the loss of privacy in the era of Google Street View in her series 'No Privacy'. The images selected from street view are notable for the high resolution and the clarity with which they depict interior spaces, as captured from the street. It is perhaps in this series, in particular, that the potential invasion of privacy is most evident, as personal document and the interior details can be discerned within the images she selected from Street View, leaving the viewer with a chilling feeling of complicit voyeurism.³⁷ Both artists engage a

³⁶ Platt, "Documentary photography meets Google Street View"

³⁷ Little content has been written on this particular artist. A visual analysis of the images within this body of work highlighted for me, personally, the tensions that exist within this larger privacy discussion.

political line in their work, with Dengerink's work a meta-commentary of the tool used to create the work.

Nick Mason engages the conceptual platform of GSV in *Versificator*, which takes its cue from Orwell's 1984 machine that creates literature and music without human input. According to Mason, his framing of empty or subdued images reflects the real intention of the Google camera as that of capturing visual information. His *actual* framing of the images, like Hobson, transforms their status as visual data into something else, "These images were never intended to be more than mere information, compiled by a machine and possibly never even viewed by a person. By my choosing them, they begin to become something else. I'm interested in the restructuring of information and the 're-habilitation' of data."³⁸ It is the intentional act of 'editing' that transforms a random capture into an object of art.

Additional projects as meta-commentary include Greg Allen, who explores the visual phenomenon of the Street View capture, tracing the path of a man who appears in countless scenes in a European city. His fascination with the idiosyncratic appearance and automated severing of the individual guides his project, which is defined solely by the repeated appearance of a man in a black tank top and denim pants. For Allen, this fascination transformed over time, "At first, it was the distortions of time, space and perspective... I became fascinated by how this man seemed to travel almost precisely at the distance that simultaneously kept him in frame, but also all but guaranteed his algorithmic erasure." For Allen, it then became a process of narrativization as a means to understand it as a visual and cultural phenomenon, drawing from his own understanding of intellectual history and art's production within the larger structuring concepts of the social milieu.

"Then I tried to understand the images as portraits, or self-portraits. As the exercise of the

³⁸ Brook, "New Breed of Art."

flaneur. The product of the flaneur's gaze. An artifact of a moment in time, in space, evidence of the photographer's decisions. As photos or cinema. Surveillance or subversion. Indexing, seriality. As virtual or real, documentary or manipulation, strategies or tactics. I looked at Muybridge and Marey. I went back to re-read Benjamin, Bergson, Barthes, de Certeau, Sontag, but these images seemed to thwart every attempt to put them into a critical or historical context as photographs."³⁹

For Allen, these photographs did not neatly fit into his existing horizon of meaning, either from a visual phenomenon or urban imaginary and the attendant concepts that enable sense-making. His cognitive process shifted as a result of this new kind of image. As his thinking shifted, so too did his understanding about the *process* of capture and came to realize that the figure in question was part of the Google mapping project, revealing a glimpse into the mapping machine: the man was part of the Google crew.

Entangled aspects

These photographic projects reveal a unique set of concerns that stand apart from the remaining artistic uses. This wide range of conceptual and formal projects utilize the newly installed archive of urban and rural environments and their inhabitants, at the same time, it moves the photographer from active camera operator to one in a more prone, passive state of sitting at the computer. Whether the preoccupation with street view is one of an idle tourist traveling the world, capturing conditions of the American landscape, drawing attention to issues of privacy and prostitution, or constructing a news narrative and imbuing it with meaning, many of the projects highlight the wealth of the visual material that exists as pure potential. The

³⁹ Allen, "Walking Man."

photographer collects, curates, or reframes the scene within the browser window, to make it his own, or to ‘interpret’ Google, aided by the new media space of digital technology and the software platform.

While most street photographers in the past had moments of physical confrontation or defense,⁴⁰ the new photographer within the framework of Street View is released from that tension that inherently exists at the moment when subjects become aware they are turned into an object of a rendered scene, in which their gaze meets the gazing eye of the camera. The passive act of ‘photographing’ existing images, previously captured at an unidentified point of time, radically changes the relationship between the photographer-subject. The *actual* relationship engenders a dialogue of seeing and being seen, whereas the new relationship resembles a monologue of looking, one that is wholly managed by the user. The relationship is radically altered. The potentially problematic ‘othering’ and even a respectful I-thou relation with the subject is neutered and turns voyeuristic when that confrontation is removed. All made possible by the automated capture of camera on remote.

Two-Dimensional Media

Bill Guffey is a self-taught painter who simultaneously works in plein-air and from photographs in the studio environment. His oeuvre consists of both urban and rural scenes, ranging from seaside communities to dense urban environments; farming to natural landscape scenes. His use of Street View imagery as source material for his paintings has earned him a great amount of notoriety recently. He discovered the inherent potential of GSV when looking

⁴⁰ While there are countless stories of confrontation, Winogrand’s surreptitious framing, flicking the camera and viewfinder in front of his eye *as if* about to take a picture, reveals both his desire to remain invisible and the defensive state of taking photographs. His aloof, disinterested posture removes suspicion from his machinic capture that is actually taking place with the viewfinder camera and its silent operation of leaf shutter.

online for the location of a particular establishment. The visual quality of the screen image interrupted his activity, whereby the scene contained the subjective qualities of composition, content and color and felt ‘like a painting.’ “I came upon a cafe in New York City that I thought interesting. So I captured a screenshot on my computer and used that as a reference for a painting.”⁴¹

Guffey is a prolific artist, one who continually churns out smaller canvases of quiet scenes; his ability to draw from an existing archive, while having editorial ability, has expanded his practice in numerous ways. His ability to ‘travel’ to exotic places has opened up the variety of scenes he depicts. No longer restricted by his own physical environment, he is free to seek out scenes in unknown places without relying on his own travel photographs. One such series is his ‘50 state’ Street View series, each painting exemplifies a state in some way. Not settling for an easy, iconic image, Guffey finds quiet, banal scenes or the dirt and grit that express a quality of a place like Alabama, versus what kind of image might express New York, with the influence of New York City.⁴²

Being involved in the plein air community, he cites the common practice of a ‘paint out’, where a group of painters come together at one location and paint the same scene. One part camaraderie, another part support network, the evolving community is able to learn from each other as well as share the experience of painting from the landscape, creating a common thread among disparate styles. Shortly after his discovery of the rich archive Street View, Guffey organized the first virtual paint out. He selects a Street View location for the month and participating artists paint a scene found within Google Street View, in any artistic style. As Street

⁴¹ BBC News, “Artists paint virtual Jersey.”

⁴² Guffey continually states his rural location in relation to the hundreds of places he has painted, but has never visited. His understanding of a kind of rural or abandoned view of Detroit is a perceptual decision to paint a scene from one of the 50 states, rather than based on a first hand experience.

View adds new locations, Guffy often chooses those as the site for the next paint out. After nearly 60 locations, the number of artists consistently fluctuate between 75 and 150 participants each month, with the site counter of group members at over 800.⁴³ At the end of the month, participants submit a digital image of their work; Guffey selects a large number of them to be included on his blog and includes links to the individual artist's web presence. A virtual community emerges from repeat participants, particularly within the discussion forums. Various followers of his work or participants are open and share both their gratitude and the personal experience, including offering advice when appropriate.⁴⁴

Guffey is enthusiastic about its potential, especially for those that are disabled and are unable to travel or bring equipment out into the landscape, or for those that cannot afford to see the world first hand.⁴⁵ The comprehensive scope of GSV enables many to get a glimpse of the world, in which they can explore visually at their own pace and frame their own images. While it is not a first hand experience, having the means to move through the world and 'pan' the view in relation to individual interest advances a simple engagement of 'travel' photographs to a virtually embodied experience. For Guffey, this is an important aspect for the painter, as their scene remains their own, "A lot of artists will not work from someone else's photograph...' But with Google Street View... 'you're actually composing the theme, just like you were there taking the photograph.'" ⁴⁶ This flexible interface creates near infinite viewing conditions within the unique platform.

While Guffey uses GSV to replace his previous means of working from photographs, another artist using a traditional lead pencil takes images from Street View and adds a strong

⁴³ Virtual Paint Out blog, accessed on June 16, 2014.

⁴⁴ Art-landscape blog, Google Street View. This particular blog seems to be a resource for the plein-air community, and they are supportive of Guffey and the camaraderie is established in the forum comments.

⁴⁵ Farnsworth, "Artist finds inspiration."

⁴⁶ Huessner, "Google puts the world." Article quotes Guffey.

conceptual framework. Krista Charles inherited a collection of vintage matchbooks from various places in the United States, each 20-30 years old. The selected matchbooks provide an original image and address of the business. Inside the matchbook flap, Charles draws the current location as represented on Street View to update the matchbook information. While Guffey's unwieldy and infinite production of paintings is limited only by the number of streets canvassed by the Google car, Charles's project is finite in nature. She has a limited number of vintage matchbooks that can be redrawn from present day imagery, making it a discrete artistic body of work. The conceptual frameworks of the two projects are also distinctly different. In Guffey's larger project, it is man-cum-painting machine, only limited by the sustained interest in both painting and working from photographs, whereas Charles advances her own particular drawing practice in relation to a limited concrete object. She complexifies the relationship with the ability to locate or map the present day development onto a different era. Travelling to each matchbook location in order to draw the current condition becomes unnecessary. The use of technology to draw together two distinct eras is as much a part of the commentary as is the act of visiting (virtually) specific places traveled in order to reestablish a psychical connection.

Performance

A Street with a View is one of the earliest examples of artists engaging Google Street View as a site of creative production and intervention. Artists have a long history of engaging in contemporary phenomenon to 'make visible' political issues, often with the desire to affect change by raising awareness. Artists Robin Hewlett and Ben Kinsley saw an opportunity to utilize this new platform and engage the circulating discourses in a different way, "Our city was one of the first US cities to be mapped and GSV was in the news a lot for issues pertaining to

invasion of privacy, surveillance, big brother, etc. As artists, Robin and I saw an opportunity to play within this system and, instead of dwelling on the darker issues, to explore it as a site for artistic production.”⁴⁷ As they developed the project, the driving interest was to include the neighborhood in the intervention, “What we wanted to do was not just have artists come in and throw something up when the Google car comes by. But really, taking an image of the neighborhood. So getting everybody in that neighborhood involved ... But then we thought, what if they could really choose how their neighborhood was seen in Street View?”⁴⁸ From there, they developed the staging of Sampsonia Way in direct collaboration with the residents, including students from the local school.



Hewlett & Kinsley, *Street with a View*

⁴⁷ Brook, “A New Breed of Art.”

⁴⁸ Klein, *A Look Inside*, about 3:20 ff. Artists interviewed by filmmaker.

Both Hewlett and Kinsley both had artistic practices with a performative aspect and employed interventionist strategies that built upon spontaneous situations. Their project, “A Street with a View” was the first artistic intervention within Google Street View, and was highly choreographed, working in collaboration with Google and the neighborhood to produce a theatrical scene. Their effort relied on the participation of countless residents to pull off the several blocks-long intervention, of which large portions remain intact online, nearly 5 years later.⁴⁹ Google’s apparatus moved through a staged environment, capturing a parade and a variety of staged vignettes, like firefighters rescuing a cat from a tree, a sword fight, monumental food items, etc. The seemingly spontaneous cast of characters was rendered as part of a stable archive of a particular street condition, with enough realism in the events that would blur the boundary between fact and fiction.⁵⁰

As an individual line, Hewlett’s practice had previously focused on the truth-value of representation by inserting performances into the public realm without notice.⁵¹ This project advanced that concern, calling into question the accuracy and objective nature of the archive as produced by Google, with the performance now archived as part of the fabric of Sampsonia Way. It required the active involvement of an entire community to make it happen, making them co-collaborators and performers, rather than her previous discrete, solitary gestures in the public realm. In the process, it revealed to Hewlett the potential of the creative act’s ability to strengthen or create community through a shared project that was a joyful experience. This staged event effectively altered her artistic trajectory, which now focuses less on discrete artistic

⁴⁹ Their project website, <http://www.streetwithaview.com/>, provides comprehensive documentation and information about its construction, including a video and commentary, “The making of A Street with a View”. It is evident that some of the streets have since been remapped in Street View, altering the experience of the project

⁵⁰ Hewlett & Kinsey, *Making of ‘Street with a View*

⁵¹ Ibid, at 1:05.

performative interventions and seeks to manifest a different possible world from community interaction through artistic and creative events.⁵²

The project itself was conceived while Street View was still in its early stages, and Google's Street View team was eager to meet with Hewlett and Kinsley.⁵³ Google has long been a supporter of open-source projects, and their corporate environment thrives on collaborative partnerships and openness to innovative ideas. This project revealed the collaborative potential of Google providing infrastructure and technology to creative endeavors as a way to showcase the powerful potential of their tools. Their willingness to incorporate novelty engenders positive reception, and lends support to their stated position of advocating for web democracy, free 'speech' and indexing the world's information, of which mapping every street and making it accessible is a part.⁵⁴ As part of the larger structure of Google and Street View, this collaboration and its staged theatrics moved beyond Google's earlier conceived 'molar' uses of Street View as a mere way-finding device. It created a whole new set of 'molecular' potentialities and interventions within the rapidly developing framework, thereby adding significant movement or segmentation to the digital plane.

Aram Bartholl's work engages digital technology in various ways, from computer to internet and seeks to blur boundaries between the real and the digital. While much of his work directly engages the culture surrounding the internet/computer, utilizing imbedded usb devices to engage passersby "Dead Drops" or creating sculptural works like the aluminum cut "Captchas", digital portraits created through software that generates smartphone 'check in' points in "Google

⁵² 3Arts, *Robin Hewlett*. Interview with the artist.

⁵³ Klein, *A Look Inside*.

⁵⁴ In particular, their company philosophy highlights the need to focus on the user, work towards high level of standard, and all of this can be done while still making a profit. Importantly, their desire to let all information be free and cross boundaries is evident in their resistance to 'censoring' content, including artistic production. See <https://www.google.com/intl/en/about/company/philosophy/>.

Portrait Series”. Other work seeks to directly engage with the networks/infrastructure that have created such a culture. His work “15 seconds of Fame” is his own intervention into the Google Mapping process of Street View, where he was sitting at a café when he saw the Google car drive through the neighborhood, and then proceeded to chase the vehicle on foot. His images are now part of the online archive of one particular German Street, where the running Bartholl is continuously captured as part of Google’s mapping efforts and remains part of the archived fabric. “He understands this work as an answer to the well known moment of 15 minutes of fame... in our days Aram gives everyone only 15 seconds of fame.”⁵⁵

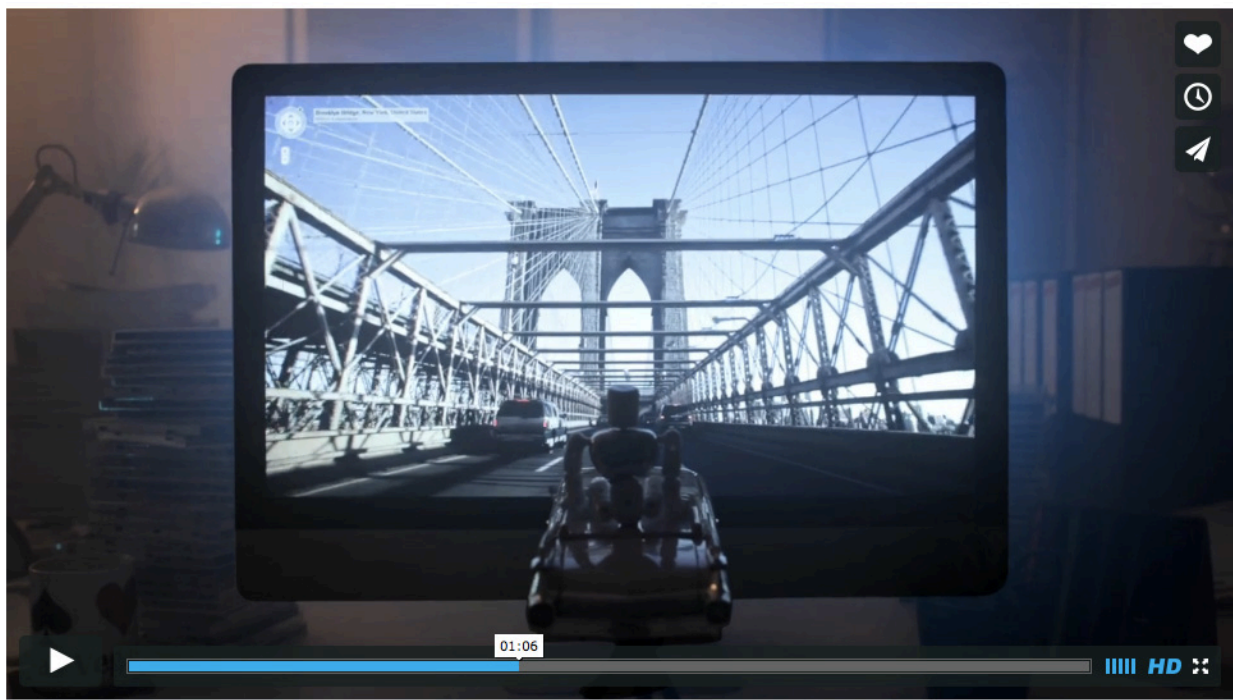
While his intervention was approximately 15 –or so- seconds of running after the van; the media sensation surrounding it also reflected the equivalent 15 seconds/minute phenomena. His gesture, generating its own hype, will soon be forgotten. The residue remains for an unknown period in the online archive. Any random person may encounter the gesture online at any point in time, much like the remnants of ‘A Street with a View.’ The stability of the visual archive and the instability of the narrative are thus separated; each encounter produces a range of experiences within the user, from those that go to seek out his intervention, to those that happen across it unawares. This functions much like performance art; it affects the viewers differently depending upon their complicit-ness and intentionality for reception.

Time-based work

The groundbreaking motion studies of Muybridge and the early invention of the zoetrope led to the invention of cinema, the moving image born from the same celluloid *Address is Approximate* is a short film that portrays a late night environment in an office, in which the cast off toys set off to explore the world, via Google Street View on the desktop. The imaginative

⁵⁵ Kuhn, Aram Bartholl at [DAM].

shooting combines the effects of office props for environmental effect, including office plants animated for the effect of moving through the landscape. The storied adventure takes the toys through the urban canyons of New York, across the Golden Gate Bridge and along the California coast. As part of the narrative line, the story taps human emotions of longing, loneliness and instills a sense of adventure, while also including humorous, transparent moments, such as the rapid mouse operation by a sidekick toy, alluding to the ‘man’ behind the adventure of the toy robot: the rapid-fire clicks that allows the user of Street View to move through the virtual street environment. As a unique creative effort, it went ‘viral’ on Vimeo and YouTube for its creative quality and technical proficiency of stop-motion animation.



Screen Shot, *Address is Approximate*

As a pet project founders Tom Jenkins and Simon Sharpe of The Theory, the project was filmed and produced during the down-time of their commercial production company. With an eventual goal to direct films, their short stop-motion video was offered to the world as a humble first step. Within 2 weeks of the online release, it was viewed nearly 2 million times across both

platforms, earning it Vimeo's award of 'Staff Pick.' Shortly thereafter, they were offered a contract to transform it into a feature length production by a renowned Los Angeles production company. Following a second viral video that uses digital technology in innovative ways, the creators of Address have been hired by Sony for to rewrite and direct a motion picture, *Giants*. Their idle experimentation with Street View and stop-motion photography effectively changed their personal trajectory.⁵⁶

Two years later, Address is Approximate has been viewed nearly 4 million times, 3.2 million on Vimeo, more than 580,000 on YouTube.⁵⁷ With such statistics, the support and enthusiasm is evident. The wealth of comments by viewers on Vimeo fully substantiates this, however. It garnered the attention of co-founder Larry Page, who reposted it on his own 'Google+' page, describing it as 'poetic'. Of more than 1200 comments⁵⁸, the public response is wholly positive, with many describing it as 'sublime', 'genius', 'amazing', and endless variations of those sentiments, including the executive from WME that extended the contract.

Tom Jenkins, the mind behind the concept, attributes its affective capacity to its *universal* nature, "I think because there's no dialogue and we rely 100 percent on the visuals and music, the film can be seen and enjoyed by anybody — no matter where you're from.... And it plays on a universal desire: the longing for adventure we all have deep within us."⁵⁹ By filming the single clicks through the Street View environment, scored to music with toys as the cast, the stop-motion effect affected millions, offering a radically different view of what Street View could do, and the potential that this new media space provides. Or, as the writers of a column of the Washington post say, "Sometimes, when the thirst for travel, adventure and fresh frontiers

⁵⁶ Cavna, "Viral Google Street View."

⁵⁷ Statistics accessed on December 22, 2013

⁵⁸ As counted on the Vimeo page, <http://vimeo.com/32397612>.

⁵⁹ Cavna, "Viral Google Street View."

becomes great, *the best window to a new world* is illuminated by animation,” and “charming a planet”⁶⁰ in the process.

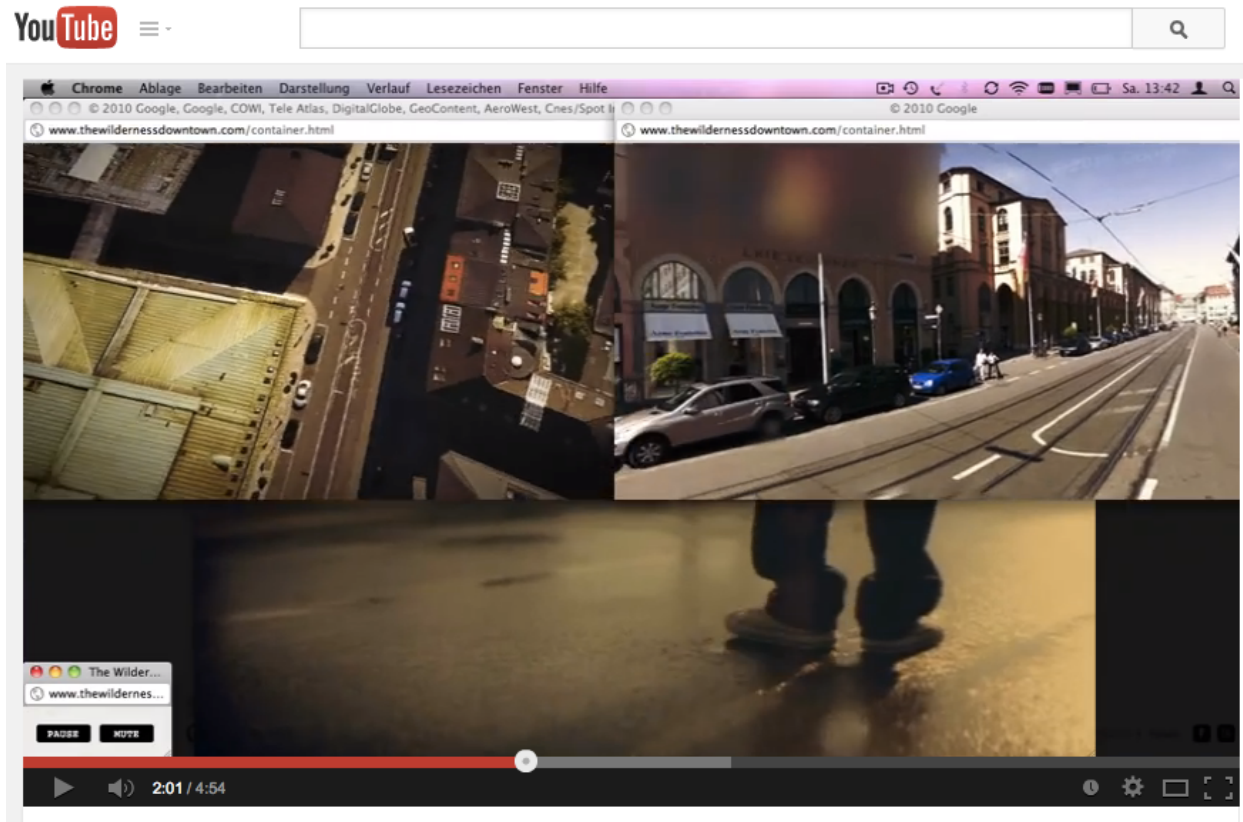
Music video

In 2009, a ‘sneak peak’ into an upcoming Editor’s release *In This Light And On This Evening* ‘hacked’ Street View and created an online immersive environment to preview the new album. The concept incorporated Street View footage with commissioned night photography. Navigating the same map API, users could enter the ‘alternate’ night world of Street View and see the locations that inspired the individual songs on the album. The night photography depicted the band members in various scenic positions, with each location tied to a track of the album and allowed the viewer to stream each track. The band sought a novel way to generate interest around their upcoming release, while utilizing a still relatively new phenomenon like Street View as a platform environment, as the scenes were set in London and Google’s international efforts were still uneven and unfolding. The new media space complexified the type of layering possible for the user experience and allowed the viewer to manage their own experience and order of consuming the tracks.

In 2010, Arcade Fire effectively changed the visual field with a track their then new release *The Suburbs*. The video for “We Used to Wait” brought together the latest technology of HTML 5 and Street View imagery in a semi-customized viewing experience of the online video, entitled ‘Wilderness Downtown.’ Users were instructed to enter their childhood address into the initial web page, and the custom video incorporated previously filmed footage that related to the conceptual content of the song and extracted images from Street View from the users entered location. The series of cascading screens all featured cinematic footage, showcasing the potential

⁶⁰ Ibid., (emphasis added).

of Chrome and HTML 5 and its ability to handle several content streams simultaneously. As content, the song was evocative of nostalgic images of childhood memories; the interleaving of images from individual users' childhood street environment mimicked the fleeting images of memory and how those images come to populate our mental field intermittently and unexpectedly.



Screen Shot (from michaelpraetorius), Arcade Fire, *Wilderness Downtown*

For viewers of the video, this created a personalized experience. The media hype that surrounded it created a cultural buzz in which popular media would simply say ‘*go experience this*’⁶¹ as a clear imperative. Brief descriptions were provided about the visual effect, but the goal was to get users to experience it for themselves and to retain a sense of wonder of the first experience. “‘Video’ is probably actually the wrong term here. Arcade Fire teamed up with Chris

⁶¹ This sentiment is uttered in a variety of ways, with message being beyond verbal description, both in terms of conveying the experience, but also not wanting to ruin the sense of wonder surrounding it.

Milk to create this personalized experience that opens up tons of windows on your desktop and uses your own address to create a rush of images that'll be unique to whoever ends up watching.”⁶² The driving idea of the content was to combine an ambiguous figure running through the streets of the neighborhood of the user's information. Additional screens would pop up that incorporated Earth and Street View images, with specific moments of the video choreographed to creative continuity between the action in all screens.

As illustration, in one section the video footage depicts the hooded youth turning in a circle, filmed from above. In corresponding frames, a window of Street View imagery is also turning at the same rate, in the same direction. Another window shows a more distant view from Google Earth. The proximity of the images working in a synchronized fashion enables the user to seamlessly integrate the action of the video in relation to images of an environment of which they are familiar. The structuring of experience occurs through visual recognition of the environment and through the transference of embodied activity, creating a unique experience in which the viewer experiences a heightened affective response, as the emotional content of the childhood home figures larger than the ambiguous youth as universal representation.

As part of the creative process, producing an experience that transcends a simple visual phenomenon and moves into a personalized experience can be challenging for the director, “One of the biggest struggles for a director is to successfully create a sense of empathy with their characters and settings. Using Google Maps and Street View we're able to tailor the experience to each person. This effect is a totally different kind of emotional engagement that is both narrative and personally driven.”⁶³ While the reception cannot be predetermined, creating the environment that allows individual users to associatively connect with the content of the song

⁶² Breihan, “Watch: New Interactive Video”

⁶³ Hubbard, ABC News, *Conversation: Exploring*

and video is the primary goal. In the increasingly individualized user experience of new media environments, this presents more challenges still. For the numerous viewers that commented on the viewing experience in comment sections, there is an overwhelmingly powerful response of nostalgia and emotion. As on website offered, “**Warning:** The nostalgic lyrics of the song coupled with panoramic views of your childhood home may get you a bit choked up.”⁶⁴ One viewer elected to not visit his childhood home as it was laden with too many bad memories. Rather, he used the address of his Grandmother’s house, and associative olfactory memories were stirred up as a result, “But I like this, it even brings back the smells of Grandma’s house, the stale smell of the basement, the way the bedrooms smelled, the kitchen, always smelling like coffee & detergent, (she was a very clean woman). Very cool this was. Thanks for bringing it to us, I’ll pass this on to friends.....”⁶⁵ As if in support of one of Gaston Bachelard’s theses in the *Poetics of Space*, the spatial association with particular smells is one of the strongest memory associations.⁶⁶

The interactive video was also a media sensation, with media outlets rating it the best or among the top 5 video releases for the year, including *Rolling Stone*. A series of popular media posts resoundingly give the same account, a video that revolutionizes music videos⁶⁷ and shows off what HTML 5 ‘can do,’⁶⁸ As a technological feat, Arcade Fire partnered with Milk and a team of programmers from Google as part of Google’s ‘Chrome Experiment’ efforts. The company’s attempt to advance HTML coding has been met with uneven reception due to its inability to run on some browsers. Google, in the interest of showing its capacity over the traditional, older browsers, has gotten involved with several high profile projects. The Chrome

⁶⁴ Beta, “Arcade Fire,” (emphasis original).

⁶⁵ Ibid., User comments, Bruce R.

⁶⁶ Bachelard, *Poetics of Space*, 13

⁶⁷ Greenblatt, “Arcade Fire Take You Home”; Beta, “Arcade Fire.”

⁶⁸ Schonfeld, “Google Chrome Shows Off.”

Experiments website showcases nearly 800 experiments that are written specifically for HTML 5 and the Chrome browser.⁶⁹

The enthusiasm and buzz around the experiment has extended into many different sectors. Groundswell, a blog that focuses on media, technology, nature and community, examines this new platform and the potential it offers *beyond* tech-inspired projects, under a post entitled, ‘What the Arcade Fire’s Wilderness Downtown Experiment Can Teach Journalism.’ The author states, “The Arcade Fire just teamed up with Google for an incredible new kind of music video that isn’t just about introducing people to new music, but also introducing people to a new way of experiencing the web.” For the author, Josh Stearns, the personalized and emotional affective capacity of the video provides insight into how journalism can continue to be valued and effective in this new media saturated online environment. He posits six new tenets for this new era: make it well, make it local, make it personal, make it together, make it shareable and make it and remake it.⁷⁰

What makes the Arcade Fire video so successful is the high level of production, viewers can personalize it and engage the content in a way unique to them, the level of collaboration is a unique manifestation of the open-source environment and new media space; a virtual community develops out of sharing this experience. This innovation opens the door for ever more innovation and ideas, expressed clearly in Google’s mapping efforts, “*The breadth of stories and discoveries over the last six years inspires us to keep making the product better. We look forward to seeing what comes out of the next billion downloads.*”⁷¹

⁶⁹ Chrome Experiments website. Running tally of ‘experiments’ is prominently displaced on the front page, with 876 currently featured, accessed on June 19, 2014.

⁷⁰ Stearns, “Experiment Can Teach Journalism.”

⁷¹ McClendon, One World Many Stories site, (emphasis added). Here, it is more than patently clear how Google looks to its users as the immanent source of innovation, upon which they can observe and respond with software updates. It is precisely this co-constitution of the digital plane in which Google relies on citizen’s participation and the perceived freedom to experiment by citizens that creates a particularly unique cultural condition.

Google is vocal in their desire for this as a final outcome: they build these innovative tools and want to seem them infect and affect production in unexpected ways. In an interview with ABC news, two programmers from the Chrome team discussed the process of making the project and see it come alive, and the innovative potential that comes from the multi-disciplinary teams pushing the limits of their own practices. As the correspondent posits, “The biggest thing is this is really ‘eye opening,’ and ‘door opening’ too.” The Google team enthusiastically respond, “When we make these things, we hope that people will see them and say, ‘wow, that’s amazingly cool... And, I have another idea.’ We hope that the net result of this is that other people think about what is possible with this kind of capacity, this kind of capability... Because it is an amazing thing when you put different sorts of creativity together.”⁷²

For Milk, it was precisely the intersection of technology and music that they wanted to transcend and give it a personal layer that removed the impersonal layer that technology often gives a project,

“Google Maps and [S]treetview provided a really good answer to a big question I had when we began the project... What could we do, using the tools available, that would emotionally resonate with people, without getting them bogged down in the technology? It’s easy to lose the humanity when you start showcasing tech. Google Maps and [S]treetview embody this contradiction of cold high-tech that can be incredibly emotional when used in the right context.”⁷³

For both the producers and the end users of content, this unique exploration of technology and music and its ability to make the experience personalized produces a moment of deterritorialization, in which the visual field revealed new potentialities and experiences. For

⁷² Hubbard, ABC News, *Conversation: Exploring* at approx. 1:50.

⁷³ Greenblatt, “Arcade Fire Take You Home.”

producers, they were given a view onto the veritable endless potentialities of chaos, getting an image of what ‘HTML 5’ can do when creative minds push its potential. For the end user, the unexpected response of nostalgia was triggered by opening up the space-time bloc of their childhood to new visual and aural associations, generating a destabilized moment. Taken together, the social field was shifted.

For D & G, and especially Deleuze, this is art’s critical role, “this is, precisely, the task of all art and, from colors and sounds, both music and painting similarly extract new harmonies, new plastic or melodic landscapes, and new rhythmic characters that raise them to the height of the earth’s song and the cry of humanity: that which constitutes tone, health, becoming, a visual and sonorous bloc.”⁷⁴ Not only the experience wrought by watching the Arcade Fire video, but for artists as producers like Rickard, working as vector, accumulating images from this new archive; or from Guffey whose subject matter was blown wide open upon seeing the value of Street View as source material; or for artists like Hewlett and Kingsley, whose practices that had quietly engaged the public realm had transformed to directly engaged the public realm and included them in their project. Artists like Wolf, Bartholl and Rafman knowingly play with established art concepts, pushing them to their limit; and the same time, challenging the public’s reception of work and causing a reassessment within their own held definition of art.

While the act of creating is rendering an image of chaos, those reverberations are not held within the artist, rather they remain within the work. The artist is changed by the production, but as a material object, it has the potential of a monument, an object that stands on its own and continues to reverberate through the social field.⁷⁵ In placing the work before a public and peers,

⁷⁴ D & G, *What is Philosophy?*, 176, (hereafter cited as WiP).

⁷⁵ Ibid., 177.

the potential effect is one of transformation. Transforming relations between the producer and the viewer, between viewers, between producers, and to recall D & G, linking up, vibrating in a rhizomatic fashion. “It is in this way that, from one writer to another, great creative affects can link up or diverge, within compounds of sensations that transform themselves, vibrate, couple or split apart: it is these beings of sensation that account for the artist’s relationship with a public, for the relation between different works by the same artist, or even for a possible affinity between artists.”⁷⁶ It is the precisely this transference between the set of relations that shifts the social field, producing next variations or concretizing a sensation into a ‘style’, to be adopted and applied without transformation.

From Here On

The recent exhibition, *From Here On* offers a view of the contemporary state of photography. With the Internet now 20 years old and the digital revolution of the image 10, what now exists is a plethora of visual material. The viral and public natures of this condition explicitly points to this infectious practice in which artists recycle content. The curators of the exhibition, established professionals of the art field, offer a forceful manifesto on this state of affairs, rather than a considered ‘exhibition statement’. Short, pithy and concise, the curators to pinpoint a turning point in photographic practice. They argue that that the present condition requires us, as producers, to think of ourselves of ‘curators’ rather than as ‘artists’ or authors of a work. Moreover, the sheer number of images available on the Internet demands a reconsideration of making ‘new’ images. Most of the artists in the exhibition specifically work with what’s already available, the wealth of untapped resources as being in the public domain, and challenge the notion of private property, in the intellectual sense. The curators alight on this particular shift

⁷⁶ Ibid., 175.

within the artistic plane. No longer concerned with the role of the author, the mythology of the artist, the ‘fair use’ clause that prevents unfettered distribution of content: all these concepts must be rethought today. With the Internet and digital photography revolutionizing the way in which we consume visual information, our understanding and expectation must necessarily adjust accordingly.

As one review of the exhibit suggests, “the curators leave us in an uncertain state, the curators point out that we are just at the cusp of this decisive break, not yet able to see the horizon. Because of this naïve stage in the digital revolution, many questions are left unanswered.” Or as another writer seems to suggest, we are entering a era of asubjectionation, in which the ‘I’ we are accustomed to saying, merely ‘out of habit’ as D & G would say, is becoming irrelevant. “We might say that for this generation of artists “I” is better written in the lower case, as it appears in the prefix of the iPhone or the iPod. It’s an individual voice, but one that is immediately shareable, interchangeable, highly compatible, and as such, hopelessly compromised, alienated, massified.”⁷⁷ Social media and the ease in which we construct profiles for particular situations presents us as malleable selves, one that comes with a potential cost.

Recalling the positive force of Nietzsche ‘all the names of history’ that D & G find so insightful and inspiring, the ‘letting go’ of the ego-artist-creator in exchange for the creative-curator presents itself as a romantic ideal-cum-reality. On the surface, this mode is embraced, but as a practice, the curators posit that it is merely a position, one still wholly laden with ego. And as artists engage in this appropriation of images, and particularly in the case of using Street View images, the artist-as-curator still asserts his imprint as being distinct from other curatorial sites. Wolf and Rafman use some of the same images online, but Wolf is particularly vocal in the

⁷⁷ Gegel, “Neoappropriation Strategies.” Quoting Massimiliano Gioni, “We Are Too Many” in *Younger than Jesus: The Generational Book*, 35.

distinction between the two works,

“ ‘I strongly disagree that mine or Jon’s images are repetitions of each other,’ says Wolf. ‘The only thing they have in common is they were taken from the same street-view page. But the resulting images are very different. It’s as if you would say an image taken by Martin Parr of a beach in Rimini is a repetition of an image taken by Massimo Vitali at the same beach. They both happened to have photographed the same location, but their images are not in the least similar, or ‘repetitions’ of each other.’ ”⁷⁸

However, within his example, these two artists may photograph the same location, but pure difference keeps them distinct. Working with GSV, two artists are working off the identical time/date capture. Ultimately, artists are savvy ‘golddiggers’⁷⁹ and they have discovered a goldmine of source material from which to engage in conceptual creative acts of collecting and juxtaposition.

The curatorial role of the *actual* curators thus offers a philosophical moment in which these five individuals seek to provide consistency to the artistic plane.⁸⁰ The curatorial act is one of framing a set of conditions and forces, the formulation of a concept for the new contemporary condition, the bloc of space-time that is altering artistic practices and how we think about them. Viewers of the exhibit are left to confront their own thoughts and feelings about the value of art, and whether or not this work falls within that particular framework. Together, framing the questions of ‘what does it mean to produce work today?’ and ‘how are we to consider the new surge of appropriated images in relation to the author?’ offers the same concerns that circulate among most of the artists that draw from Street View in their work. The artists who seem to escape that criticism are precisely those that seek to transform the images precisely though the

⁷⁸ Brook, “Navigating the Puzzle.”

⁷⁹ Cheroux, “Time’s Gold,” *From Here On*

⁸⁰ Curators include: *Clement Cheroux, Joan Fontcuberta, Eric Kessels, Martin Parr, and Joachim Schmid.*

artists hand, ‘touching’ the image, to recall Hobson, and leaving a trace of artistic DNA behind.

Molarization

In all, each creative act presents a conceptual ‘leap’ within the particular artists oeuvre, advancing or shifting their individual planes as a result of this new visual archive. While each of the practices might not be considered as conceptually rigorous as some, or may not be at the same level of sustained engagement upon which one builds a large body of work, each of the practices *do* represent a radical departure from the original intentions of Google.⁸¹ What results are newly conceived material practices that not only alter the plane of immanence of the artists, and how we, the end-users, now conceptualize the tool and its potential across a broader segment of the society, but it *also* the plane of organization as conceived by Google. These innovative practices that utilize Google’s tools are not wholly anticipated; when they emerge, however, they advance *not only* the ways in which Google can market or advertise its value, but elicits additional strategies in which to capitalize on the creative forces in order to absorb a greater market share.⁸² What results are a new series of products that build upon the existing infrastructure and enormous financial outlay.

These idle explorations of Google Street View radically bifurcate and proliferate. More recent artistic endeavors are no longer predicated on a single-minded focus of a project or returning with ‘bloodshot eyes’ from taking something to its limit, reterritorializing oneself with a material image of that process. Rather, an idle cultural phenomenon emerges in which

⁸¹ Jackson, “Artist Travels.” Google project manager, Stephen Chau, is on record for stating “Bill’s use of Street View, to inspire his paintings and to create a virtual community of artists, is a remarkable example that we hadn’t imagined but are really excited to see.” This quote is often re-circulated in many of the new stories on Guffey, and Guffey is quite vocal in stating it as such.

⁸² Perhaps exemplified by their unveiling of time machine, which, as previously stated, asserts its position as a comprehensive archive, par excellence.

countless users contribute to a larger movement utilizing GSV as an archive, full of potential. What marks these general practices distinct from the aforementioned innovative practices is the institutionalizing or normativizing the practice of using Street View as simply a tool like any other, much like the transition from the early days of photography in which its use was debated continuously. Over time, using a camera signified nothing in particular; it was simply one means of a creative process.

As these influential lines of flight gain media attention and public recognition, the overall plane shifts in relation to these new circulating practices and discourses. Given that Google actively encourages creative and innovative uses of their tools, an antagonistic ‘appropriation’ of corporate property does not exist as it does with ‘illegal downloading.’ Explicitly, there exists no ‘challenge’ of free speech if the corporate entity replies with enthusiasm, and only stipulates ‘fair use’ by maintaining the Google copyright information. Their support of Guffey’s artistic interpretation of Street View and according the Street View paintings as being his property definitively cleared their ‘vested’ interest in all production stemming from their technical and financial investment. Works produced from creative interpretation of Street View are simply the property of the artist who produced them.⁸³

Within this liberal environment of ‘fair use’; an increasing amount of media coverage of innovative uses; and an ease of use overall, it stands as no surprise that legions of other users would explore the novelty of Street View as an image and take part in larger movements that coalesce. On Google+, one user group called ‘Artistic Google’ invites users to submit ‘tricked out’ photos taken from Street View, using traditional photo editing software like Picasa or Adobe Photoshop. More than 7,000 people have Artistic Google in their ‘circle’, and there are active

⁸³ Guffey is particularly enthusiastic about this perceived coup, whereas ‘trained’ or educated artists gave little consideration as to ‘whose’ work it became through appropriation, an issue long since settled in many instances.

daily submissions by the users, each offering a unique artistic ‘interpretation’ of a Street View image. Similarly, on the public photo-sharing site Flickr, there are countless pages of Street View photo collections, some with a large number of contributors. On YouTube, there are a large number of ‘stop-motion’ experiments using Street View footage, as well as a large following of films and photographs of the stereographic image, built from Street View photographs. And over span of nearly five years, Guffey’s Paint Out has a large following and a consistent participation every month.

Together, this recent widespread adoption of GSV as an artistic tool and archive plainly suggests that the innovative practice of an artist seizing this visual archive has become commonplace. The early line of flight of Rickard or Wolf, or even Hobson, in which the moment of discovery forever altered their trajectory has been transformed into an accepted, idle activity. Within this molar Google group or Flickr site, the intensity of engagement, the enthusiasm, as well as the cognitive shift that resulted from the initial exposure has been radically altered. Rather, it is transformed into an idle activity that warrants little reflection on the part of the producer.

On the one hand, the video produced by Arcade Fire represented the quintessential moment, in which scientists (coders) and artists engaged in the production of a material object, with philosophical activity expounding on the shifting of the plane. On the other hand, this video also presents the quintessential moment in which the creative act becomes folded into the accepted molar practice, made possible with the technical expertise of Google, sanctioning the innovative uses of their mapping APIs, with the hope or desire that more people will adopt them and further explore its potential. It is perhaps in this moment when the three planes overlap,

resulting in a hybrid synthesis that D & G explicitly caution against: the moment in which the creative line of flight is axiomatized and reterritorialized to the social field.

The cultural power that Google exerts over the social field is unmistakable, and as they showcase the many different ‘Chrome Experiments’ that have been produced, they solicit additional projects for their curation of ideas, made possible by their new browser and technical prowess. For producers that are trying to catch a ‘lucky break’, attempting to build a project that might garner the attention of Google could mean millions if acquired, as the volatile Internet and mobile app craze continues to assert.⁸⁴ The supplanting of individual investment to potentially be a part of a larger project with greater reward is both a signaling incentive of open source and a moment of microfascism.

Shifting of the plane

This analytic of the molar, molecular and line of flight thus serve as a useful organizational tool to place the diversity of practices that engage this new visual tool. The robustness of Deleuze and Guattari’s articulation offers a way to both understand the impulses at the individual level of artists, while simultaneously accounts for social norms and conventions that structure and inform those same practices. More importantly, their articulation allows for a description of the kind of movement that results by introducing a new technology into a social field. The new associations that result from adopting the tool inevitably changes the overall conditions, both in terms of what is ‘possible’ and in relation to what has been actualized.

Importantly this ‘change’ often results in a cognitive adjustment, one that may not be immediately apparent at the outset; rather, it is often evident over time. As each individual brings

⁸⁴ Many recent events highlight this unique environment of position, such as the WAZE bidding war, or WhatsApp, the start up that turned down millions because they thought they ‘could do better’; Google’s founders’ own strategy of producing a search engine to sell, in order to fund their research.

a unique orientation, the reception and adoption of the tool is one informed by social relations and past experiences; it resists a fixing of meaning and function as a result. Moreover, Google is particularly effective in encouraging a range of uses, thereby requiring a different approach to understanding this shift.

Following D & G, then, if the present-day society can be conceived of as a plane of immanence or a particular social field, the overall plane can be broken down into micro layers that allow our society to remain open to change, for movement that exists on each layer affects and is affected by the other layers. The molar and molecular lines alter the consistency, producing a combination of a thickening (molar) or loosening (molecular) of the overall plane. This thickening is the process of acceptance by a larger number of individual actors and social groups. This shifting orientation is contextual and is informed by the associations that produce new connections in the social field, a product of the singular, unique manifestations of spatio-temporal situations. The movement generated within each layer creates the conditions for a line of flight to emerge.

Within the plane of composition, artists are subject to the same ‘thickening’ of the plane that society experiences as a whole, resulting in art ‘movements’ that ossify the character of the artistic practice of a particular period. The various practices that engage Street View begin to coalesce along individual molar and molecular lines. Artists invoking Street View as a rich tool might be considered a ‘line of flight’ in relation to the other more general user practices like way-finding. However, taken as an *artistic segment*, the various artists that utilize the tool become axiomatized within the larger plane of composition. As acceptance to this new way of

working becomes subsumed into the larger field, some practices are subsequently labeled as ‘derivative’ or are measured against the dominant figure of the field.⁸⁵

In a different context then, as a self-trained artist who previously worked from photographs, Bill Guffey found Street View to be a rich archive from which to paint.⁸⁶ It advanced his practice, but not his thinking. A molecular line. He continued to paint by way of the photograph, but the field of potential content was radically enlarged. Having a virtual scene in which he could frame his own composition, it provided an equivalent to his own travel photographs. In turn, he initiated a virtual ‘paint-out’ organized around a chosen location within Street View. Artists from around the world virtually descend upon the chosen site, each producing a painting from the chosen location, according to the rules laid out by Guffey.⁸⁷ No longer seizing the creative potential of the tool as a purposeful act, the artists turn functionaries, taking Guffey’s supple molecular line and making it a rigid, established molar activity, sanctioned and organized as a monthly event. Street View thus becomes merely a tool within a larger established structure, as Street View may not hold the same level of potential for all participants. While some artists participate regularly, many are only one-time participants. Most are enchanted by the novelty and efficiency; the ease of participation figure prominently: simply find an image on Street View in the designated location, paint the image in your studio environment, and then digitally photograph and upload to Guffey’s site. Guffey is clear in his desire to remove financial or physical barriers to exploring the world with plein-air painting.

⁸⁵ This is particularly exemplified in a recent post by Brook, “Navigating the Puzzle,” that examined the similarity of images that Wolf claimed to ‘interpret’, in relation to the images interpreted by Jon Rafman, another artist using Street View; while drawing into the fold the websites that have culled the sensational photographs of accidental capture, from which both Wolf and Rafman were aware. User comments debate the merits of the different works and assign such status based on personal opinion.

⁸⁶ Jackson, “Artist Travels.”

⁸⁷ Guffey, “Beginnings of an Idea.”

Considering the proliferation of these discrete movements across the artistic plane, the vertical and horizontal movements that occur reveal a range of implications, as immanent production at the level of individual subject reciprocally defines and is defined by the immanent formulation at the structural level of the social field.⁸⁸ That is to say, individual production as exploration of a new technology and immanent formulations of possible uses at the level of the social field create movement as part of a larger feedback loop. New associations develop out of existing virtual potentialities. This happens both for Google and the ways in which they expand their ideas about ‘what Street View can do’ as a result of seeing creative practices; as well as society as a whole becoming more receptive to the nature of artistic production as a fundamental act, rather than a rarified practice.⁸⁹ At the individual level, these movements also create horizontal and vertical shifts. Horizontal shifts may advance an existing practice forward, in production but not necessarily reach a new plateau of conceptual engagement. The vertical shifts produce a changed engagement or level of conceptual understanding.⁹⁰

Within this framework, forward horizontal movement in an artist’s practice might make it more efficient to produce work; but a vertical shift produces a higher level of understanding. The line of flight both advances their production and changes conceptual engagement, thereby cutting across these potential directional movements, with the angle of movement neither predictable nor reproducible, thereby revealing its true potential to destabilize the social field. Even though production is a discrete material practice, reception happens across a larger social field and offers

⁸⁸ Krause and Rolli, “Micropolitical Associations,” 247-9.

⁸⁹ Google Plus, Artistic Google page. This is particularly clear in the Google group that has formed that is organized around manipulating Street View photos. A variety of contributors upload their artistic ‘interpretation’ of street view using digital software. More than 11,000 followers belong to the group, though it is unclear how many of those followers contribute to the visual efforts. Accessed on June 19, 2014.

⁹⁰ It is important to note that for Deleuze and Guattari, with reterritorialization, the territory, loosely defined, is always more deterritorialized than the previous state. In other words, after a cognitive shift, regardless of the level of significance, we cannot return to a state prior to that shift in understanding. The plane from which we engage the world has been altered through this event.

the most potential to affect change. While Deleuze is particularly interested in artistic production as means to understand the societal tensions within which artists are working, I would argue that the field of reception and the aesthetic experience as it relates to the line of flight and the moment of deterritorialization offers perhaps the most profound ability to affect change at the social level. While this happens at an individual level, a different orientation to the world can engender small deterritorializations in our daily lived experiences.

In that spirit, *retaining a sense of wonder* like Doug Rickard, offers a productive way in which to adopt new tools, rather than being seduced by the efficiency they offer, like the machinic production of the virtual paintout. Short-circuiting our engagement with the world through which we move, thereby reducing it to a mere representation rather than allowing pure difference,⁹¹ is one of the many dangers of relying on this representation. The productive potential of the line of flight has the ability to radically alter these conditions for a new orientation and thus another possible world. “The poet, on the other hand, is one who lets loose molecular populations in hopes that this will sow the seeds of, or even engender, the people to come, that these populations will pass into a people to come, open a cosmos.”⁹² It is the very nature of the ‘encounter’ for Deleuze that has the potential to rip us from our complacency and habitual practices.⁹³ And with it, a new kind of micropolitics that allows us to shed the molar configuration of fixed identification in favor of molecular, ephemeral connections that continue to circulate in the social field, continuously forming new associations and connections in the process.

⁹¹ Deleuze, *Difference and Repetition*, 139, (hereafter DR).

⁹² D & G, *ATP*, 345.

⁹³ Protevi, *Political Affect*, 90.

02_Photographic Line : Research Practices

While the previous chapter explores the creative potential of Street View for artistic practices, the current chapter focuses on the use of Street View as an objective, indexical document from which to produce knowledge. As a general theme running through the present work, the focus on the urban as a raw material is extended by the urban as an object of study. As Street View is a photographic mapping of the built environment, focusing on practices have explored the potential of Street View's comprehensive visual archive to augment their study of the built environment offers an important opportunity.¹ Google's comprehensive coverage of urbanized environments presents researchers with an additional tool or layer of data in which to augment or facilitate existing research, either to increase efficiency or as a way to automate visual information, thereby producing knowledge and yielding understanding at a larger social scale.

Their use of the photograph as an indexical document in lieu of the physical environment as empirical object enables them to conduct research and produce knowledge through synthetic practices based on a two dimensional objective representation. Each of the individual studies or experiments expand upon existing modes of research and seeks to implement this visual archive as a new mode, updating current methods of data collection of street audits or using the computing power of algorithms to generate new understandings about environmental perception. As the researchers conduct studies to determine its use value in both cost and facticity, they issue reports and publish findings to legitimate their study. Placing a new function onto their plane of reference, the published findings establish these molecular experiments as molar practices,

¹ This opportunity is even more clear with Google making previous versions of Street View available through Time Machine. Researchers can see how a particular area has changed over time, without having done the research themselves.

reproducible at a larger scale with a high degree of accuracy. So while artists seek to restore chaos to the plane, scientists seek to install order through adding functions to the abstract points of reference. The peer-reviewed process of publication of these findings fully establish this practices as a legitimate, sanctioned form of knowledge production. The inherent tension is this: this single platform is a creative tool *and* objective representation.

Systematic Social Observation

A variety of research teams have examined Street View as an efficient tool to conduct audits of the built environment. This practice of systematically observing existing conditions has a longer history than the present use of Street View. With the multiplicity of research projects that focus on the city, drawing from the visual landscape thus provides an opportunity to analyze the physical forms in relation to the attendant disciplinary concern, be it issues of health, poverty, crime, real estate values, etc. The Chicago School established the empirical practice of observing the public realm, and in the 1970's, the Social Sciences attempted to systemize this observation, in a concerted effort to increase the validity and reliability of the observation. The first 'Systematic Social Observation' (SSO) was developed by Alfred J. Reiss in order to systematically observe and record phenomena according to explicit, established rules that permit replication across a variety of environments. Natural social phenomena, defined as being 'events and their consequences, including properties of organization, can be observed more or less as they occur.'²

The limitation of conducting such a study became apparent as community members reported on subjective phenomena, thereby calling into question the accuracy or 'objective' data that resulted. Trained researchers conducting SSO's have an ability to observe with more

² Sampson and Raudenbush, "Systematic Social Observation."

objectivity, given their distance from the neighborhood and the psychological constructs that influence perception of the neighborhood condition. Since the first development of the SSO, increasingly, researchers have acknowledged the need to cross reference data from SSO's with independent data of census and GIS data, as well as with the suite of observation tools that may be employed by a variety of observers, whether at the community or professional level. Cost thus emerges as a primary deterrent to conducting a comprehensive observation, while failure to conduct a thorough study can lead to faulty findings that result from correlating data and phenomena without taking into account a range of socioeconomic and structural forces.

Given the importance of the physical environment in many of the aforementioned disciplines, conducting a physical audit of the environment remains a critical component of any SSO. In 1998, sociologist Robert J. Sampson published an influential study that sought to dispel the 'broken window theory' advanced by James Wilson and George Kelling. The original theory advanced a convincing argument that the physical disorder of the built environment was a causal factor in increased crime rates.³ Sampson looked at a variety of independent data, from both community based survey as well as census, crime statistics, etc., in order to determine whether there was a strong correlation between disorder as being a cause for crime, or rather, if the disorder was evidence of crime. The critical finding of the study disengaged the causal element of disorder and crime, and sought to establish individual and neighborhood agency as purposive social action as being a contributing factor in presence of crime acts.

One of the novel and unique approaches the study employed was the use of videography. A systematic filming of the environment was first conducted, with two video cameras recording both sides of the street simultaneously, with visual observations made at the same time. By building a stable, visual archive, coding and interpreting could be done at a later date. This

³ Ibid.

allowed for multiple research interests to draw from the archive, as well as have a documented condition in which to compare the environment at a later date.

While the intellectual goal of the study was to propose an alternate theory of the effects and consequences of a disordered environment in relation to an entrenched acceptance of the ‘broken window’ theory, the study also sought to establish the method of videotaping as a timesaving measure in which to conduct a visual analysis of the environment. Today, changes in digital technology provide the ability to view and store video. It has become more economical and enabling a broader use for analysis at a later date. It allows a compiling of raw data over a short period of time, compared to the physical audits conducted block by block, drawn out over a longer period, with environmental factors attributing to difficulty in gathering data. Furthermore, constructing a visual archive allows researchers to analyze elements of a given neighborhood for much longer than would be possible if the audit was conducted in the field. Both methods of observation suffer from a temporal bias, however. Activities of the neighborhood fluctuate throughout the day, and it was determined that video posed no greater bias than observations on foot. In both instances, neither were conducted during evening/dark hours. Sampson’s study convincingly made a case for conducting a physical assessment based on a visual archive and has served as a benchmark for best practices when conducting SSOs.

Criminology

Sampson is part of a larger disciplinary field that studies visual cues of the built environment in order to assess levels of poverty, homelessness, and criminal activity by observing items like graffiti, random shopping carts, dilapidated structures, vacancy, among others. At the same time, looking for positive indicators that demarcate a healthy community are

equally important, such as the presence of parks and street trees, absence of litter and distressed facades. As common practice, an initial assessment will include a tour of the community, looking for these indicators. Within this context, an international and cross-institutional team of researchers in child psychology published a new study that looks at the efficacy of Google Street View as a means to efficiently gather first impressions about a given community.⁴

Working directly with Sampson and his videotaping study, this study extends the methodology by looking at Street View footage, rather than creating their own visual archive. An ongoing study focusing on the health and environments of children of affluent and poor families served as the starting point for the virtual study. It looked specifically at how the physical environment shapes antisocial and pro-social behavior and as a healthy weight indicator. The actual built condition was surveyed for standard items; an i-Tour survey protocol was developed to use with Street View, building off of existing survey parameters.⁵ The findings were then compared against the existing compiled data from the ongoing study in order to gauge the level of accuracy between the physical world and its online representation.

The findings reported a high level of agreement for physical disorder, thereby determining its use value as an efficient, cost-effective tool to augment systematic observation studies that assess level of sociability and obesity of communities. Limitations were reported in relation to the uncertainty of capture date, as the time/date stamp for reference is unavailable, and the inability to view smaller visual cues prevents an accurate assessment in some instances. Given that sociality is a key measurement for the study, one unique drawback specific to this study was the inability to ascertain activities of individuals, as captured by Google. The inability

⁴ Odgers, et al. "Systematic Social Observation."

⁵ As defined within A Classification of Residential Neighborhood (ACORN), which draws upon more than 400 census variables, including socioeconomic status and geo-demographic discriminators. These include age, educational attainment, household composition, income, among many others.

to determine collective efficacy, intergenerational closure and child behaviors leaves a critical gap in a study oriented towards determining such relationships. Undeterred, the researchers hypothesize the capability of incorporating social networking tools into a study to cover these aspects.⁶ Ultimately, the need to stay current with technology in order to advance research and theorization of the social environment is a driving factor in conducting these exploratory studies.

Street audits

Citing an increase in scholarship that successfully links the quality of the built environment in relation to physical activity and its direct impact on health factors, planning, epidemiology and public health researchers are increasing their efforts to provide a structural account of environments in order to determine what implementations may be executed to facilitate healthier transportation choices for the inhabitants. Understanding the current street conditions and amenities is a necessary first step. While GIS is growing in its capabilities, many of the important qualitative aspects of a given street are not rendered in full by existing data sets. Creating these data sets is a time-consuming and costly effort. When Street View was released in 2007, independent research teams saw the potential of this new visual archive and conducted independent studies to determine the efficacy and reliability of using Street View to conduct virtual street audits of neighborhood street conditions, potentially replacing the costly and time-intensive physical audits.⁷

Hannah Badland, et. al. conducted street audits to assess reliability of determining cycling and pedestrian features of four Auckland, New Zealand neighborhoods.⁸ The study conducted a physical and virtual audit on all four sites to determine accuracy, with care taken to

⁶ This effort then raises a host of other digital literacy and access issue of what geographers call ‘the digital divide’.

⁷ Of the four street audit studies included here, three cited Sampson’s study to legitimate their use of Street View.

⁸ Badland, et al., “Virtual Streetscape Audits”

avoid same-site bias. Phillippa Clarke, et. al., conducted a virtual study of Chicago neighborhoods, based on a previous study conducted 5 years prior.⁹ The study focused on the amenities of the area, recreation, food and commercial land uses, as well as instances of physical disorder and street condition. Bronwen Taylor, et. al. conducted a study of public/open green space in Sydney, Australia, using a combination of Google Earth satellite footage and Street View footage, measuring degrees of shade, irrigation, pedestrian paths, and neighborhood environment. Virtual results were compared to a physical observation independent of the virtual study.¹⁰ The study by J. S. Wilson et. al. was perhaps the most rigorous. Simultaneous audits of Indianapolis and St. Louis were conducted with archived imagery, a new visual archive by videographers, and virtual audit using Street View, focusing on land use, sidewalk and shoulder characteristics, street quality and transportation.¹¹

In each of the studies, an established physical audit tool was used to assess the Street View version of the environment. Slight modifications were required to make the tool appropriate for the virtual realm, as some of the qualitative factors that are typically measured in the physical realm are not measurable in the virtual realm, such as street noise, pedestrian activity, traffic speeds, etc. In nearly all of the studies, there was a high or near perfect concordance with many of the larger, stable elements of the streetscape, like the presence of sidewalks or traffic signals. Many of the ephemeral or smaller elements like graffiti or street furniture exhibited a lower concordance. Graffiti or the presence of litter changes over time, while smaller elements like street furniture or window boxes are more difficult to discern from the viewing angle of Street View. Sidewalk widths and its conditions were more difficult to assess, given the viewing angle. From a cost saving perspective, all but one study reported time

⁹ Clarke, P, et al, "Using Google Earth."

¹⁰ Taylor, B.T, et al, "Measuring the Quality."

¹¹ Wilson, J.S, et al, "Assessing the Built Environment."

savings when conducting the audit. In most instances, the time savings resulted from travel time to and from various sites, rather than an actual time savings of observed elements. In the Wilson, et. al., study, they reported an increase in time to conduct the actual audit compared to their other methods. Of all the studies, however, the Wilson study reported the highest level of concordance, which *suggests* additional time spent studying the virtual representation may yield more accurate results.

All of the studies expressed uncertainty over the time/date stamp to ascertain the age of capture; without knowing this, the accuracy of the audit is questionable. The temporal variations over the course of a day or even the year reveal different streetscapes. Google often captures urban streets when traffic is at a minimum, either early morning or early evening, and the resulting capture may not accurately portray the street environment, such as traffic or pedestrian activity. Given its static visual quality, qualitative elements are not conveyed, such as the street noise, frequency of pedestrian activity, the olfactory smells of the neighborhood, etc. While some of these elements are temporal or ephemeral, a physical audit of a street scene traditionally includes several 10-minute pedestrian counts, indicates the presence of street vendors, and the sound quality of the overall environment. In all instances, this generally contributes to a significant assessment of the overall street character.

Despite these limitations, each study concluded that the level of accuracy made the use of Street View an important cost-saving tool to be incorporated into a larger study, especially during research design, when larger areas may be assessed at the block level with a reasonable degree of accuracy. Its particular strength allows researchers to assess a variety of environments in quick succession, which can be important when comparing other urban environments in order

to improve local conditions by implementing elements from a variety of successful urban contexts.

Within all of the street audit studies, there is an unquestioned reliance upon the photograph as a stable representation or index of the built environment. Its objective nature is not questioned, the accuracy is only measured against the stability of the environment, not the clarity of the image.¹² The universal ability to ‘read’ the image is also taken for granted, as the habitual phenomenological interpretation works effortlessly in the background. Its inability to determine small scale elements occludes many of the important details of the world through which we move, ones that defines a sense of place, engenders the perception that one street feels ‘safer’ or ‘better’ than another, based on atmosphere and subjective intuition more than any quantitative element. That the larger stable elements of the environment made the representation *effective enough* to warrant being incorporated into studies with little effort is cause for some concern. Is it the solid, stable objects of the lifeworld that are important, or is it individual utterances, the haecceities, that give the world the variation necessary to discern one place from the next?

While the image is a direct index of the environment, it is one fraught with contingencies: subject to lens quality; lighting conditions; an algorithm that stitches together the environment effortlessly. These contingencies are directly subject to the established ‘best practices’ of the mapping division, which takes place predominantly during times when traffic is the lightest; when the ‘unemployed’ might be caught on camera; when the disproportionate ‘productive citizens’ are off the street and at their desk. As unique images, these contingencies present no

¹² This is perhaps dramatically highlighted by a recent Internet buzz around a ‘discovered’ image on Street View that appeared to capture a murder taking place. Authorities were alerted, investigation ensued, only to discover that it was an elaborate staged event for the archive, See Cullinane, “Murder on Google Street View?” There have been countless stories like this, including a woman giving birth, and apparent ‘break in’ attempts.

problems. Google's cars objectively capture a visual field at a random day at a random time.

Assessing environments and publishing findings, however, functions in a different register and has greater potential impact in the social field, via the legitimation of 'peer reviewed' publication and thus sanctioned as a molar activity.

While GSV might provide a mostly accurate assessment of the built condition, at best it represents an approximation from which to begin to conduct research. Given the stability of the larger elements, this approximation may be mostly accurate. Rich ethnographic and phenomenological research has established that the quality of the urban environment cannot be reduced to numbers of elements counted. The actual health of the neighborhood can be measured in a variety of ways. The qualitative layer may shift understanding in unexpected ways, as opposed to the physical appearance that contradicts behavior patterns. In other words, while there may be sidewalks present, it does not ensure there are places of interest to walk *to*, or that residents feel safe to use them. In a similar vein, it may be the street furniture or window boxes that give a street a quality worth preserving. The levels of concordance thus offer a slippery slope. Giving undue weight to stable structures and missing the small level of detail that enables pure difference to be considered. An approximation should not suffice.

Environmental Perception

Issues of representation and environmental perception run through all of the studies outlined above. A group of researchers from MIT developed 'Place Pulse' to examine the environmental perceptions of ordinary citizens, via an online interface that invites a comparative polling of two urban images. The images are randomly selected from four different urban environments. The qualitative line of questions seeks to go beyond the established 'disorder'

element of the Broken Window Theory, and expands this to a larger array of characterizations. The research team argues that there has been insufficient research that brings together perception of the built environment and its actual sociological condition.¹³ Numerous studies have been conducted in relation to the form of the built environment as a marker of aesthetic experience and value, while the social sciences have examined the correlation between economic and sociological concerns of crime, poverty, education, etc., few studies bring these two concerns together. The objective of the study is to develop a meaningful way to quantify environmental perception to correlate conditions.

In an effort to quantify perceptions of partially conspicuous conditions, the researchers established four test cities and bounded areas for image sampling.¹⁴ Users are asked to rate two scenes in comparison, with one image voted as a winner or loser of the question, with a third option available to assess the images as equal in quality. The net results are that with additional evaluative dimensions of the image, urban perception has a high degree of accuracy when discerning issues of safety and represents a strongly perceived aesthetic content. Intuitively, the researchers argue these additional dimensions could be used to explore perceptions of entrepreneurship, civic engagement and educational attainment. In other words, the perception of the urban environment can ascertain notions of positive and negative correlative aspects, rather than merely looking at ‘disorder’ as indicative of crime.

While the findings suggest a high level of accuracy in relation to the perception of the image, the research is not looking to draw any causal assessment, in contrast to the Broken Window Theory. Notably absent from their assessment of literature is Sampson’s research,

¹³ Salesses, Schechtner and Hidalgo, “Collaborative Image of the City.” Stated position of the authors in the published findings.

¹⁴ As of June 16, 2014, this has since been expanded to 56 cities. The original 4 cities of comparison and the quality of images has created a different plane of consistency than the original study.

which precisely seeks to bridge the gap between the urban form *and* socio-demographic concerns. Sampson set out to disprove the causal aspect of the Broken Window Theory and to establish it as one key characteristic rather than a determining characteristic. Sampson specifically notes that social relations are not evident in the image of the urban environment, which is *precisely* a key determining factor that indicates a correlation of crime.

The screenshot shows the Place Pulse website interface. At the top, the header includes the logo "PLACE PULSE" with a click count of "728,049 clicks" and navigation links: Vision, Rankings, Maps, Data, Papers, About. Below the header is a poll question: "Which place looks more beautiful?". Two Google Street View images are shown side-by-side for comparison. Below the images, it states "For this question: 122,723 clicks collected" and "Goal: 500,000 clicks". A button labeled "SEE REAL-TIME RANKINGS" is present. Below this is a table showing the top and bottom ranked cities.

RANK	CITY	CLICKS	TREND	RANK	CITY	CLICKS	TREND
1	Atlanta	8846		54	Taipei	3145	
2	Washington DC	2128		55	Rio De Janeiro	8059	
3	Singapore	5896		56	Belo Horizonte	4328	

At the bottom of the page, the footer contains: © 2014 Macro Connections | MIT Media Lab, Admin Login, and Comments / Questions? Contact us!

Screen Shot, Place Pulse, "Which place looks more beautiful?"

One finding of their report that stands out is the spatial distribution of perception that exists between 'good' and 'bad' neighborhoods. The perception of inequality is larger in New York and Boston, whereas the assessment is more stable in Salzburg and Linz. It remains ambiguous from their published findings what precisely this constitutes in real terms, "we showed that the inequality of perceptions helps explain the location of violent crime in a NYC

zip code, even after controlling for income, population, area and age.”¹⁵ What the researchers hope to accomplish is a methodological tool to bridge some of the perceived gaps between lines of research, between architecture/planning and social science, “there is a strong need to create quantitative bridges that can help us link urban perception with other social, political, economic and cultural aspects of cities.”¹⁶

Ultimately, what the study *does* validate are held assumptions and prejudices about the built environment and the way in which we read the image and assess it for content.¹⁷ The qualitative difference of the sample images is randomized from the established spatial parameters of the study areas. While the comparative strategy is radical in unmediated image comparison, the value gained from voting on winners and losers of a particular environment is questionable. This questioning occurs before even considering the appropriateness of the comparison in question. Should a “lively” environment of two radically different urban zones be viewed in the same light? Can a ‘boring’ environment be accurately discerned when the Google car often captures streets when pedestrian count is at a minimum? What defines boring, and how might we control for cultural differences? Within the random image sample above, the image on the left resembles an abstract, fine art photography shot, while the other is a clearly defined street environment. What sort of knowledge is produced from comparing two such images?

Like the above examples, the variance of image quality and atmospheric conditions play an important role in reception, leaving the study open to criticism. Of the four cities, Street View is the source image for the US cities, while the images from Austria are manually compiled.

¹⁵ Ibid, 11.

¹⁶ Ibid.

¹⁷ This is perhaps most evident in the media coverage that reported on the study and the level of discussion that resulted from it. Simultaneous assessments of ‘surprise’ at the accuracy as well as about the misreading, depending upon the question content. Missing from the coverage were questions that focused on considering whether it was even a good idea (or not) to use the photograph to make such judgments.

Google automatically captures images according to the schedule, with consideration of weather constraints, like heavy downpours or snowy conditions. In comparison, the manually collected images show a dramatic qualitative difference. The weather and temporal conditions were likely considered, given the manual process of photographing the scenes. The overall lens quality is distinct: the images are sharp, the color of the environment more vibrant, and subjected to less processing by algorithms that blurs and compresses the image size.

The images are subjected to additional processing, with algorithms removing duplications and smoothing gaps between frame sequences.¹⁸ The urban images from Boston and New York are uneven in their quality, with lens quality and seasonal variance key factors in the ‘optimistic’ quality of the image. Areas subject to greater structural changes are more frequently updated, with less ‘desirable’ or economically ‘stable’ locations remaining online for a longer period of time, revealing the discrepancy of capture dates. Does the time lapse or image quality attribute to ‘perceptions’ of safety or liveliness of the built environment? Is there a facile discounting of ‘weather’ or ‘age’ within the image, and to what degree does it inform subjective and unconscious formations of opinion?

The scatter shot plotting of responses shows an amorphous collection or ‘smear’ of common responses, with a whole host of ‘outliers’ that extend the results to a larger field. What are we to make of these outliers? Are they statistical anomalies, are they ‘pranksters’ that seek to subvert the dominant visual order? Are the merely individuals that have a different way of ‘reading’ the image? The researchers maintain that further work could be done, “future studies might also explore the perceptual biases associated with the measurement technique presented in this paper, as well as support the development of techniques that can help identify the features

¹⁸ This algorithmic processing generates headless or severed head/figure arrangements, produces duplication of a figure walking, among others. These ‘sightings’ often serve as fodder, or in the case of one artist, a persistence to understand the ‘nature’ of a reoccurring figure, replete with philosophical inquiry. Cf. Allen, “Walking Man.”

that determine the evaluative responses recorded.”¹⁹ It remains unclear what level of critical assessment has been considered in relation to the research design, as well as what ‘proof’ is being sought and verified in relation to the image.

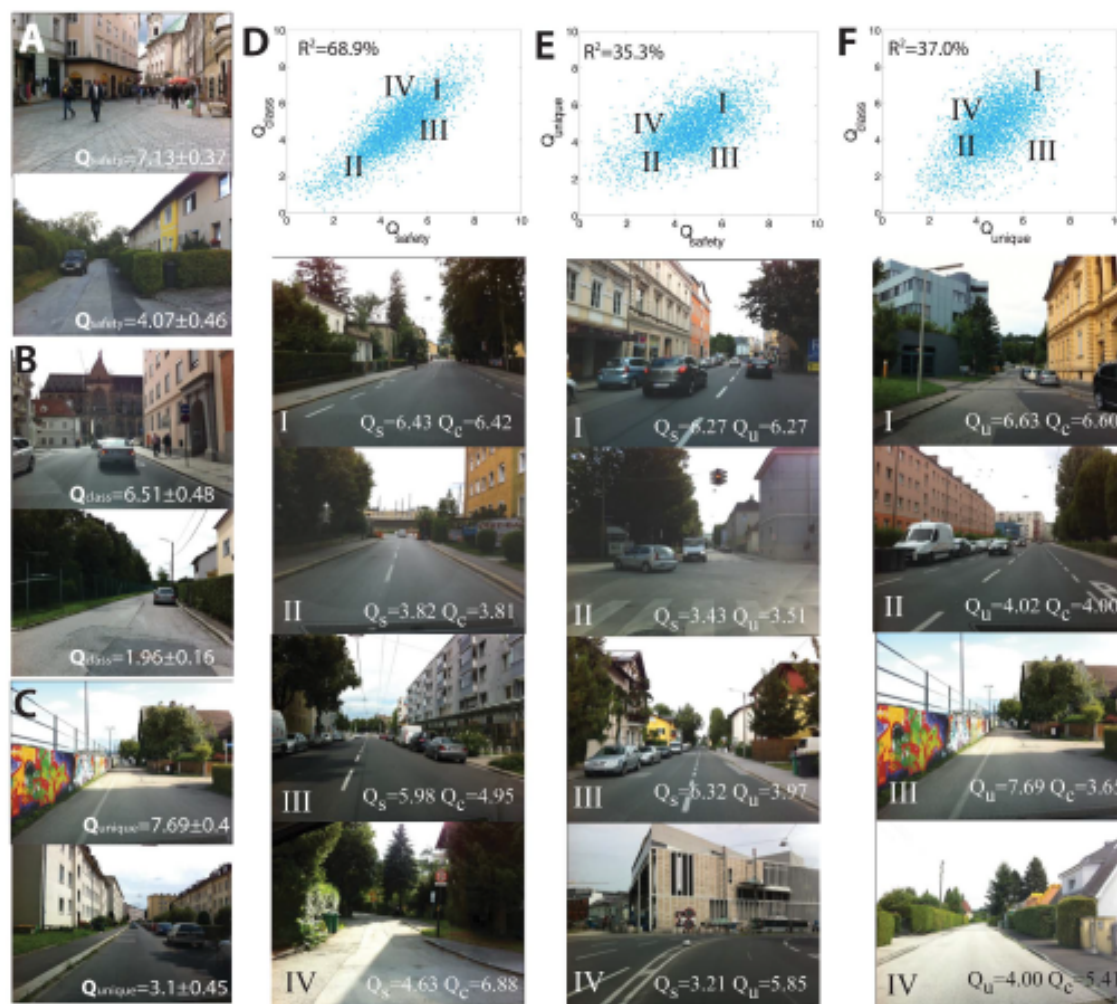


Figure 3. Identifying places associated with different urban perceptions. A. High and low scoring images for safety B. social-class and C. uniqueness. D. Scatter plot of Q-scores for safety and social-class with four examples illustrating images with different combinations of evaluative criteria. E. Same as D, but for safety and uniqueness. G. Same as D, but for social-class and uniqueness. doi:10.1371/journal.pone.0068400.g003

published findings, “Collaborative Image of the City.”

¹⁹ Salesses, Schechtner and Hidalgo, “Collaborative Image of The City.”

Participatory Planning

Baron Haussmann's plan of Paris and Daniel Burnham's plan for Chicago are often cited as two points in history in which the discipline of planning established itself. Both plans sought to reorganize the urban fabric under the guidance of a 'master plan' of an existing urban form. Haussmann's Paris widened boulevards to create scenic vistas, created an architectural hierarchy of form, reduced the diseased structures and outdated infrastructure, while at the same time, the reorganized streets of Paris intended to reduce the ability for organizing factions of the public by increasing street widths that could be quickly cleared by strong military force. Burnham's 1909 plan for Chicago seized the opportunity to reimagine the city after the Great Fire of 1871 and the success of the White City of the World's Fair in 1893. His plan called for integrating current practices of planning in light of the unrelenting force of industrialization and growing transportation needs, while at the same time, it created parks, cultural and civic institutions, as well as lakefront redevelopment. Together, these sweeping plans for a metropolitan era ushered in the planning as a unified discipline, building upon the rational Cartesian grid, ordered infrastructure and housing segregated from industry.

The 'master plan' brought together several impulses or desires: the choreography of urban forms, the cultivation of a coherent image, and improvement of the overall environment and infrastructure. Two key developments emerged from this unique environment: top-down institutionalization of the modern, rational technocratic agenda, and the bottom up efforts of citizen engagement of the City Beautiful movement. The establishment of modern planning was formulated by CIAM in 1928 in the Charter of Athens and promulgated by subsequent congresses until the late 1950's. It institutionalized the technical role of planning under the

purview of national and state governments.²⁰ The rise of modernism solidified rational planning in large urban development schemes, and included broad sweeping ordinances and regulations of contemporary life, including minimal housing standards, zonal organizations, transportation schemes, like street grids, standard widths and turning radius. Zoning regulations sought to ameliorate the effects of noxious industries from residential districts; in the process, overlaying new zonal categories onto held property produced the first landmark lawsuit in which a private party sought to recover ‘damages’ as a result of this new constraint placed on property.²¹ Massive projects of the 1950’s and 60’s continued to build off of the rational, modern tenets with new frames of efficiency, resulting in large redevelopment slum-clearing projects. The construction of the freeway network through eminent domain seized land from neighborhoods with the lowest land value; those with the least amount of ‘power’, or agency and financial ability, were often displaced into vertical towers.

In tandem, a cultivated interest in an ordered and aesthetically pleasing environment also emerged in the early 1900’s, following Burnham’s comprehensive and visually cohesive representation of the urban realm. The City Beautiful Movement was an aesthetic and social ideal that attracted the interests of many professionals and constituents, including private citizens. Neighborhood organizations sought to improve their environment through small-scale plantings and being involved in the overall reorganization of the growing urban fabric. This grassroots effort of engagement and improvement is a key element of the tension of private development of land in relation to the social character of the land and the needs of the citizens.

²⁰ The implementation in American cities versus European cities had different emphasis for clear reasons- the historic fabric of much of Europe limited the potential scope of the CIAM tenets, while land in America was plentiful in a resource-rich country.

²¹ *Village of Euclid v. Ambler Realty Co*, 272 U.S. 365, 1926. As a landmark, precedent setting case, the ability to enact zoning restriction as an element of top-down planning efforts to exercise police power for public safety and interest has also marginalized some voices that do not have the ability to persuade land use changes as others. The need for public participation in zoning changes thus stands as a negotiation of a need to negotiate the social character of the land and the needs of property owners to develop property to its highest, best possible use.

With private financing and community effort, the effect of collective action was writ large in affluent neighborhoods in urban areas.

This early precedence of bottom-up involvement reemerged with a growing resistance to rampant rational planning of Modernism. Jane Jacobs influential book, *The Death and Life of Great American Cities*, invoked the critical element of ‘community’ required for healthy cities and streets. It called for a different level of investment, one no longer focused on the aesthetic form of the environment, but rather the health of the community and their emotional and intellectual investment of their surroundings. In Greenwich Village in New York City, active engagement and forming coalitions empowered the voices of citizens, in the process pitting themselves against the capitalist machine of private development and governmental large scale urban renewal of Robert Moses. The expressway plan was envisioned by the rational, technocratic planner, adhering to codes, ordinances and transportation concerns, with little concern for the detrimental effects to the neighborhoods and its residents. It was met with too much resistance and was cancelled, standing as a strong testament to the efficacy of citizen organizing.

Participatory planning, or the Communicative Model,²² emerges as an alternative to the private property/special interests of developers, in which concerned citizens and affected constituents work together to articulate the needs of the community in relation to the force of development. Consensus of goals and actionable plans are made possible by way of the planner as facilitator. No longer enacting the ‘big plan’ according to code, the planner seeks to build consensus among the different interests in order to create a more sustainable and equitable environment. Participatory planning thus focuses predominantly on giving voice to the disadvantaged: socially, spatially or economically. Focus groups and public hearings are

²² Fainstein, “New Directions.”

common forums in which to engage citizens, design charrettes encourage aesthetic feedback, while newsletters and citizen task forces continue the communication throughout the planning process. For small isolated neighborhood projects, this method of communication can be highly effective in giving citizens a voice. As projects cross various political jurisdictions and diverse socio-economic neighborhoods, the complexity of the competing, constituent voices to be heard grows exponentially, often revealing the limits of this method of planning. The ability to measure outcomes and dilution of goals is a direct outcome of the complex nature of the planning process, the forces of development, the inequity of private property values and the needs of citizens.

Communicative Planning continues to be a key planning method and many governmental agencies now explicitly require community involvement on any large infrastructural development. Key failures of communicative planning efforts remain. Susan Fainstein succinctly highlights some of the practical deficiencies, of the most important are the movement from communicative information capture from citizens to concrete incorporation into the overall project and effectively engaging the sections of the population most likely to be disenfranchised in the planning process.²³ While the movement towards actualizing feedback can be rectified through realizable strategies and better defined expected outcomes, the tension of development goals in relation to the social character of the land remain. The power struggles between the different constituent groups and interests are less resolvable, and the question inevitably remains, ‘whose voice is ultimately heard?’ Fainstein points towards a ‘weak’ consensus, in which arguments of the multitude are diluted and continued support for original goals/outcomes increasingly tenuous. Groups with more power are quick to forgo some of the earlier goals that were mutually agreed upon, but without the same level of conviction. What becomes critical is to

²³ Ibid.

find a means in which to capture the myriad voices and interests efficiently, without diluting the range of interests in the process.

Engaging some populations continues to be more difficult, including the youth, households where English is the second language, and those that are not familiar with the planning process. The social and financial elites continue to show interest in civic issues, from the beautification projects of City Beautiful to present day infrastructural projects that affect their daily environment and property value.²⁴ The need to reach all potential constituents remains, while the efficacy of such efforts is difficult to measure. In recent years, the Internet technology of Web 2.0 has generated the potential for a new suite of tools that to increase the outreach efficacy of the planning discipline. The unique environment enables a variety of interactive tools, from mapping platforms like GIS and open source maps like Google maps, gaming environments built from visualization tools like Photoshop and Google Sketch Up and virtual worlds like Second Life, where peer-to-peer producers can contribute directly to content, rather than being simple receivers of information. Open-source software, in particular, allows customization of these tools, resulting in a user-friendly tool allows residents to visualize different urban forms. The hope is that having these additional tools available in the communicative process will bridge language and generational gaps and involve currently underrepresented sectors.²⁵

The features of Web 2.0 and its crowdsourcing features have enabled a surge of mapping tools that enables users to contribute to a working map. Mapping amenities and identifying needs within an existing community is a key activity that has become increasingly popular in

²⁴ A recent Pew research initiative seeks to understand the contemporary condition of civic engagement and the Internet, and whether digital technology can bridge the participation divide as claimed. Findings in general are far from conclusive, but within civic participation, those that engage participatory efforts online are also active offline. As in the past, the demographic of those likely to participate, “the well-to-do and well-educated are more likely than those less well off to participate in online political activities...” See Smith, et al., “Internet and Civic Engagement.”

²⁵ This is explicitly stated on Code for America’s website, as well as a featured page on Next City’s blog website. Both highlight the potential of technology to change how cities attempt to solve problems through increased participation through technology, as well as how technology can make the city more efficient in delivering services.

participatory planning practices, and Google's base map makes it an economical platform choice for grassroots efforts.²⁶ Non-profit organization Open Plan is developing platforms that allow users to contribute content utilizing Google's mapping APIs. Their tagline 'Eyes on the street, comments on the web,' is an unmistakable nod to Jane Jacobs in the era of the Internet. One of their first platforms, Shareabout, allows users to add comments and content to an existing map. The platform 'content' is open and can capture a range of information that an organization wishes to capture. The platform allows users to place a marker on the map and embed the marker with comments. The social activity of engaging a common map creates a dynamic process among the users, while organizers have better access to comments in a less mediated environment. Some common uses include mapping dangerous intersections, locating possible bike-share stations, noting need for bike lane infrastructure, and documenting community assets.

Open Plan continues to advance this mapping strategy by developing two unique tools that utilize Google Street View. *Beautiful Streets* allows users to compare two different streetscapes in order to identify possible solutions to implement within their community.²⁷ Street View images provide citizens with visual content to directly compare with their own environment, expanding users' vocabulary of urban concepts. This process enables them to better articulate changes they would like to see in their community. A second tool, *Project Fitzgerald*, is a Wordpress Plug-in that utilizes the Street View platform and mode of navigation to allow citizens to insert comments onto the image. The sponsoring organization can predetermine particular intersections, soliciting the community to offer input on possible problems or creative solutions to implement. Like the crowd-sourced mapping platform, the dynamic online activity

²⁶ Google's mapmaker tool is also a user-friendly interface that allows a community to update the map to reflect their environment and its amenities.

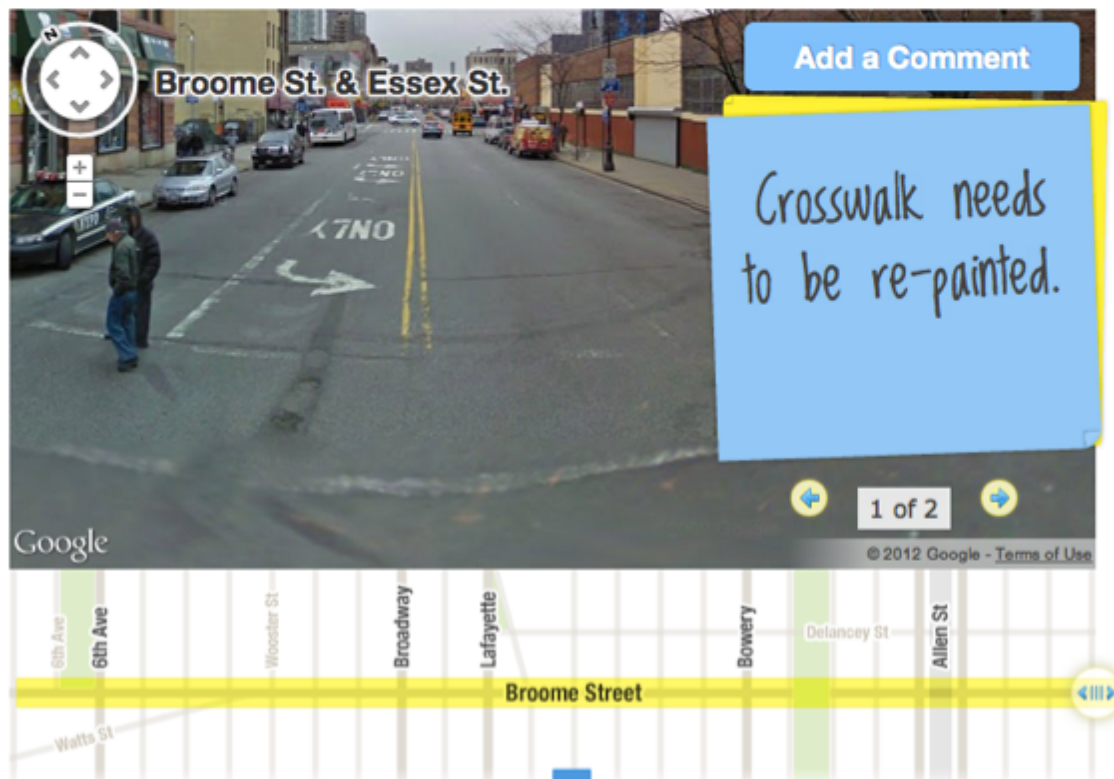
²⁷ On June 16, 2014, the application appears to be defunct. It was rolled out in 2012; see 'Beautiful Streets in the News.'.

of community engagement allows users to view other comments, and their contribution to the larger project becomes more tangible. At the same time, seeing other comments often sparks other ideas in subsequent users. The co-constitution of the social field results from these collective utterances, generating a feed back loop and circulation of ideas. The community organizer has access to the comments and the immediacy of the interface creates a unique environment among the online community.

Eyes on the street, comments on the web.

Posted on [August 8, 2012](#) by [Frank Hebbert](#)

Gathering neighborhood info on maps is great (and we have [the ideal tool for it](#)), but sometimes, you really want to show and tell. So we built a tool to do just that. [Try it out.](#)



Screen capture, Open Plans blog, "Eyes on the Street."

As part of a larger strategy, both of these efforts to reduce the ‘participation hurdle’ offer much potential, but still presents real challenges. Technology provides a lower barrier for participation, *if* there is a computer and Internet connection within the home, and cultural and education hurdles are minimal.²⁸ Presenting images of different environments can help citizens see the range of potential within their own environment. Larger questions remain, however. Within the *Beautiful Streets* platform specifically, citizens are presented with two preselected images and are encouraged to choose which ‘type’ of environment they would prefer. Without knowing the range of options, citizens’ options are reduced before they even offer their opinion. For diverse, ethnic cultures, choosing between a suburban street and a gentrified urban street scene is inherently problematic, as the presumption resides in a Western frame of reference and mode of evaluative strategies. What the image ‘signifies’ is assumed; the comparative content is normed against the standard typologies chosen by the planner or sponsoring organization, rather than giving citizens multiple choices from which to choose.

While citizens may find this activity enlarges their visual vocabulary of urban forms, there is an implicit trust in the photograph as objective document as well as the assumed legibility of the image. The quality of the photograph ranges over the course of Google’s expansive project. Older environments with a poor lens quality or images taken during the fall may seem ‘less ideal’ than images with higher resolution or in the sunny summer months, where foliage is full and air quality crisp. The visual content is not neutral in this sense: *it is qualitatively different*. The critical analysis required for assessing the content of the image as well as its subjective quality of conveying information is not taken into account. Given that this

²⁸ This has been convincingly argued in critical geography literature that engages the inequalities of technology and the ‘digital divide’ and the potential barriers of physical as well as intellectual access. Cf. Warf, B. 2001; Halford and Savage, 2010; Gilbert and Massucci, 2011; Crutcher and Zook, 2009; and Graham, 2011, among others.

interface has the potential to form a set of assumptions and solicit opinions to develop a planning strategy, basing it on the subjective image and assumed legibility is cause for concern.

The strength of the Project Fitzgerald application is that it allows the individual user to self-navigate on the designated street. The user's unique interests and concerns are given the opportunity to be recorded and heard. The developer designed the interface so planners can gather and analyze the comments according to the geocoded position within Street View. The limitation, however, is that within this interface, the need to navigate and discern details are likely to fatigue most users. Ultimately, the efficacy of the tool might be difficult to assess if uneven results are tabulated from the blog interface. Critically, however, there is a similar implicit trust in the legibility of the image. Users are asked to navigate the street through the Street View interface and identify elements that need to be addressed. The quality of the image is dependent upon the age of the capture, with older images less clear than newer photography. As was the case with the above instances, the smaller details in the image are difficult to discern, leaving only the larger, stable elements to comment upon.

Typology

Given the sheer volume of images on the Internet, researchers seeking to mine visual data for larger patterns are often confronted by the simultaneous heterogeneity of variations and a pervading homogeneity of image typologies. The ability to mine the images that provide a sense of place for a given location becomes a more difficult process, as a strong bias towards iconic or scenic images of different cities or regions pervades the expanding visual archive. If one enters 'Paris' into a Google image search, a predominant number of the images returned depict the

Eiffel Tower in a variety of settings, with too few images of the streets of Paris.²⁹ The Eiffel Tower has a unique iconic *presence* in the skyline of Paris, beautifully articulated by Roland Barthes with the following sentiment, “The only way one can escape the Eiffel Tower is to occupy it.”³⁰ The *visual* presence of the Eiffel Tower says little about the quality of the urban fabric in which one moves through the city on a daily basis. A recent study published by Carnegie Mellon reports on their algorithm developed to find patterns from a large set of images, culled from the Street View archive.³¹ Their findings cite the high level of visual identification of Paris among a larger set of viewers, regardless of their level of familiarity of the city, as one of the main selection criteria for their case study. Beginning with the question, “What makes Paris look like Paris?,” the study seeks to identify visual patches that are both ‘frequently occurring’ and ‘geographically unique,’ in order to determine whether an inherent pattern is discernable from a large data set.

With architectural historians detailing the variations of building elements since antiquity, there exists much precedence for articulating subtle variations. Among the notable historical figures, Vitruvius wrote the Ten Books of Architecture, c30 BC, with one book devoted to the column orders and building styles for temples. Alberti’s rediscovering of the text of Vitruvius in the 15th century established architectural history and theorizing of style.³² Alberti published a reformulation of Vitruvius’ treatise in 1452; Palladio produced his own treatise in four volumes in the 16th century. Since then, historians have pored over stylistic variations across the centuries, identifying subtle shifts of building technique. The colonizing regimes effectively transported

²⁹ Search conducted on December 4th, 2012. The first 8 ‘pages’ of images returned a large number of images of the Eiffel Tower, taken from different angles and during different times of the day. A smaller amount of images returned notable celebrities with the name ‘Paris’, as well as a few additional images of other iconic images, such as the Louvre.

³⁰ Paraphrased. Barthes, “Eiffel Tower.”

³¹ Doersch, et al., “What Makes Paris.”

³² Peter Eisenmann discusses the incorporation of architecture theory and its history as a formulation of a discipline, Eisenman, “End of the Classical.”

regional styles to distant locations, resulting in roman styles in the south of France in the days of the Roman Empire or British Federalist style in India during the 19th century.³³ Architectural historians specialize in these epochs, often following the style of the architecture, regardless of geographic region, perhaps best exemplified by the global modernisms that coursed the globe, and the scholarship that has accompanied its movement.

Returning to Haussman's Paris, his grand urbanization project radically reconfigured the urban landscape, lining the grand boulevards with distinctive architecture.³⁴ This level of planning created a cohesive urban image in which a hierarchicalization of building types matched the scale of the streets, many of which still stand today. What results is an urban imaginary of Paris as an ideal city, its form distinctive and unique, with temporal modulations across the arrondissements. Given its iconicity, the quintessential urban image of Paris offers a case study to test the algorithm. Using Street View images as source material, the computer program automatically selected 'fronto-parallel' images that depicted an elevation of the building façade. Known as 'scraping', this method reduces the images per city to approximately 10,000 images.³⁵

An algorithm is generated through analyzing square patches and looking for frequently appearing structures that are also unique. The algorithm is then adjusted to exclude images that are frequent, but not unique, such as trees and blank building walls, as well as images that are unique but infrequent, such as the Eiffel Tower. The algorithm is refined through multiple iterations on a sample set of images, each time defining and refining patterns that are consistent

³³ Not meant to be exhaustive, these examples merely serve as the contingent and fluid nature of aesthetic variation, in which the frame of reference colors the interpretation of style through their own lens.

³⁴ While not avoiding the militarization of the project, the political aspect is not the particular point of consideration here, but rather the radical change in the urban form, made possible by clearing of slums and narrow streets, rightly or wrongly.

³⁵ Doersch, et al., "What Makes Paris." See image below.

across a set of images. At that point, the algorithm runs on a larger set of images, from both Paris as well as other European cities. When there is a high concordance with unique images, the algorithm can be refined to identify iron or stone balconies, or whether windows have an arch or square shape.



Carnegie Mellon University, “What Makes Paris Look Like Paris?”

What results is an attempt to develop ‘an unsupervised object discovery’ project that will enable algorithms to handle the vast amount of visual data that exists today. Focusing on a site visually significant to the human mind, like the urban realm, an ability to produce a stable algorithm based on visual patches becomes a more efficient way in which to test the reliability and relevancy of the project. The final algorithm yielded several distinct forms for Paris: the blue street sign of distinct shape, present on the front of every building; the Parisian lamppost; windows; balconies with railings; and the distinctive doorway. The visual quality of these architectural features returned unique and frequent characteristics when compared to images from other European cities. To determine the accuracy of their findings, the study consulted a

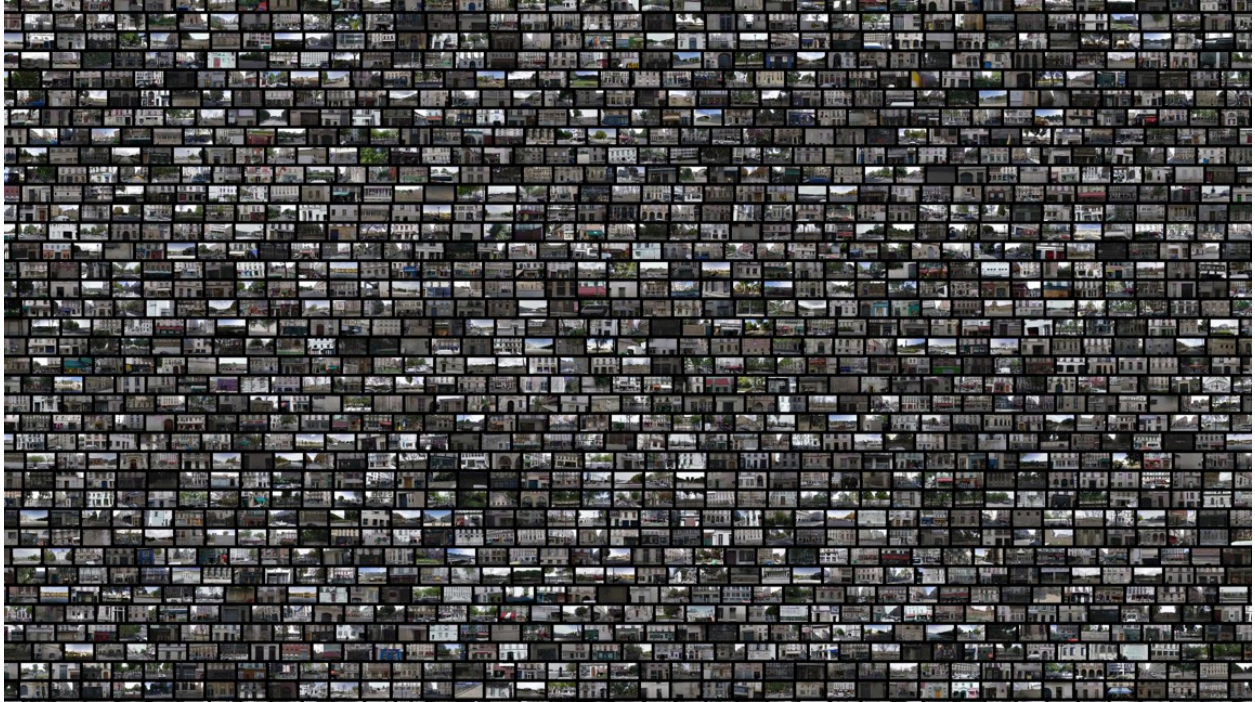
well-respected volume on Parisian architecture, and their results were corroborated by the expert opinion of the historian as being unique and distinctive of the Parisian urban form. The study concludes, “So, what makes Paris look like Paris? We argued that the ‘look and feel’ of a city rests not so much on the few famous landmarks (e.g. the Eiffel Tower), but largely on a set of stylistic elements, the visual minutiae of daily urban life.”³⁶

The authors of the study cite the ability to process big visual data as having many potential productive uses. Scientifically, understanding which visual elements are fundamental to our perception and our cognitive process of developing a sense of place is “interesting and useful.”³⁷ As a place becomes familiar and recognizable through embodied sensing, a conception of ‘place’ develops as a result; in the process, new experiences continue to be measured against past ones, allowing for a comparison of unique places to be possible. Future applications could use the algorithm to accurately render a place more quickly and efficiently. A film setting or constructing large computer models of cities for planning or design purposes would benefit in being able to model large areas to achieve an approximate representation. This can save many work hours, while still achieving the desired results of establishing ‘place’.³⁸ Finally, the study cites the ability to construct a stylistic narrative about places or regions from such visual experiences. Across geographic regions, differences and similarities can be more efficiently identified, highlight cultural exchange or materially diverging forms. In the process, the study hopes to build a new field, ‘computational geo-cultural modeling’ that can effectively and accurately process urban forms, natural forms, and even product characteristics.

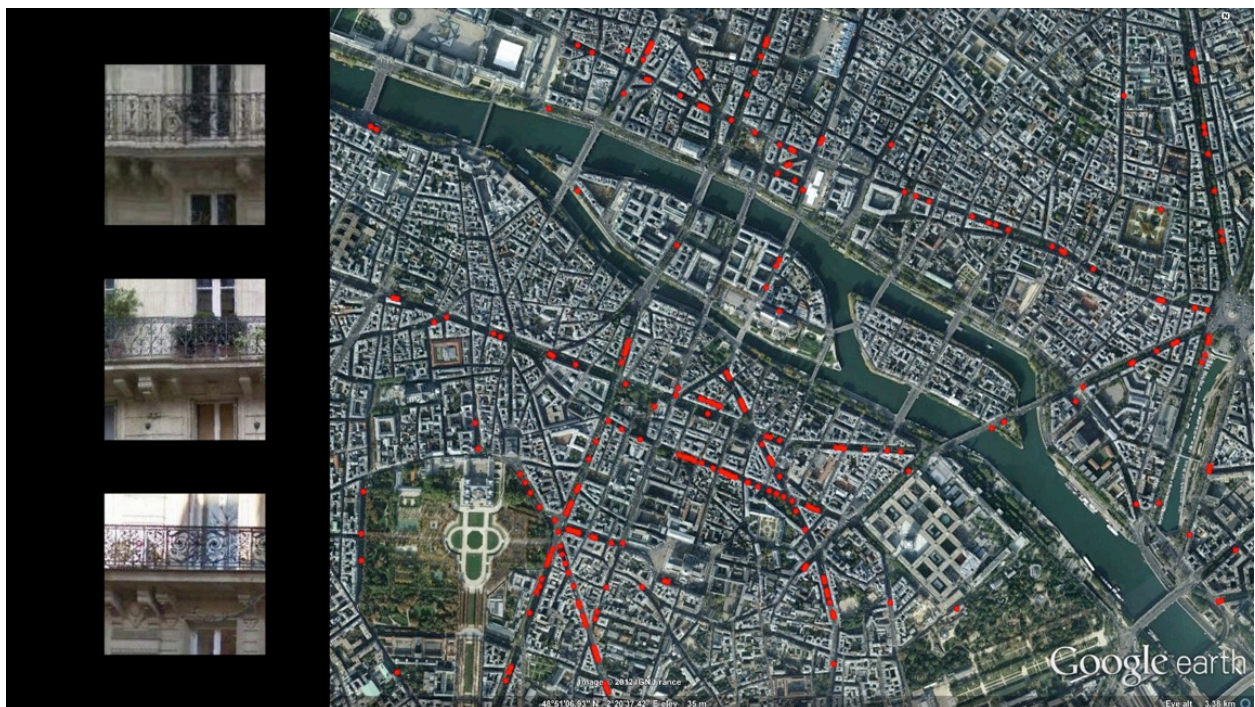
³⁶ Ibid., 8.

³⁷ Ibid.

³⁸ The study cites the following example: in the recent Pixar film, *Ratatouille*, graphic artists spent a week in Paris before beginning the production of scenes. They went around the city attempting to identify key architectural forms in order to graphically render Paris in an accurate manner. This visual tool would make production processes more efficient.



“Fronto-parallel” images, from SIGGRAPH 2012 presentation



Mapped locations of ‘patches’, from SIGGRAPH 2012 presentation

Urban form of the everyday thus emerges as a defining characteristic of cities, and efficiently and accurately separates Prague from Paris, and Paris from London. Each geographic

region has a dominant style from 19th century construction, made possible in part by the industrial revolution and the capitalist economy requiring a greater division of physical spaces. Given the epochal architectural styles of 18th and 19th century architecture, it is perhaps not surprising that London, predominately, has Federalist style with stone balconies, and that Paris has an ornate, wrought iron balcony, best highlighted by the art nouveau ironwork by Guimard for the Paris Metro stations. What *does* emerge of value is the ability to map defining patches and their relationships in space. This may reveal the hierarchical architecture of the different balconies in Paris, highlighted by the grand boulevards for one elaborate typology or style and a more simple typology on residential side streets. As seen above, *automating* a geographical distribution across a city or a larger geographical region can efficiently determine a shift in style between arrondissements, according to their age or wealth, or across a larger region, where colonial pollination of architectural styles and patterns are given new significance or create different stylistic narratives that might not have been previously evident.

Presumably, this level of visual research by architectural historians has already produced similar findings. The efficiency of a computer to collate like images in a short period of time, however, provides a great strength when an ‘approximation’ of visual styles is the driving force, such as in the case of the Disney film, *Ratatouille*. A full-scale physical film set will require different level of detail than a graphically animated cartoon. Encapsulating the general street characteristic for creating a charrette presents another use, where an urban design intervention needs to effectively and efficiently communicate an environment. In both instances, culling the archives of architectural history for source material is time consuming and often unnecessary, depending upon the overall thrust or level of detail needed

While this efficient analysis can be of value in key geographical instances, perhaps equally unsurprising is the algorithm's inability to accurately ascertain a dominant stylistic feature in most American cities. Perhaps a damning illustration of the 'melting pot' of America, the architectural features of Atlanta, GA or Phoenix, AZ do not fair so well; New York can best be defined by the presence of the fire escape; other cities are best defined by a dominant automobile manufacturer or roadway signage presence on the streets. While urban form is but one part of place-making characteristics, equally important are qualitative elements, like light or the temperature of the air; the persistence of the terracotta roof tiles reveal not so much about a particular city, but illustrates more accurately a shared bioregion of desert conditions. The block shapes and street widths that define New York as being New York are as important as the smell of the food vendors, the sweet smell of roasting nuts or pungent smell of grilled onions, that occupy nearly every other corner of the city where heavy foot traffic is present; the noise of the honking horns in a congested city, amidst a sea of yellow taxi cabs, defines New York more 'accurately' than a pattern of fire escapes. While fire escapes are, in fact, a dominant visual element, the city itself is not defined by this formal element alone. For planners, designers and filmmakers, simply constructing an environment with fire escapes will not realistically render the landscape as an approximate representation, thereby calling into question the signifying capacity of the image and the knowledge that might be produced as a result.

Cultural Practices

As a conceptual bridge between knowledge production and creative production, tours and cultural history projects straddle both worlds. Guided tours often seek to capitalize on local knowledge of the built environment, presenting factual and anecdotal information that is not

evident for the common passerby. The value of the guided tour expands the individual knowledge of a place by highlighting information that might not be considered as ‘majoritarian’ knowledge. Rather, the local knowledges transform a location to a place imbued with meaning. Cultural history is constructed between members of a society; understanding and local knowledge are developed as a result of becoming immersed or acquainted with the virtual past. As citizen led projects are given new tools to assert their own knowledge, the heterogeneity of history expands in relation.³⁹ No longer offering the single narrative of historical development, the collective enunciation of histories come to the fore, each imbricated in different ways. In both instances, a variety of investments have been made with Street View, seeking to utilize the visual platform to generate an additional layer of meaning and knowledge.

Online tours

Plott Me App

Plott Me App is a mobile phone application is designed to allow users to consume content, as well as allow the *production* of content, and is built around two unique interfaces.⁴⁰ The end user views the tour on their hand-held device with the recorded tour providing map and route information to move them from one point to the next. GPS locative media signals the approach of the end user to the desired location, cuing the narrative to begin. Once that segment of the tour is completed, a mapped route for the next location becomes available. A corresponding online version of the Plott Me App allows the end user to launch the App in a

³⁹ Sarah Elwood is an important theorist in this particular realm of knowledge politics that result from citizen contributed forms of knowledge in relation to the sanctioned, majoritarian knowledge production of peer review and scientific methods. This will be discussed in greater detail within the Mapping section.

⁴⁰ Originally developed by a team of New York University graduate students for a class; Thomas Chan further elaborated upon the project as his Thesis project. The app platform. Little information now exists online and the App appears dead in the water.

browser window, with the online tour built from panorama images from Street View. The app pulls data from the Street View API and allows the user/producer to upload additional photos and audio to construct a tour for mobile phones and online sites. The second interface functions in a similar, but virtual way, whereby the end-user navigates Street View and the audio plays in relation to the panoramic location. The end user is then able to move through the same tour virtually and look around within Street View, and have a similar experience as the located tourist, thereby simulating the embodied experience of physical navigation.

With the increasing number of mobile users transitioning to smart phone technology, there is a growing market for a platform that enables both an experience of content, as well as the development of content. In particular, web 2.0 technologies easily allows coproducing content. Hand-held geo-locating capabilities of devices place the tourist within various segments of the tour. The online platform maps the tour information onto Street View imagery. Both forms enable a more dynamic, haptic experience of the environment compared to reading or listening to stories, or walking through the a neighborhood or viewing images, independent or isolated from the other layer. The developer seeks to enable telling of complex histories and narratives about place by providing a platform that allows the mobile user to synthesize these histories and narratives as spatial phenomenon; in the process, this potentially enriches place-based embodied experiences.

Chan cites a number of precedents that attempt to engage the viewer through audio narrative, including museum guided audio tours, artist produced audio tours that blend fictional and factual narratives, or user provided narratives. A general trend of providing additional meaning to a place through an added layer of narrative persists, a function of mapping information. The developer states a desire to connect people and stories, as well as provide a

more enriching experience when moving through the world. The process of experientially synching up the narrative and the visual experience of environment imbues place with a new layer of meaning that are often hidden to the random passersby. This process of layering information is precisely the material from which mental or cognitive maps about a place begin: a specificity of place in relation to our own embodied experience.

What the online interface offers is a more flexible way in which to explore an audio tour. One of the driving considerations was to resolve the experiential gap of consuming place-based stories in relation to the site of consumption. A tour of a specific site or neighborhood presents a variety of spatial, temporal and seasonal challenges, and often the consumption of these kinds of narratives take place in another environment. By creating an online interface that allows the end user to experience the narrative in relation to the Street View image, a greater potential of success and synthesis takes place when a simulated tour can provide a similar immersive experience, albeit without the some of the sensorial aspects, such as sounds and smells of the site.

Kunstler Cast

In a similar vein, James Howard Kunstler gave several virtual tours on his podcast show, the Kunstler Cast.⁴¹ The content predominantly builds upon Kunstler's already published work, including *The Geography of Nowhere*, *The Long Emergency* and *Too Much Magic*, in which Kunstler continuously writes on the failures of modern planning, the suburban fabric and the dependence on fossil fuels. The conversational tone of his texts extends to his podcast, structured as a conversation with the host, and engaging listeners in the broader discussion of the

⁴¹ The show airs on several radio stations throughout the country and is free to download as a podcast as primary delivery method, available at online sites like iTunes, as well as the station website.

contemporary urban condition. His first virtual tour aired in 2009, using Street View to conduct a walking tour, in which he narrated various street scenes of Paris.

The idea for the virtual walking tour came by way of a regular listener of the show. The audio recording of the listener recounted the experience of listening to one of Kunstler's podcasts, in which he utilized Street View to get a sense of the particular landscape in Detroit that Kunstler was referencing. The listener suggested that Kunstler use Street View to guide his listeners in a walking tour, allowing the listeners to deepen their understanding of some of the key aspects that Kunstler covers as part of the broader intellectual content. The listener attributed his understanding of many of the key concepts offered by Kunstler, such as termination points and positive outdoor space, etc., through synthesizing the image of the physical condition in relation to Kunstler's narrative. Building a tour based on visuals that anyone could access would allow other listeners a similar opportunity to synthesize visual and audio information.

Both the host and Kunstler were amenable to the idea, though both confessed to using Street View infrequently. In the first broadcast, the cognitive shift that was required to view the street scene through this new tool was evident in the dialogue of both the host and Kunstler. Throughout much of the first half of the program, both Kunstler and Crary audibly attempt to orientate themselves both spatially and cognitively to this visual archive. Attempting to describe a particular street in Paris, Rue Lepic, known for its sounds and smells, as well as visual and tactile experience, the Street View re-presentation of the street scene falls short, as Kunstler attempts to describe the slope of the street, which is not evident in the photographic image. The range of delicacies and offerings by the various shops are not quite discernable, as the image quality is too poor for small details. Their active attempt to make sense of the *particularities* of the street scene portrays an accurate and honest articulation of the cognitive process of

assimilating the visual experience of navigating Street View against the held knowledge of the expectation of encountering a street scene first hand.

What the interface does offer is an ability to describe features of the Parisienne street in great detail for listeners to follow along, rendering urban design concepts and theories more concrete for the lay person. The website imbeds Street View windows of the different tour points, to guide the listeners through the trajectory of the audio tour. Kunstler describes the construction of the buildings, the desired proportions of street width to building height ratio, the benefits of termination points, the organization of the boulevards, to name a few.

At the same time, the listener experiences the cognitive processing of the orator in relation to their *own* attempts to navigate what is likely to be both an unfamiliar landscape generally and their own horizon of the Street View experience specifically. What results is a highly sophisticated level of cognitive processing, following directions to navigate a virtual world, looking at an image while processing concepts and theories of design, in order to advance understanding of a place. The layers of knowledge that are actively produced through this new means of navigating the urban environment points to both the benefits of ‘zooming’ into a scene, backing up, changing a viewing position and the drawbacks of pixilated images and out of focus or obscured elements. The viewer can thus simultaneously take more time to comprehend elements without drawing attention to oneself, while at the same time, cannot control the need to focus, or *squint*, on a particular element that is just out of visible reach.

Memory/history

The photograph continues to hold sway through all these practices, while the role of mapping the photograph onto a two dimensional platform creates a new kind of media space that

is navigable and amendable. The ubiquity of the photograph is evident in the many street scenes that have been taken over the course of the 20th century, with individuals acting as small repositories of once ‘current’ photographs, *now* deemed able to represent a historical condition. The physical urban environment is frequently reconfigured as a result of capitalist endeavors that transform outdated structures into a more relevant form for the current milieu.⁴² As the fabric of the city is transformed, individual photographs serve as indexical evidence and reminder of a previous era.⁴³ Many historical societies compile photographs of earlier city form, which often become an important tool to understand how a city changed over the course of decades or a century. Perhaps more importantly, it creates a cultural history and appreciation for future historic preservation. The practices of Google emerge as an important archive in which other cultural activities might be rendered against, and as previously mentioned, Google’s new Time Machine, it solidifies its position or role as an important public good and archival resource for urban studies.

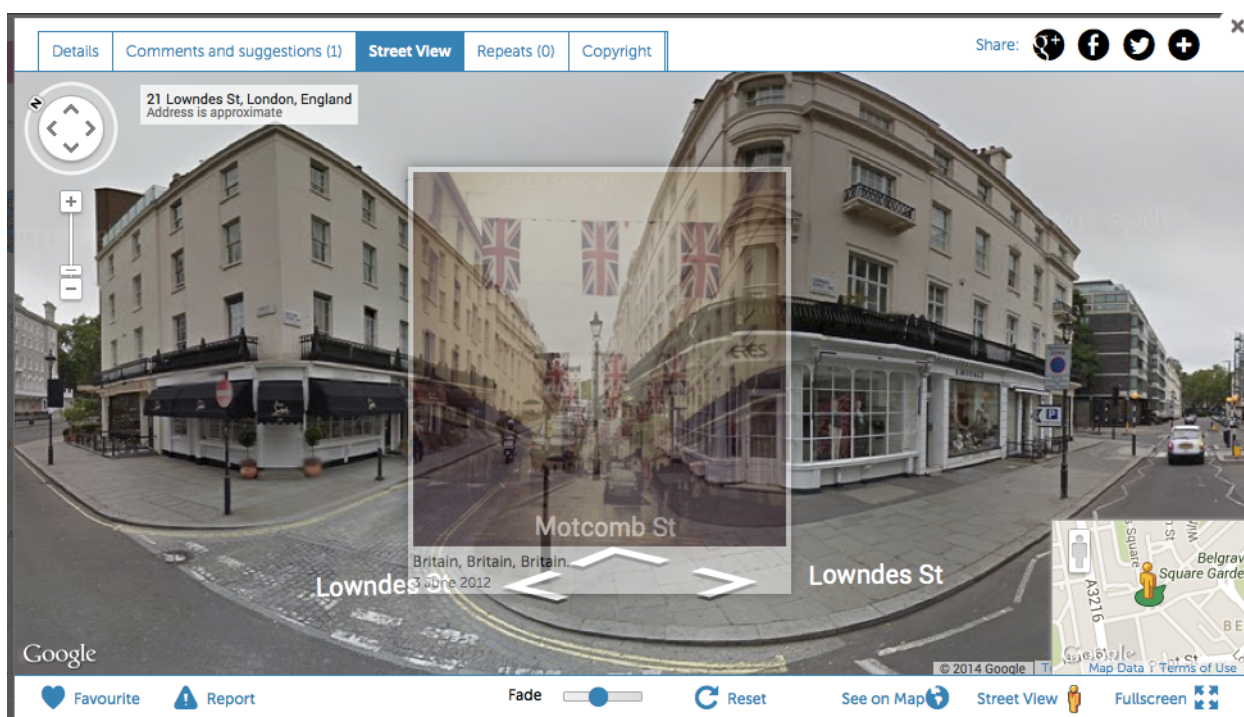
Websites like ‘History Pin’ and ‘What Was There’ utilize the Street View interface and enables users to ‘pin’ or link historic photographs of a site against the recent street view images. Non-profit organizations or civic institutions then develop larger efforts in order to flesh out a substantial area, often working with local historical societies to locate the relevant images from its constituents.⁴⁴ Museums or societies can devise a reach-out campaign in which to enlist the

⁴² In property law parlance, ‘highest current use’ gives property owners the right to redevelop their property as the market conditions dictate, depending upon overlay zones that may zone or mandate a character different than ‘highest’ possible use. David Harvey’s articulation of the three circuits of capital offers an illuminating explication of the circuit of investment and rampant development, depending upon the particular stage at which capital is producing. See Harvey, *Urban Experience*, 59-89 especially.

⁴³ In particular, Atget systematically documented the changing conditions of the built environment of Paris, and hired by Bibliothèque Historique de la Ville de Paris, see MoMA artist profile page.

⁴⁴ History Pin, <http://www.historypin.com/>, offers a number of ways in which to explore their user demographics: schools, local projects and museums/archives; projects that highlight concerted efforts to gather images, like the Jubilee effort, or celebrating Balboa Park centennial in San Diego, or more recent efforts like preserving the effects

help of knowledgeable citizens to identify locations of the photographs or to assist in the monumental task of uploading and tagging the images.⁴⁵ Seen also a valuable classroom tool, students can engage local histories and contribute with their own family photos. Such a widespread effort from a variety of citizens begins to fill in the map with historic photos, a process that becomes highly interactive and one that engenders (potentially) a bigger engagement/investment in the overall efforts. As the website states on its welcome page of getting involved, “Welcome to the Historypin community, made up of people, groups and organisations (sic) working together to unearth and pin as much history as possible from all over the world - from within archives, in attics, and saved up in wise old heads.”⁴⁶



Screen shot, History Pin. Showing the Street View platform with uploaded image with fade.

of Hurricane Sandy; or customizable curatorial efforts can be viewed via ‘channels’ which draw from different uploaded photos, such as culling all images that contain an historic scene of a street car.

⁴⁵ History Pin, Diamond Jubilee, accessed on June 19, 2014. As one example, the Jubilee for the Queen of England served as a ‘kick off’ for the website itself, as appeared on YouTube. A larger campaign appealed to various users that had attended past jubilees and to get user uploaded images to generated a more substantial cultural visual history of the event. Last image count updated on the website was more than 1400 photos.

⁴⁶ History Pin, Get Involved.

What emerges is a direct line emanating from the ‘citizen cartographer’ mantra of Google Maps, which enables users to take part in the mapping process through their open source API interface, made possible and efficient with the widespread adoption of the tools of the new media space, where users are generating content. As non-profits like ‘We are what we do’ provide the technical knowledge to build this archive, it requires the assistance of an engaged community to realize its potential, one that extends across the globe to collaborate around history.⁴⁷ As individuals participate in a larger project, information and misinformation continues to circulate. The cultural knowledge is as varied and storied as the voices that have contributed, further complicating the perceived truth-value of the photographic archive. The creative investments expand and exploit this value on numerous levels.

A new *kind* of archive is also being constructed, interactive yet also subject to errors and revisions, a patchwork in its (in)completion. With various communities’ historical societies galvanizing forces with varying levels of success, the ability to flesh out the historical image of the area is wholly dependent upon citizen participation and the existence of a photographic archive, the quality of which has shifted over time. As photographs have become more economical and a more pervasive part of culture, photograph’s status as an important indexical document has been diminished by the economical snapshot. 35mm film has a round of 36 exposures; point and shoot disposable cameras with low quality film; the mass processing-house and low quality ‘1-hour’ prints; taken together, the privileging of the photograph is no longer. The disposable quality lends itself to inconsequential framing and a proliferation of images. With the digital camera, this process is exacerbated even further.

⁴⁷ In part, what makes this new kind of participation sticky, is while it is truly a public good and inspiring to see collective sources of knowledge be produced from the ground up, the ability for corporations to utilize this range of data, as well as a larger socio-political environment which devalues this type of labor, the free labor responsible for its production, while worthwhile, has the potential to devalue paid labor for qualitative efforts such as these.

Concluding thoughts

In all these instances, there is a great effort to harness the visual archive of Street View in relation to existing research and cultural practices concerned with spatializing information. Of the research practices, each seeks to determine how effective Street View can be in advancing or augmenting existing research and the attendant knowledge production. In the street audits, each researcher was given training to conduct the audit via Street View according to previously established traditional audit categories. These studies place implicit trust in the photograph to provide objective, neutral visual content, while also rely on mapping as a conceptual armature in which to establish spatial relationship and produce knowledge of the contents therein.

For the researchers, it is only the ‘unknown’ of the time/date stamp and the difficulty in determining small details that clouds its usability for street audits. Little attention is given to the cultural ‘legibility’ of an image. Assumptions and perceptions are recorded based on visual information that is qualitatively different. With Place Pulse, there exists no explanation of the two types of environments in comparison, much less guided explanation of the difference in image quality. While the empirical weight of two photographs being compared side by side is evident, the ‘je ne sais quoi’ of the images, or the weight of the punctum, as Barthes called it, remains unspoken. The subjective nature of ‘choosing’ between two environments is doubly burdened by a difference in visual quality. How are we to produce knowledge and what sort of knowledge is produced, given these subjective, but meaningful measures?

Within cultural production, collective local knowledge production is taking place. Tours are conducted via the virtual interface, with the goal of enlightening and educating the listeners. Kunstler guides listeners down streets, while audibly expressing his own difficulty with navigating the interface. His script is rehearsed, but his actions are not; the enlightened user is

following along, distractedly listening while trying to follow the navigation directions for Street View.⁴⁸ With the social history/memory projects, a collective archive is being assembled, one that has the potential to extend well beyond the immediate social environment into the broader global community.⁴⁹ In History Pin, a large campaign to map England in time for the ‘Jubilee,’ resulted in contributions from many different sources and locations. In other instances, various museums have announced events that focus on a mass ‘production’ to establish the base layer of an archive.

An implicit hope of generating interest in a continued participation by the citizens, its status as a Web 2.0 citizen-led effort makes the barrier to participate relatively low.⁵⁰ Overall, however, there is the duplication of efforts. An individual contributing their own knowledge on their own time is subject to scrutiny of held knowledge of other citizens, also on their own time. Whose knowledge is accurate? What burden is placed on the ‘ethical police’ of the project to ensure all information is accurate?⁵¹ How are we to ‘trust’ the information that is generated from the ground up, knowing well that gaps exist in us individually, thus exponentially enlarged with ‘crowd-sourced’ knowledge production? Or will this produce a real shift in pluralism and accepting ‘difference’ and the multiple realities that necessarily exist within any moment in time?

Within all instances, there remains a seductive element of experimentation: how can we use this tool to advance, augment, make efficient, or enlarge our understanding of a

⁴⁸ As a self ethnography and an experienced user of Street View, I still had difficulty in listening to the narrative while trying to navigate the virtual environment with a mouse, *while also* processing the content of the tour. This particular multitasking is a sophisticated level of functioning/cognition. Many GPS studies reveal that those that listen to the GPS instructions for navigation retain little visual recollection of their journey, which suggests that the degree of focus is oriented toward the most pressing element, which is often navigation.

⁴⁹ And in fact, this goal is expressed clearly on the site, “A global community collaborating around history.”

⁵⁰ In many instances, this is also an explicit appeal, as seen on the Balboa Park website, as well as the Jubilee efforts.

⁵¹ This particular issue has been the source of many crowdsourced efforts, among the most famous being Wikipedia, in which editing wars have required a benevolent dictator to establish best practices.

phenomenon, of our discipline, of the world? In ‘Questions concerning technology’, Heidegger effortlessly guides the reader through various scenarios in which a phenomenon is described, only to call into question the certainty with which we ascribe meaning to it. His assessment is one of caution, to ‘hold lightly’ the technology and efficiency it promises. D & G also advise ‘caution’, moments in which we accept or acquiesce freedom with the promise of a ‘better’ future or through a desire to belong to a larger movement or as group identification, or what they define as a microfascism. They go much further, Deleuze in particular, by multiplying and spatializing the different perspectives through which an event *might* be viewed. The compossible, the potentialities of the virtual, the individual durative moments that participate in the whole of time, all of which urge a *thoughtfulness* to which we give ‘freedom’, freedom of research, interpretation, memory, as well as an embrace of the heterogeneity of time and its idiosyncratic manifestations. This presents a unique quandary, one in which researchers that seek to ‘augment’ existing research would do well to ‘hold lightly’ the ‘value’ that Street View provides, given its subject foundation upon which researchers erect findings and publish as knowledge.

The photograph is a bloc of space-time, and it is subject to as many interpretations as layers of participation that exist. As a unique bloc, its intersection with mapping forms the particular assemblage of Street View, drawing the latent intensive and extensive practices and utterances into a particular composition, one that draws from the socio-political milieu from which the photograph is given cultural significance in relation to mapping as a means to establish territory and knowledge of its content. For creative practices, this radically opens the photograph to contingency, as systematic documentation or mapping of the environment creates a stark

division between being in the world and viewing the world as it existed at one point in time, stitched together and compiled in unexpected ways.

For researchers that seek to produce knowledge from the indexical ‘proof’ the photograph is imagined to provide, it is mapped onto an abstract, graphical representation from which spatial relationships can be discerned and made concrete. Mapping practices as the virtual have coursed through this extended explication of research practices that utilized this visual mapping tool. Not only has the veracity of the photograph been assumed, mapping as an established practice has assumed facticity upon which to build knowledge. Understanding the various mapping threads that are held within the fullness of the present gives greater insight into the research practices as well as helps define the current contemporary condition of web 2.0, one that is full of potential as well as fraught with darker pitfalls and unintended consequences for the contemporary cultural condition. The ease of participation and a willingness to provide knowledge and labor to a larger project has a particular nexus within the larger political economic environment in which the private sector is providing more services. Tracing this mapping trajectory to understand the various investments is thus the necessary next task.

03_Mapping Line : Historical Impulses

Tracing the history of mapping is a critical way to understand why and how a company like Google has achieved the overwhelming 'market share' of mapping due to its comprehensiveness, surpassing most, if not all, government repositories of mapping efforts. Google's entry into the mapping industry has challenged established cartographic roles. First and foremost, they are not 'educated' as cartographers, but computer scientists that compile information. Their map mash ups and continual releases defy the perceived exacting, scientific quality of mapmaking as a practice. Both of these activities are the result of a fast and loose way of working, in which updates can be made continuously and beta versions signal the 'work in progress' feel, for which Google is known and defines the Open Source spirit as well as the contemporary media environment. Moreover, this quick release is an open acknowledgement of the map not being perfect and error free; rather, it points to Google's goal as working towards developing the 'perfect' map. Anything approaching this accomplishment is an approximation and open to change, and most importantly, subject to verification. Given such a subjective measure, one wonders if it is even possible to achieve a perfect map in the first place,¹ not unlike reaching the horizon of the ocean.

Rather than claiming 100% accuracy, Google wears this imperfection on its sleeve. Since many see the map as a natural extension of search, the larger cultural assemblage of place-based information-finding highlights the ubiquity of the map within contemporary culture. Numerous threads that establish a variety of orientations towards the map as an object and idea inform Google's larger mapping project, as well as give specific shape to its development.

¹ Google's new map marketing playfully suggests as much, "While we may never make the perfect map..." (or "The never-ending quest for the perfect map", see McClendon, "Never-ending Quest."

Understanding the entangled lines of various mapping efforts provides a view into the diversity of uses for maps today. The virtual gives access to a range of historical practices that reemerge in the present in unexpected and sometimes novel ways. It is less that this technology has provided a radical shift in the social field, rather, the assemblage of Street View draws from the social field from which it emerges, combining virtual impulses in unique ways. The social field is directly informed by the political and economic dynamics of the present and recent historical conditions. Together, the latent impulses of individual production and the structuring forces of the social milieus draw together unique points of tension. Mapping thus offers a critical pivotal point for the present work. As we shift from individual practices to structuring forces, a series of tensions will continue emerge.

Entangled spaces of mapping

Mapmaking is often considered an active practice of constructing and communicating spatial knowledge, one that is tied as closely to landscape as it is to vision.² The linkage to physical land and truth claims of empirical practices gives mapmaking political importance, as territories are constructed and subjectivities established with the drawing of a new political boundary. A map results from this co-constitutive production.³ The demarcation of indelible conceptual lines both establishes power over the territory and creates the conditions over which resources and land can be fought, simply by delineating ‘mine’ and ‘yours’. Early mapped navigation routes led to the conquering and exploiting of new lands, establishing political and colonial claim over what was seen as unsettled lands. The belief in the map as objective information gives a place, community or nation, legitimacy by asserting its existence through

² Cosgrove, *Geography and Vision*

³ Kitchin, “Practices of Mapping.”; Kitchin and Dodge, “Rethinking Maps.”

visibility. Those *not* rendered on a map are without a place in the world, and the histories and cultures of an entire people are erased with the act of labeling, giving national and spatial specificity to an previously unknown terra incognita, which is at once an exercise of power and a bolstering of knowledge.⁴

Early cartographic practices were more artful than the present day ‘scientific’ maps generated from aerial and satellite imagery. The hand of the cartographer infused many maps with landscape art and literary description, known as chorography, and poetically depicted the regions of the world with what now appears to be artistic license, where designs invented land masses where none existed in order to maintain symmetry.⁵ The distribution of the gridded field of latitude and longitude installed order, but did not organize the continents, leaving the artful interpretation of unknown regions to the mapmaker. As scientific practices and navigation lines established a more agreed upon arrangement of the world, the ‘plain style’ of mapmaking was adopted, leaving the artful geographic description to the humanities.⁶

As the Cartesian grid became firmly entrenched and explorers came back with maps of new coastlines, a gap between the 3-dimension of the world and its 2-dimension representation was patently clear. The paper environment flattened the curved surface, resulting in countless distortions. This gap was clear to Ptolemy, but it was a conceptual or philosophical problem, not an actual mathematical one produced by exploration. As a result of calculations, a variety of projections were explored to create the most faithful flat representation. Ultimately, projections revealed their own representational bias, depending upon which feature was preserved, such as

⁴ Latour, “Drawing Things Together.” Latour gives an account of how important the inscription is, and how the act of inscribing takes greater importance with the map, given its mobility as a representation, and as a representation it stands in for territory, without being able to directly compare it to ensure its veracity.

⁵ Cosgrove, *Geography and Vision*.

⁶ Ibid.

shape, distance, scale, etc.⁷ As a result, landmasses might retain more accurate representation, while skewing the latitude or longitudinal lines, or in other cases, certain portions of the globe retain a greater emphasis, and thus carrying a perceived different political weight. More contemporaneously, the Dymaxion map has been used to highlight the contiguous landmasses, which reinforces a horizontal view of ‘connection’ rather than obscuring the polar regions.⁸

While lines of exploration sketched out terrain and identified land and resources in the process, the *inhabiting* of a territory produces a space and a civilization. The need to navigate *between* places increases as the complexity grows. The resolution or granularity of the maps produced in the early days of exploration sketched out the limit spaces of the empire and demarcated areas for expansion. The need to render the space in between these limits at the scale of the inhabitant was a direct outgrowth of the shift in the socio-economic organization of societies, as capitalism produced a range of spaces for different functions.⁹ Nolli’s maps of Rome are some of the earliest mappings of urban space, and produced an accurate account of the distribution of spaces of solids and voids. In the process, the maps created a different understanding of how the built space we were accustomed to seeing could be rendered in an abstract manner. The legibility of the terrain layout remained, but the spatial conception produced by a plan view of a large area changed the comprehension of the spatial relationships.¹⁰

Mapping out physical space at this scale of resolution quickly proved useful. From one perspective, nations and their employed professionals were given an abstracted representation of an urban territory. The abstraction enabled a divorcing of an embodied relationship to the

⁷ Ibid.

⁸ This map is also used in Prakash & Jarzombek’s *World Architecture History*, which attempts to rethink a concise linear, regional world history of architecture by exploring the simultaneity of regions.

⁹ Rybczynski, *Home*. Rybczynski gives a great account of the transformation of the house in this era and how it changed ideas about ‘comfort.’ This shift had real spatial consequences, as cities accommodate more kinds of spaces, the footprint of the city changed as a result. The process of suburbanization and the held notion of moving away from industry extended the physical footprint to accommodate this new psychological spatial need.

¹⁰ For an interactive overview of Nolli’s maps, see <http://nolli.uoregon.edu/preface.html>.

physical space and produced a formal relationship to solids and voids. This separation of meaning from symbol enabled professions to begin to imagining a different formal arrangement, one that shifted from the incremental building of old urban centers to conceiving first of a formal image in which to project on to the world. Large-scale reorganization of urban environment like Paris or Washington DC or colony settlements like New Delhi¹¹ were produced from such visionary plans. The functional aspects of the city were set aside as a new level of consideration was given to the formal arrangement.

The invention of flight gave a unique perspective onto the world, and with the invention of photography, more exacting documents were created, from which national and international territories could be marked out with greater precision, strategic attempts at claiming territory could be better waged, both from understanding the placement of oppositional troops, as well as having an index of the worlds terrain, made possible through the assemblage of aerial photography. Early attempts were slow to reveal the potential of aerial imagery,¹² but increases in photographic technology enabled more flexible exposure processes. The ability to capture ground conditions proved instrumental for the First World War (and subsequent ones), with reconnaissance photography providing an exacting description of placement of troops behind the enemy line as well as having a deeper understanding of the foreign terrain.¹³

In less overt political uses, aerial photography was also used to conduct land surveys, particularly in a young country like the United States, there was a real need for a comprehensive map of areas that were difficult for physical surveying. Photogrammetric surveys could make visible large land formations, revealing a different understanding of soil extents as well as

¹¹ There are countless number of cities that produced large-scale master plans, establishing the master plan as both a goal and a requirement for 'modern' cities.

¹² Newhall, *Airborne Camera*. while the first patent was filed in 1855, the first successful aerial photograph was in 1858, As the dryplate process became available, the photographing process was more reliable and less cumbersome.

¹³ Ibid.

revealing the watershed and catchment basins of river systems.¹⁴ Large plains regions could be seen in relation to mountainous plates, revealing deeper geological formations not visible at the ground level, producing a new insight into geomorphology as a field of study.¹⁵ Greater awareness and understanding of man's footprint on the planet resulted from this distant, aerial view, with metropolitan areas and extended developed regions visually graspable in scale and breadth of development. Subsequent space exploration extended an imagined 'god's eye view' of the world, giving a sense of the whole earth for the first time, from which an encompassing territorial view gives a sense of power. As evidence of man's accomplishment, human built forms such as the Great Wall of China was observable from space, providing a unique opportunity to reflect upon the variety of scales in which man's impact can be discerned.¹⁶

It is perhaps here where link between cartographic space, urban space, knowledge production and power produces the greatest tension. Imagined spaces and a new urban order eliminated the unsightly tangle of tenements and incremental growth. The new order produced a modern society that accommodated changes in infrastructure and helped eliminate many of the conditions for communicable diseases. This new order also eliminated the lives that currently lived there and the practices and relationships that established particular identities and communities. As surviving documentation, the new urban vision projected a normative vision for the modern city, rendering many spaces invisible in the process.

¹⁴ Cosgrove, *Geography and Vision*.

¹⁵ Ibid.

¹⁶ Arendt's opening pages of the *Human Condition* poignantly point to the shift in understanding upon seeing the Apollo photograph of the Earth from outer space

*Systematic Documentation, or Royal Mappers*¹⁷

Within a mapped territory, the first layer of knowledge produced serves as a base for future instances in knowledge production, and is evident in the large undertakings of the three different national survey projects by the US government.¹⁸ When geographical formations are noted and a rough map produced, future survey efforts focus on verification and adding new layers of information. These ‘layers of information’ are cultural constructs of a given milieu, and what is valued is made visible by spatially locating it, while what is taken for granted or not understood as being a resource goes unnoticed.¹⁹ Acts of mapping and documentation have long been a practice of professional cartographers, hired by the State to produce detailed renderings of the land, first as artful depictions of territory and transitioning to scientific renderings of the terrain. Over time, the scientificity of these documents were assigned to an agency within the State organization, and created records and documentation of the physical environment, natural resources, as well as the land tracts for potential development.

Within a country like the United States, jurisdictional purview often dictates the level at which updates to the map take place. The USGS produced a range of maps of the national territory, highlighting the physical terrain, soil type, climate, as well as national navigation routes and a continually expanding rail and road network. Relevant coordination across jurisdictional agencies becomes necessary, as state-specific resources are updated by state agencies, and local municipalities updated by the appropriate agency. While the state and interstate highway

¹⁷ D & G offer the distinction between sanctioned procedural production and immanent creative production. Within mapping, the distinction can thus be made between State sponsored efforts that have legitimacy and the more creative or experimental mapping that lacks the same ‘use value’ of the state sanctioned production.

¹⁸ Cosgrove, *Geography and Vision*.

¹⁹ Bureau of Land Management, History. This is perhaps most evident in the US Land Bureau (General Land Office) and the selling and transferring of territory that took place at a rapid pace following the War of 1812. This selling of territory was means to pay off war debts for the new struggling nation, with little consideration given to the material resources that occupied such territories. It was not until much later were the resources of the land itself, such as mineral deposits, timber, and water, were considered as a valuable resource, prompting the government to retain some land, or retain the mineral rights contained within the parcel.

networks have not experienced dramatic change in the last 30 years, updating maps at local levels remain time consuming, as population growth and change in the physical organization of the built environment have created sprawling developments across the US. Recent changes in technology have made the mapping process more efficient through GIS, but verifying and documenting new road construction must still be completed and coordinated as appropriate. Governments now manage data layers through both open-source and proprietary mapping softwares and services,²⁰ and the combination of data sets allows users of the software to produce the maps that are suitable for their purposes.²¹ This level of tailoring maps for unique purposes relies on quality data sets.

A truly comprehensive map of a given territory, regardless of scale, has stages by which progress is measured in relation to knowledge produced, with the end result of a ‘perfect map’ truly Sisyphean in nature; the territory changes as the documentation is taking place. It becomes evident in the increasing detail produced and the variety of maps generated as countries advanced and settled previously unknown land, in the case of the US in the 1800’s. In the ‘old world’, the rate of urbanization that took place in a geographically constrained, established locations created dense environments that radically expanded with industrialization. Early survey and mapping initiatives called on citizens and schoolchildren of the community to act as ‘sensors’ of the world, both in the United States and in England, as well as countless other countries that sought to develop more comprehensive maps of the region.²² Calling on citizens to help generate this information was cast in nationalism. Pride in one’s country and a sense of

²⁰ Esri, Bentley and AutoDesk have some of the largest name recognition, with ESRI a major sponsor for the Annual American Geographers meeting, and have a notable presence in academic institutions with student licenses for its ArcGIS. Its ‘ArcGIS Marketplace’ offers applications and analytics for nearly any industry, from business to humanitarian aid, and to all levels of government. See <http://marketplace.arcgis.com/search.html#i=all>.

²¹ Geller, “Imaging Geller the World”

²² Goodchild, “Citizens as sensors.”

adventure was summoned in order to elicit contribution. As the level of detail increased, the ‘army’ of sensors increased accordingly, with minutiae being mapped by average citizens, including flora and fauna of a region, as well as the migratory patterns of a given habitat population, and the geographical areas that are impacted as a result.²³

From 1939-41, many municipalities across the US embarked on a comprehensive photo land survey. Funded as part of the WPA, the funding provided jobs and enabled various improvements within existing communities. Administrative improvements at the government level were often easy candidates, as the WPA dollars were intended to provide money to projects that could begin immediately.²⁴ Photographers were hired to systematically photograph property. With changes in technology, 35mm film was an efficient and automated format that made such large projects now feasible. Once joined with spatial data, these images served as evidence for tax assessors, documenting the condition of property, ownership and valuation for tax purposes and insurance underwriting. Counties held a large archive of photographs of buildings, available to the public upon request.²⁵

Mapping and creative production, or Nomad Mappers

Documenting the built environment has also been preoccupation of artists and hobbyists, and mapping as a unique kind of artistic practice has continued to grow as a particular mode of

²³ National Audubon Society, Christmas Bird Count. The Society has a long history of ‘birders’ that have taken part in the ‘Christmas Count’, in which bird enthusiasts count bird migration for the scientific community, with December, 2013- January, 2014 marking the 114th such count. New media applications have expanded this yearly activity to one that can be performed throughout the year.

²⁴ History Link, WPA. Today, many of these compiled archives stand as historical documents of the city. Campkin & Ross state that Google attempted to get access, so the history archive was known to the mapping team. If the Aspen study was widely known to those in the Internet sector for its early ‘hyperlink’ quality, then Google would have likely known about this study, as well.

²⁵ Google’s interest in gaining access to these archives in order to digitize them and link them to existing Street View photos is evident in their quest for ‘comprehensive’ mapping. This impulse is evident today in crowd-sourced history projects like History Pin and What was there?, which allows users to geocode digitized historic maps in relation to the GSV API, and Google’s support for Time Machine indicates the value of layers of time as important data points.

production.²⁶ This expands the conception of ‘mapping’ as a discrete practice, but offers a particular systematic documentation of spatial information from which relationships are formed and a different kind of knowledge produced. Of particular interest here is the work of artists who have systematically documented the built environment in such a manner that appears ‘exhaustive’ or thorough in its approach. Given photography’s slow-exposure beginnings, the built condition has long been a stable environment on which to train the camera. As novelty of exposure gave way to the novelty of content, the lenses remained fixed on capturing the world. Early photographers at the turn of the century set out to document a radically changing 19th century Paris and other European urban centers. The shift in capitalist mode of production introduced new spatial arrangements, resulting in the rise of department stores and a decline in the variety of storefronts that served the varied needs of the population, from horse carriage wheels to window filled with mannequins. A variety of photographers, like Atget, Brassai, Cartier-Bresson, etc., visually ‘fixed’ the image of the environment at the turn of the century.

Artists often seek to make visible particular conditions in order to highlight a political point of view. Systematic photographic exploration of street facades by more contemporary artists reveal both the state of the environment as linear progression, as well as the banality produced by the scale of the automobile. Returning to the examples of Edward Ruscha and Robbert Flick, both of their practices can be viewed as a particular kind of mapping. Ruscha’s ‘Every Building on the Sunset Strip’ presented it as a folding system of display, which carefully documents the street condition, enabling the viewer to ‘move’ along the strip and both sides of the street would be visible.²⁷ Robbert Flick’s project mapped the streets of Los Angeles, driving through the environment, continually documented from his car window. The facades were then

²⁶ This topic is a dissertation topic in itself, and falls outside the scope of the work here.

²⁷ Notably, it’s quality of depicting every building on the Sunset Strip is a visual prototype or precursor to Google Street View, and its mode of capture similar to the careful documentation by Google, albeit in an analog way.

displayed as large contact sheets and overwhelmed the viewer with the visually tiling of frontal images. Both artists systemized the means of capture, but each provided a different aesthetic, representative of the era in which they were producing.

The mode of presentation was conceptually tied to the content of the project, thereby encouraging a particular reception of the work. Whereas Ruscha's work conveyed the banality of moving *through* this car-centric environment, Flick's work emphasized the banality of the environment through sheer number, the repetition of blank walls and relatively undifferentiated facades against the persistence of the visual language that sought to demarcate the places which lacked formal legibility. Documenting existing conditions of the built environment is thus one of the strengths of photography, for its ability to create an index of reality reproduces a faithful likeness that can stand in lieu of the actual object, creating a visual 1:1 relationship. As an exhaustive means of visually mapping the environment, these efforts add to the virtual content of the present.

Mapping and knowledge production

Together, this systematic and novel documentation of existing conditions produced countless archives of information, where changes over time could be discerned and theorized. The archives produced by an increasing heterogeneous mix of mappers, and produced a line of researchers of their own heterogeneous mix that sought to build upon the information base. This co-constitutive relationship of the production of material information and producing knowledge based on said material is, at best, 'complicated'. At worst, it creates a subjective plane of

malleable ‘truths’ from which a range of researchers draw upon to produce knowledge, giving rise to what is defined as ‘knowledge politics’.²⁸

Histories of urbanization are documented and cultural phenomena are socially constructed, based on features collectively considered worthwhile to spatially locate. This historical development of a city can be traced by its expansion of the ground plane and the building that resulted. Urban historians use these materials to aid them in their research,²⁹ and glean much information of a given area, solely on the changes of the mapped terrain and the notational descriptors. In other words, “urban space and cartographic space are intimately related.”³⁰ When compiled with additional ethnographic and cultural artifacts, the synthesis of this information from a particular place as it changed over time offers a rich understanding. As one example, a survey of maps generated for the city of Boston in 1880³¹ reveals a range of phenomena deemed worth locating spatially: one map depicted ‘secret societies’, asylums and hospitals; another map located concert halls and beer gardens; while a third depicted various ‘temporary housing’ options. These maps were produced in addition to traditional mapped urban elements like annexation dates and building/parcel information.

Making these spatial relationships visible is a highly selective process. There is a limited amount of information to be represented graphically and still be rendered legibly. Complex layering of information through compilation requires greater synthesis by the viewer, with more

²⁸ Elwood, “Emerging Research.” Elwood has continually sought to address this in her work on the ‘geoweb.’ She defines it as ‘the ways in which individuals and institutions leverage digital spatial data and spatial technologies in negotiating social, political, and economic processes, often doing so in ways that rely upon the differential influence and authority that is granted to particular forms of knowledge or representations.’ This will be covered in greater detail in the following chapter.

²⁹ Stanford University, Historic AAA Maps.

³⁰ Cosgrove, *Geography of Vision*, 169.

³¹ Map Database. The site gives a list of historic maps by location and year. For Boston, a seemingly eclectic selection of maps from 1880 spatializes information from a particular point in time.

elaborate keys to decode the symbology.³² This synthesis of spatial organization can create spatial patterns of events where none may exist, solely depending upon what is included. Areas frequently mapped show periods of rapid expansion, with projected building often included as ‘future’ road construction; it follows that conclusions about relative prosperity can be drawn from this second tier of capitalist investment of a particular era.³³ Perhaps one of the most famous examples is the map of Cholera outbreaks in relation to the location of water pumps, which created perceived knowledge of the spread of Cholera, regardless of the scientifically verified cause of transmission.³⁴ Or, referring to the Boston maps of 1880, mapping secret societies appear to have the same level of import as hospitals and asylums. Together, this group of spatial data suggests that the presence of secret societies gives rise to the need for asylums and hospitals, as it lies outside of the normative behavior of a civil society and therefore must be treated. In other words, spatial data can represent a variety of relationships, which highlight the subjective or partial truth that is represented within a particular map.

Researchers, in mapping their own phenomena, have contributed to the cultural production of organizing this spatial information, either as objective or subjective representations. The sociological inquiry of the Chicago School established the practice of mapping of empirical observations of the urban condition: the study of human behavior in relation to the social structures and the physical environment. This new research established the environment has having a key influence of social relations, and of particular interest was the rapidly changing organization and growth of the city. They produced a range of maps that

³² Cosgrove, *Geography and Vision*, 161-62

³³ Harvey, *Urban Experience*. Harvey defines the second tier of capital investment as being located in the production of the built environment. During prosperous times, new buildings are constructed to meet the need generated by the expansion of the first tier of capital.

³⁴ Cosgrove, *Geography and Vision*, 162. Thematic maps were critical for establishing scientific validity to ‘statistical mapping’, but historical analysis suggest that they functioned as ‘propositions’ or formulating a hypothesis of an observable phenomenon and should not be regarded as fact.

spatialized socio-demographic information in order to understand the connection between the environment and the distribution of races, as one example. The *interpretations* of that research were a direct product of the researchers' education, prejudices, ideological predilections, as well as honest 'naivety', in which the conducted research was due to genuine interest.

The production of knowledge that resulted from these ethnographic studies were were written up, synthesized and presented as 'findings'. The academic and scientific community validated these empirical studies as objective and true by way of publication. In the process, this school of researchers trained generations of sociologists and geographers of the humanistic science with these 'appropriate' methods and case studies. Overtime, more rigorous research methods were established to ameliorate perceived blind spots in the research. The development of standardized research tools, called 'Systematic Social Observation' (SSO), satisfied the demands of an increasingly stringent environment of the 'hard sciences'. The street audit was one such tool, which systematized the study of the built environment, recorded a variety of conditions, and mapped them as spatial information. Spatializing this information enables researchers to discover patterns in the condition of the built environment in relation to other spatially occurring phenomenon or as effects of socio-economic conditions.

The proliferation of photography is critical to the development of empirical research, in which photographic documentation of observed phenomena in relation to particular locations served as evidence for published findings and further study. The discourses of the birth of photography long established the truth claims of the photographic image as being an important use for research. As previously mentioned, the early sociologically oriented work by Riis and Hine utilized the influential element of the photograph by documenting the adverse living

conditions for the working poor or the prevalence of child labor.³⁵ Production of research of spatial phenomena against the mapped environment generated a concrete specificity to the phenomenon where it exists in the world. This spatialization of data, when adding empirical proof, is precisely what allows researchers to advance knowledge by observing concrete relationships in space. Documenting the street condition has been fully established as a practice, but ‘mapping’ the street level by way of photography is less common. Recalling the sociologist, Robert Sampson, his street audits used video technology to systematically documented street conditions. sociologist Robert Sampson studied the correlations between the condition of the built environment and crime rates,. The technology was inexpensive and gave researchers greater flexibility over the time of day and duration required to conduct the study. From the footage, he conducted audits and subsequently concluded that systematic photographic mapping could be as accurate for conducting street audits as in person.

Mapping as navigation tool

From another perspective, graphic abstraction enabled a particular kind of space where language and knowledge of the environment was produced at a reduced scale, thereby facilitating navigation of new environments or rapidly urbanizing environments. As the US industrialized and rail networks were surpassed by road networks at the scale of the metropolitan region, the need to update the rapidly expanding gridded network of streets was essential for both business and residents. The rate of urbanization surpassed the local knowledge of existing residents and the influx of new population into urban regions were confronted by unfamiliar geography to negotiate. The burgeoning growth of residential communities via transit networks and the

³⁵ Hine was a sociologist and an accomplished photographer. His effective photographs produced a growing interest in perfecting the documentary photograph that blurred the lines between art and evidence.

continual annexation of developing communities extended the reach of the city and with it, the ‘terrain’ that was unknown and therefore not navigable to the average citizen. This practice of mapping a larger area at this level of detail provided knowledge to the inhabitants.³⁶ Advance knowledge of a rapidly expanding urban environment has been instrumental over time, as the sphere of spatial knowledge has changed in relation to speed of travel. The pedestrian’s speed and scale of exploration is remarkably different than the sphere of mass transit the automobile.³⁷ Pocket maps have been the key to navigating large cities, for both residents and tourists alike, and are often the main mediator of experience of an urban environment.³⁸

Spurred by the increase of automobile ownership, the need for portable navigation for the individual driver became evident as cross-country independent travel became easier through a national road network. Vacation road trips captured the imagination of the nation, and everyone needed a little *direction*. A variety of private entities began generating and distributing road atlases, often simplified from an existing base map,³⁹ and included metropolitan road networks to aid the traveler. Insurance companies and national hotel chains often published a version that established their locations across the country on these maps. Other efforts to produce an

³⁶ While there is an extended discussion over the ways in which embodied cognition versus traditional accounts of visual computation produce cognitive capacities, it is generally agreed upon that human subjects learn in different ways. Learning an environment by moving through it produces one form of knowledge, studying a graphic abstraction generates a different kind of knowledge. The synthesis that happens between those two kinds of spatial knowledge are sophisticated levels of cognitive capacities of which most humans can synthesize in varying degrees of complexity.

³⁷ The early influential studies of Kevin Lynch point specifically to the level of resolution that occurs depending on the pace in which we move through the environment. While larger areas are sketched out for the motorist, small scale resolution is far less detailed than that of the pedestrian, who views the world at a slow, distracted pace versus the high pace of the focused driver. Lynch’s study in *Image of the City* reveals that auto-centric city have less memorable nodes and more ‘gaps’ in the mental maps compared to the dense urban environments that have high pedestrian activity. While this familiarity of the terrain can be attributed to the elements of planning that serve to focus our attention, there is also much to be said at the speed in which we move past the same environment and the level of detail that is captured depending on the demands of travel.

³⁸ Runcie, “Woman who Invented the London A-Z.” Pearsall’s *London AZ* map is one of the first pocket guide books in which she walked 3,000 miles to map the city. The stories surrounding the hatching of an idea, similar existing models, etc., is less concrete as a narrative. But for our purposes, that an individual produced a popular map by walking the streets is of interest. What is important for the argument here is the desire or need for a detailed map of the city streets.

³⁹ Campkin & Ross, “Negotiating the City.”

alternative to the graphic folded road map have taken different forms. At the turn of the century, Gardner S. Chapin produced photographic images taken at the intersection of US and State highway routes to aid navigation.⁴⁰ Meant as a general way-finding guide, users could note the pictorial landmarks and plan their route accordingly.⁴¹ This image provided a visual representation of the abstracted intersection and was meant to give advance knowledge of visual markers to aid the cross-country exploration.⁴² This facilitated cross-country journeys, but did not have details of the metropolitan network.

The larger metropolitan regions produced more detailed road guides, aiding the motorist and local businesses. Sprawling environments like Los Angeles were rendered navigable by companies like The Thomas Brothers. The spiral bound book was kept in the vehicle, always available for consultation and were indispensable. Yearly editions were issued to keep pace with the development of the grid, and older versions quickly retired. The level of detail achieved by the spiral bound book far surpassed the standard folding paper map, which typically provided a larger road network of major roads, accompanied by a detail map of the business district. Books like the Thomas Guide could render the smallest side streets as well as a host of urban amenities—from pocket parks, school and religious institutions, etc. Given its coverage and increased level of detail, the Thomas Brothers map became the Guide, or the *Bible* of LA, so comprehensive was it in its coverage; so essential was it for navigating the sprawling metropolitan region, it was often considered a sign of ‘citizenship.’⁴³ Even today, human interaction and navigation in a new urban environment is mediated by a map to some degree.

⁴⁰ Ibid.

⁴¹ David Rumsey website, <http://www.davidrumsey.com/luna/servlet/detail/RUMSEY~8~1~34033~1170186:Instructions-for-using-Photo-auto-m>. Website shows first page of the guide with the instructions for use.

⁴² Campkin & Ross, “Negotiating the City.” It was subsequently purchased by Rand McNally and incorporated into their national atlas.

⁴³ Anecdotal, but true. Cosgrove, *Geography and Vision*, 169, allows notes its status as a geographically important object.

An automated navigational system has been developed in tandem with automobile history. Jones Live-Map is the earliest ‘programmed’ route map in the automobile and dates back to 1909.⁴⁴ The automated disk system connected to the drive system of the car itself, and generated directions based on predetermined destination points. This directly aided long-distance navigation, but was insufficient for navigating the rapidly increasing street network, produced as a result of a quickly post-industrializing economy and a decentralization of urban population. While a series of systems attempted to make a navigation system affordable and effective, it was not until Satellite technology transmitting frequencies made significant advancement in automated navigation systems. It was not until the 1990’s that the Navstar GPS system developed by the Department of Defense had enough satellites orbiting to ensure consistent triangulation, and *it was not until digital maps had reached a level of comprehensiveness* that the two systems could be coordinated reliably.⁴⁵ Today, various after-market systems are available in a variety of platforms, providing customizable routing and turn-by-turn driving instructions,⁴⁶ distributed through mobile technologies or manufacturer installation.⁴⁷

Cognitive Mapping and Wayfinding

Another navigational system of particular interest is the internal human mental map or ‘cognitive map.’ In an early laboratory study in 1948, Edward Tolman revealed that rats

⁴⁴ French, “Automobile Navigation.”

⁴⁵ Ibid., 550. In a conference paper delivered at International Symposium on Computer-Assisted Cartography in 1987, consultant Robert L. French discussed the long-term hurdles to a truly effective on-board navigation system, which required digital maps to match against GPS data. His findings reported a resistant among mapping companies that were working on digital maps, signaling their uncertainty of the field and employing a ‘watch and see’ attitude, “Systems developers and map firms have been reluctant to undertake comprehensive digital map development before the market becomes better defined.”

⁴⁶ The flawed execution of some directions is often the subject of many jokes: while the position may be accurate, the map may not be, resulting in comical, yet frustrating, navigation directions.

⁴⁷ This shift here is important. While navigation aids remain essential, the directions of ‘turn right in a quarter mile’ followed by ‘turn right, now’ eclipses the semantic association of road names and visual cues.

possessed the similar capacity as humans to navigate a space, including ‘shortcuts’ to reach the goal-driven journey. The study highlighted the brain’s ability to store spatial information in the neural pathways for later recall; the cognitive map thus functions as an “internal spatial representation of environmental information.”⁴⁸ While humans had long since proven the ability to navigate their environs by way of natural systems, use of graphic representation is more recent, as mentioned above. The level of familiarity thus serves as a pivot between navigation as secure mode of wayfinding or navigating as an insecure mode of exploration.

Early urban theorists like Kevin Lynch and Donald Appleyard focused the imageability or legibility of the city as a means to facilitate navigation and developing a sense of place. For Lynch, it was the structural composition of the city of paths, nodes, edges, districts and landmarks that provided navigational anchors.⁴⁹ Appleyard, however, specifically points to the role perception places in our ability to navigate.⁵⁰ While the structural features that Lynch highlights may be prominent, the subjective nature of perception and features we pay attention to, or ascribe meaning to, are more important for navigation. It seems that perhaps one difference between the two theorists is one of Place and place. For Lynch, a sense of Place is developed in relation to these structural elements. The imageability of the environment enables the inhabitant to locate themselves mentally in the city, the more places in the city we can locate ourselves, the better our mental map is, and by extension, the greater the legibility is. Appleyard appears more pragmatic, where perception is an organizational mechanism, like thinking.

When we encounter an object, we immediately sort it based on our own cultural horizon, test hypotheses, etc. The broader our horizon, the quicker we are able to place objects in their categories. As a hermeneutic phenomenological condition, the structure of experience is

⁴⁸ Golledge, Preface, *Wayfinding Behavior*.

⁴⁹ Lynch, *Image of the City*.

⁵⁰ Appleyard, “Notes on Urban Perception.”

encoded, sorted and organized.⁵¹ But while we may all move down the same street, the elements we notice are unique to ourselves. If we are to give the same directions, the landmarks of what is ‘significant’ are likely to be unique to us, as our own subjective seeing focuses on elements in the phenomenal field differently. “The structure of urban knowledge is difficult to grasp and contradictory: concrete, abstract, disjointed, conventional, imaginative. As mental counterpart, it contains elements and attributes which are classed in concepts and categories and structured in spatial systems and systems of meaning; yet given the formlessness and complexity of most cities, it is also fragmentary, partial and inaccurate.”⁵² The blue house on the corner may stand out to me for its color, while the black fence surrounding the yard may stand out to someone else as being visually significant.

As embodied beings, our cognitive abilities employ a range of tactics for navigating the built environment, giving significant evidence of humans’ ability to store information and navigate three-dimensional space. A notable geographer of place and wayfinding practices, Reginald Golledge defines wayfinding as a process of determining and following a path or route between destinations; purposive, directed and motivated activity.⁵³ The route defines the sequence of movement between two points. The degree of legibility of a route determines the rate of travel and our ability to learn the environment, with route and survey being two dominant forms. Route knowledge results from active navigation of the world, in which the encoding process of looking and orienting oneself results in spatial understanding and memory. Survey knowledge results from having an understanding of the spatial relationships between places.

⁵¹ Deleuzian protests are loud. The critique of this orientation is that we fail to see the nuances of objects when we simply categorize them. So while we can move through the world and *not* stand in wonder at every single car, tree, person and building; we run risk of assimilating the environmental characteristics that provide a sense of place. For directions, the specificity of elements can make following directions effortful or effortless. ‘Take a right at the house’ is less specific than ‘take a right at the red house,’ versus, ‘take a right at the red two-story craftsman house.’

⁵² Appleyard, “Notes on Urban Perception,” 114.

⁵³ Golledge, “Human Cognitive Maps and Wayfinding.”

Route based knowledge is the source of much of our stored images or representations of our environment, while survey knowledge provides more accurate Cartesian spatial knowledge. This mode is also more detailed in the specificity of the environment, those that rely heavily or exclusively on this mode find it difficult to look at maps and orient themselves.⁵⁴ Users who rely on survey knowledge understand the layout of the city, but have less representational content that gives the environment definition and meaning. Both forms of knowledge are essential for effortlessly navigating our environment, as survey knowledge gives us a sense of the whole and we can intuit some journeys based on understanding the layout of our environment. However, having detailed on the ground knowledge is important for finding, recalling and returning to specific locations.

An Early Street View Example

Following the early navigation and cognitive map experiments, a team of researchers from MIT utilized new imaging technology to systematically document the built environment of Aspen, Colorado, in order to assess how a photographic computer-based interface might affect navigation, spatial ordering and cognitive space. With the aid of 16mm movie cameras, MIT Researcher Andrew Lipman and his graduate students produced “Aspen Movie Map,” using captured footage of Aspen at regulated intervals to produce a virtual tour of the city by linking metadata on an optical disk and presentation through computer interface.⁵⁵ The early screen images share many characteristics with the online interface of GSV, as well as produced many of the similar types of disjunctions in space-time relationships. Directional arrows for navigation enabled users to move through the city in an interactive manner. One key feature of the platform

⁵⁴ Munzer, et al., “Computer Assisted Navigation.”

⁵⁵ Mohl, “Cognitive Space in the Interactive Movie Map.”

enabled the user to navigate between the ‘map space’ and the ‘travel space’, giving the user different ways of understanding the layout of the city in relation to common landmark orientations, similar to switching between the map and the Street View interface.

Early navigation studies directly point to the efficacy of knowing what an environment looks like in advance of traveling, as it aids the way-finding process. Both phenomenological accounts of motility and habituation as an ordering mechanism of our environment make it possible, cognitively, to form a conception of moving through a new space based on past experiences. The larger physical structures of the built environment make forms recognizable and familiar, which facilitates the process of interpreting the physical world. When traveling to a location for the first time, the sense of time is extended for the navigator. The effort required to concentrate on visual markers in order to find a particular location previously unknown is a complex cognitive process that relies on our embodied sense of self which produces an ordered environment and a directional sense, as well as a horizon of meaning in which to situate new experiences as an ‘encoding’ process. Studies of second-time journeys and habitual trips reveal the decrease in effort required to return to a place in relation to the navigation time of the first journey.⁵⁶ This familiarity is also an *affective* difference in the sense of time required.

The Aspen Movie Map established an early precedent of experimental ‘spatial knowledge acquisition’ by way of a virtual realm in order to determine to what degree navigation of the first journey was eased by way of the virtual representation. When the aerial map was included in the interface, navigation via the virtual platform revealed that the experience of navigating through the city via the platform produced a similar level of knowledge compared to those that had actually visited the city. Whereas visitors to the city produced mental maps that were comprised of islands of activity; virtual visitors tended to produce mental maps that were more linear path

⁵⁶ Ibid.

maps, closer to the level of completeness of residents. Visitors that had first toured virtually and then physically, expertly navigated the city as if they had already been there several days. In several instances, the virtual traveler was appointed as the group ‘travel guide’ due to their level of comfort and familiarity, despite all travelers arriving at the same time. Overall, the results had clear benefits for users that may experience anxiety over new environments. The study also established the interface as being an efficient way to train for executing covert operations where actual experiences cannot be obtained in advance of the procedure.



Figure 34 Surrogate travel - user station

Mohl, “Aspen Movie Map,” 60.

Key to the research project was to understand how novel forms of navigation might advance spatial knowledge. For the subjects in the Aspen Movie Map study, spatial distances and topographical elements were flattened in the environment, causing a particular disorientation when arriving in the city. For all the subjects, the shift between unfamiliar and familiar was distinct upon arrival, as the arrival into the city was new, until they crossed the visual threshold where the Aspen map began. Such a dramatic shift produces different sensations of experience, and the arrival to the place was one of anticipation of ‘recognizing’ the area versus simply experiencing for the first time. The potential of the dynamic, interactive and pictorial interface to augment everyday experience offered new ways to develop cognitive maps of environments, and in fact, many of the subjects were able to effortlessly navigate Aspen without having ever been there, simply based on the time spent with the interface.

One interesting observation of the study was the documented range of affective responses by the users. One subject could not replicate her Aspen virtual experience and felt disgusted by her failure to match the real world in relation to the perceived image. She was unable to orientate herself in the actual environment as a result of faulty understanding of the virtual realm and the street layout that served as her way-finding guide. Another subject was disappointed by the familiarity of arriving in a new city: the representation prepared her for the journey and all of her experiences were measured against the stored representation, almost to the point of “boredom” (page). One subject who was typically nervous visiting new places and had a difficult time spatially orienting himself, expressed an increased level of confidence and ‘accuracy’ in navigating the new environment. For all subjects, the virtual image quickly blended into the actual city, leading the researchers to conclude, “The hypothesis, of course, is that the cognitive

spatial structures built during surrogate travel served as the foundation of further development on site, even after the origins of those structures were no longer available to active awareness.”⁵⁷

Internet historians cite this project as being a critical one in the early formation of hypertext interaction, and is part of a larger body of research momentum that engages the city in computer modeled environments as a way to understand the cognitive processes of spatial learning. Funded in part by DARPA, the military also saw potential value of being able to train soldiers during insurgencies, where advance intimate knowledge of the built environment would affect the success of the invasion. Having a visual representation of the environment in question was one such way to develop the familiarity without needing to be in the actual space.

Mapping as technology

As a true technology, the map acts as a layer for traditional modes of being in the world. In a broad stroke, the act of mapmaking establishes a bounded physical territory by systematic means of documentation to facilitate future navigation. Exploration of the material world produces understanding, communicated as knowledge by way of representation and abstraction, and it influences the ways in which we move through the world. These lines exploration and communication are co-constitutive and create a document latent with political implications in relation to the representation of knowledge. The aesthetic content is determined by the socio-cultural environment, whereby the legibility of the landscape and the practices which shape it are informed by the particular context and history of a given society and the normative practices that are ‘seeable and sayable’. In short, the politics of aesthetics is predicated on what a society recognizes, not merely in a normative and moralistic fashion, but as a more fundamental platonic sense of being present in order to be ‘visible’. This has at its origins eligible citizens and the role

⁵⁷ Ibid., 177.

of the laborer: visibility as eligibility for participating in politics, as opposed to remaining hidden from public consideration in order to produce essential goods and service.⁵⁸

The producers of this knowledge has shifted overtime, from the auspices of the nation-state advancing an official position of knowledge to the wide-spread distribution of micro-producers at the level of the citizen and the private sector. The motivations and interests in making spatial information visible proliferate accordingly. This shift of responsibilities and opportunities within mapping have created two unique outcomes: the production of state-sanctioned truth has been distributed across many populations and interests, producing a proliferation of aesthetic content as well as generating larger questions as to the accuracy of this new distributed knowledge production. For the unwitting users of these maps, the map often appears as ‘just a map’, one that provides visual information and from which decisions are made.

As part of the virtual field, these various mapping impulses, here only sketched out, reveal the potentiality of mapping and maps as a socio-cultural and political act. As users of maps and producers using maps draw from this virtual field, the productive content extends to the larger social field, affecting and affected by an even broader territory. This tension is particularly relevant for Google’s production and the authority it is accorded, and the work/efforts of its citizen cartographers it solicits to take part in their larger endeavor to make the world’s information accessible and useful. Within this trajectory of imbricated mapping uses, the shifting political-economic environment and the changing role of the government is a critical area to examine, one that had a significant role in Google’s success in emerging as the most comprehensive mapping service.

⁵⁸ Ranciere, *Politics of Aesthetics*.

Neoliberalism⁵⁹ and hybrid mapping

With the neoliberal climate championing private enterprise and the shrinking of the role of the government, a movement towards the commercialization of many projects involving geo-based services began in the 1960's, and appeared fully sanctioned by the mid-1990's.⁶⁰ The launching of the Sputnik satellite and the ensuing Cold War era of proliferation of satellite technology and its subsequent commercialization has facilitated the success of Google. A recent journal article, "A political economic critique of Google Earth and Google Maps" argues that this particular political-economic environment of the Cold War and commercialization of satellites was essential for the existence of Google's mapping efforts. Using a classically defined political economy approach, author Mickey Lee historicizes Google's production and importance as a social phenomenon through key turning points in history. However, attributing the *very possibility* of Google's mapping service to these events ascribes far too much teleological weight to historical struggles.⁶¹ Embracing the contingency of the virtual as a set of potentialities that may be actualized draw from the given conditions, some of which may be evident while others latent and unapparent, are thus critical to disentangling the Google assemblage, rather than relying on historical struggles to produce a particular social phenomenon.

The confluence of world powers, invention of flight, photographic documentation and the practice of mapping involve a far richer virtual set of potentialities, in which the Cold War emerged as one event. The commercial runaway success of Google was but another such event,

⁵⁹ The historical emergence of neoliberalism is covered in greater detail in the final section : Political-Economic Dynamics. For our purposes here, I draw from the established characteristic of neoliberalism; a more careful examination of the 'accuracy' of neoliberalism as a phenomenon within this context will be taken up then.

⁶⁰ A key executive order by Clinton fully instantiated this; covered below.

⁶¹ Lee, "Political Economic Critique," 917. Recent article by Lee uses Political Economy as a means of analysis of Google as a company and the business practices it engages in. In giving a 'brief history' of remote-sensing satellites, Lee states, "many Internet users are awed at Google's ability to produce new applications for information search; yet, few are aware that Google Maps and Google Earth would not have existed if there had not been the Cold War and if the US government had not commercialized remote-sensing satellites."

one that emerged from a complex confluence of forces of the social, political and economic realms, of which came together at a particular moment in time and space: the very definition of an assemblage for D & G. In other words, Google's success and production of the mapping services involved more than the just political economic climate of world powers under the neoliberal regime. Lee focuses on production, not consumption, staying true to the defined political-economic approach provided therein. However, the very nature of the immaterial product of 'search' and online maps demands additional attention be given to the users/consumers of Google's products, especially in light of the key role ascribed to users in refining Search through consumption or use of the product.

Space exploration and the launching of satellites created a race to land on the moon, two impulses already at work in the history of mapping, as exploration required a thirst for knowledge and power and an interest in finding new resources to bring back to the mainland. A similar race during sea exploration also emerged, with an intense effort to discover distant lands in order to establish a stronghold on material goods, including raw materials, spices or other rare resources. The wealth produced by such conquests often resulted from exploitation of the resources of remote lands for economic benefit of an established market. While countries were politically and financially motivated by these explorations, the explorers themselves occupied a different position. While explorers were rewarded for a successful journey, the knowledge acquisition through exploration from the journey itself was an important part of the exploration. The race to the moon was both a desire to conquer a new territory (and such imagined potential of 'virgin' lands no longer existed on the planet) and acquire knowledge and potential discovery

of resources, all in an effort to assert Man's technological prowess.⁶² Similar to the explorers of the sea explorations, the astronauts working under the NASA umbrella also operated according to a different logic, one that had exploration and the acquisition of knowledge as the primary goal.⁶³

The exploratory space flights brought back a new 'view' onto the world. It produced a new conception of 'surveillance', made possible through advances in photographic and telescopic technology in developing satellite technology. It provided a new way to keep track of large-scale movement of unstable governments that posed a threat (real or imagined) to world peace. The physical distance made such surveillance possible. Without drawing attention to aircraft, air rights and political 'no fly zones' of nation-states were not under threat and maintained 'peaceful' order.⁶⁴ The particular political climate was still coming to terms with the humanitarian devastation that resulted from the Nazi rise to power, and the sense of high alert had yet to recede. This psychological effect is expressed in similar terms of the early formations of neoliberalism under von Hayek and the original emphasis on reducing the reach of the State and increasing individual freedoms, as one effort to prevent future catastrophic events.⁶⁵

As the Department of Defense examined the accumulation of satellite imagery as part of 'national interest,' as the exploratory arm of the government, NASA engaged in a scientific pursuit of knowledge, one that also utilized new satellite images. The new view also produced a new sense of nationalism as well as an awareness of the earth's scale and its atmospheric quality

⁶² Nasa.gov, Kennedy Rice Speech. This sentiment is exemplified in Kennedy's speech, which evokes the sense of urgency of exploration and the pursuit of knowledge, *as well as* to triumph over physical barriers, "We choose to go to the moon in this decade and do the other things. Not because they are easy, but because they are hard."

⁶³ Which is perhaps exemplified by the political gesture of a joint Russian-USA moon landing.

⁶⁴ Air supremacy emerged with the First World War with the presence of military aircraft. The political climate determines the level of permission of access over nation-states and allies, ranging from 'friendly skies' to complete control by the military regime.

⁶⁵ Harvey, *Neoliberalism*, gives a broad overview of the political tensions of the particular environment, as well as the socio-cultural tensions that existed as a result. Within this environment, neoliberalism's emergence as both a theoretical utopian idea and a political-economic project.

and physical terrain, capturing the imagination of everyone.⁶⁶ Under Eisenhower, attempts to create a peaceful environment and keep ‘space’ free from ownership claims by any one nation, while the sharing of images should be inclusive for developing nations by making the purchase cost limited to reproduction and distribution expenses of the photographs.⁶⁷

Thus, the launching of satellites and the images it produced had the potential to serve many uses, politically and scientifically. The interest in developing and advancing satellite technology was not simply the result of the Cold War, as evidenced by the fluctuation of federal dollars earmarked for NASA. The very ubiquity of this particular technology is owed, in part, to its dual nature, one offering productive potential of knowledge production, while the other offering a new formulation of ‘surveillance’ and a heightened state of apprehension. Launching the satellites therefore exhibit two tendencies or poles: power over terrain and the ability to defend the nation-state forms one pole, while the power to acquire knowledge and discovery through exploration forms the other. *Pouvoir and Puissance*, to recall D & G. The socio-political milieu shifts between the ‘dominant’ power poles and is a result of both the political economic environment as well as the interest of the scientific community and the purpose to which the images might be put to use, itself subject to the capitalist impulse and the cumulative effects of technological innovation.

Remote-sensing satellites produced a duplication of information. The Department of Defense maintains military satellites, while ‘civilian’ satellites fall under the purview of NASA, thus giving the term ‘satellite’ an uncertain status. As satellite imagery and its sensing capabilities have increased with technology, so have the possible applications and industries that

⁶⁶ With Space Camps, efforts of sending a ‘teacher’ to the Moon and school environments creating the space to watch the space shuttle take off, signifies the cultural awe that exists in the collective imagination. It has become more commonplace, with a commercialization of traveling to the Moon priced out at a premium.

⁶⁷ Lee, “Political Economic Critique.”

have a vested interest in up-to-date imagery.⁶⁸ The buyers or users of this raw data have continued to increase exponentially, now fully imbricated in the social field and the feed back loop of technology and innovative uses. Thus, the range of buyers have produced *as much* of the movement between the two poles and have as much to do with Google's success, as does the result of commercialization of satellite data. The neoliberal environment encouraged private enterprise and mandated a reduction in government services created an opening in the field. In other words, it is the immanence at the level of the subject and the social machine, *as well as* the tension between the two, which must be considered, rather than just a confluence of political and economic structural forces that made Google's mapping success possible.

In terms of larger political-economic development of commercialization, the neutering of NASA's budget during the 1970s coincided with the larger decline in the US economy, while the commercialized NASA spin-off products registered sales in the billions of dollars by the end of the Reagan Administration, with products extending well beyond satellites.⁶⁹ During Eisenhower's term, the 'open skies' policy considered commercialization of satellite technology, but was unable to resolve the potential threat of inadvertently creating a prohibitive cost structure for image procurement (which would negate the good-will gesture of "open-skies.") Under the Carter presidency, commercialization of satellite imagery was initiated, but it was the Reagan administration that was finally 'successful' in accomplishing this goal.⁷⁰ The weather satellite was deemed a public good and thus retained, while Landsat was offered to the free market, following the passage of the Land Remote-Sensing Commercialization Act of 1984.⁷¹

⁶⁸ Ibid.

⁶⁹ Schnee, Economic Impact. Report puts sales and benefits at \$21 billion, and it is likely that the continued licensing of patents continues to generate sales of the same or greater amount.

⁷⁰ Lee, "Political Economic Critique."

⁷¹ Ibid., 918

Government continued to subsidize the development of the satellite system for several years until it became evident that the main beneficiary of the federal subsidy was Oil, rather than the imagined sectors that might benefit.⁷² The private corporation only collected data that had a ‘market’, thereby effectively diminishing the field of *potential* buyers; the Oil Industry had a vested interest in images of the world’s terrain as part of operations expansion. The government finally withdrew subsidy and the private corporation could not live up to the contractual obligations. The commercialization attempt was ultimately a failure, and eventually the government resumed control over Landsat. Its relevancy as a resource was further diminished by the Commercial Space Acts of 1998 and 2003. Since then, more private satellites have entered the atmosphere and data can be purchased from a variety of sources. As the potential use of satellite imagery grows by expanding the virtual plane, the innovation by users is also expanding, thereby increasing the demand.

The government has a history of commercializing its military and civilian practices. NASA technologies, satellite imagery, and perhaps most importantly, the Internet, have been commercialized for business use and have made its way to the average consumer – all of which have created a particular environment that has produced as well as impacted Google’s business, much like any other technology company. The commercialization of these products does not ensure its success and adoption, however. It disinvests the government from the production of goods and enables the free market to attach usefulness to its application. Or, it can revolutionize

⁷² Large-scale land speculation was particularly interested in seeing the image of the earth’s terrain, as it identified potential remote regions for ‘exploration’ for mineral rich land. Later uses of satellite imagery thus reveal the double-edged sword potential of this knowledge produced: capitalist interest, including the forest industry, sought to efficiently find territory of materials to exploit, while the same imagery highlighted damaging processes underway, like large deforestation in the Amazon on other isolated territory. Rebecca Moore of Google’s mapping outreach tells stories such as these to highlight the empowering aspects. This narrative has a mythic status and attests to the agency given to citizens when the tools to monitor their own environment are made available to them. See Google, *Next Dimension*.

existing practices in specific industries by presenting advanced products funded by research and development. Private industry can then streamline the production for broader use.⁷³

For Google's mapping services, the virtual potentialities were thus actualized within this particular configuration, but its actualization was not given. Mapping as a practice had its own use value. Commercial planes might have been contracted for data collection, creating a variation of the aerial view, as is the case with Open Street Map, which is currently working to convert aerial photographs into a base plane for their own open-source map.⁷⁴ Rather, the virtual is immanent within the present conditions, of which many ideas circulate as part of the social milieu that has created need and interest around a given set of concerns, like navigation and a shift in perspective. That Google was able to capitalize on its mapping efforts through professional business services *is but a small portion of their revenue*; the runaway profits of the advertising generated from their search engine gave them relatively unlimited financial resources to develop their own particular vision of a comprehensive and accurate map. This was in light of the growing belief that the online map was an extension of search, and there existed an actual void at the State level. While certain conditions may preclude some potentialities as a result of differentiation, the criteria or forces that gave rise to a particular event- the emergence of the online map- remain latent within the present conditions as part of differentiation. It is this actualization that remains contingent within the particular socio-cultural milieu, as individuals act in relation to the forces of capitalism and the given political economic climate.

⁷³ One unique example is a technical fabric, subsequently used for professional swim gear in Olympic competitors.

⁷⁴ Fisher, "Global Domination."

Volunteerism

The culmination of some of these structural forces outlined above are seen in the report published under the Clinton presidency, which sought to streamline the geographic survey services into a clearinghouse of spatial data, one that served as an “aggregate of agencies, technologies, people and data that together constituted a nation’s mapping enterprise.”⁷⁵ The recognized need for a uniform source of geodata across a variety of governmental sectors was increasingly clear in a rapidly transitioning environment to computing and generated the momentum to enact Executive Order 12906 in 1994, to establish a policy umbrella that would guide the development and management of such an infrastructure.⁷⁶ One of the prominent concepts contained within the report was ‘Patchwork’, which stated national mapping agencies should no longer attempt nor be required to provide uniform coverage for the entire country. Rather, standards and protocols should serve in place of the comprehensive base map coverage, enabling individuals and organizations to produce appropriate coverage that meets the scale of need of the situation.⁷⁷ The government agency, the Federal Geographic Data Committee, became the arbiters of standards of data and data sets and the protocols of use, which recused the government from additional mapping services and the expenses generated by the creation and maintenance of maps.

While the persistence of satellite imagery suggests a world that is well mapped, the imagery lacks the physical place-based markers that make it useful for navigation.⁷⁸ In an era of increasingly lean governmental operations, mapping had been in decline for many years in much of the world, with many countries unable to sustain national mapping efforts at all.

⁷⁵ Goodchild, “Citizens as Sensors.”

⁷⁶ Ibid.

⁷⁷ Ibid.

⁷⁸ Google’s position, Google I/O 2013 and Geller, “State of Online Mapping.”

“Governments are no longer willing to pay the increasing costs of mapping, and often look to map users as sources of income.”⁷⁹ (And given governments’ history of using schoolchildren and citizens as surveyors, this orientation thus comes as no surprise, as past volunteered labor produced a wealth of information. Perhaps they were *never* truly willing to pay the actual costs required for a comprehensive mapping system.) The establishment of the spatial data infrastructure established a large-scale effort of digitizing existing maps, made possible with the rapidly growing computer processing and graphic capabilities, as well as the commercialized network of the Internet. Professional mapping firms continued to produce their map editions, as updating and maintaining physical maps were still necessary as the transition to computers took place.⁸⁰

Ultimately, this Executive Order created a particular ‘opening’ within the mapping industry. The creation of standards and protocols of mapping, as well as the retreat of the government agency as being responsible for the comprehensive map, enabled the host of online and digital mapping companies to create a mapping product independently. It facilitated storing and retrieving of digital maps, as well as communication and retrieving actual data sets in a networked environment. The rapidly changing technology of the Internet and the advent of Web 2.0 eventually made it possible for multiple users to work on the same map online. A host of mapping companies created online and digital mapping products in response to this new computer and Internet environment.⁸¹ Early computer purchases often included trial map versions for firms like ‘Rand McNally’. Enhanced subscriptions were available for purchase, offering greater functionality, with updates available for future download. Early ‘live’ online maps such as ‘Mapquest’ had a strong online start, but it had significant delays in map retrieval

⁷⁹ Goodchild, “Citizens as Sensors.”

⁸⁰ Geller, “State of Online Mapping”

⁸¹ Ibid.

and only covered the US. Google's mapping efforts were working to produce a map of the world, but the sources for some geographic locations were inaccurate, outdated or simply nonexistent.⁸² Google's ability to revolutionize the server storage of the mapping platform made it highly responsive to users queries, and updates were often available within minutes. This enabled Google to continually update and expand the scope of the mapped environment.⁸³ Most important of all, the service was free. The Executive Order displaced the responsibility of comprehensive quality to a variety of stakeholders thereby creating a need to be filled, while maintaining the standards and accuracy to which these stakeholders should adhere. Between the efficiency of use and faster online access, the digital map reestablished itself as a culturally relevant and essential tool. *Someone* had to produce a comprehensive map. Who better, but Google?

A well-known narrative that evokes the impossible task of mapping and the obsession that develops in search of the 'perfect' map is Luis Borges's 'The Exactitude in Science.' The fable describes the construction of a map of a particular territory that reproduces every detail at the same scale. Overtime, this revered level of specificity fell out of favor, resulting in the scattering of the remnants and loss of 'knowledge' produced through the original mapping. In the process, it revealed the cultural construction of the importance of an accurate map, and the relative definition of what constitutes 'accurate'. Today, with mapping software available to nearly anyone, the act of mapping and the subjective nature of the map should be considered, at best, as an approximation to knowledge and truth claims. What results are the many verifiable

⁸² McClendon's history of online mapping development, as part of the press conference, *Next Dimension*; Geller also covers a similar history that is equivalent to McClendon's narrative.

⁸³ Google I/O 2013, Keynote; or also Next Dimension, 2012. Specifically, we can see the interest in the 'work in progress' environment and the company's ability keep data 'fresh'.

truths, a potential field of possibilities, compossible and impossible at the same time. While production of the map is inherently subjective, the act of consumption is equally fraught with this murky 'legibility' of the map, what constitutes truth, and what constitutes the visible.

03_Mapping Line: Contemporary Formulations

Mapping has a rich history that encompasses a range of interests and motivations, from cultural to political, and these varied threads quickly traced above continue to inform the present practices of mapping. Computer technology has enabled ‘leaner’ production, allowing more information and data to be produced and managed at a fraction of the time. Likewise, the neoliberal environment has created many constraints on government services, encouraging or requiring private industry to fill the need previously met by the government. Together, the confluence of forces has produced the unique conditions for Google to develop their extensive mapping services. Mapping as an idea was already firmly established, the online product extended a necessary tool that built upon existing knowledge; online companies considered it a natural extension of the search function, with finding place-based information a significant part of search.¹ Given its popularity as a search engine, Google Maps had an immediate, built-in user-base that would continue to grow. With mobile technology and the proliferation of smart phones, Google predicts the need for online maps will only increase.

The unique political conditions of neoliberalism have produced a particular environment for mapmaking specifically, one that makes Google’s product continue to stand out as the most comprehensive and accurate. Users are no longer required to consult a range of maps to satisfy their needs, and governmental agencies continue to find Google’s map layers more comprehensive than their own. Google offers professional services that make data layers customizable for emergency response crews like firefighters and ambulance units. This transition gives support to the sentiment that states Neoliberalism has created the environment in which the Government is a client. With computer technology and innovation as their business platform, this

¹ Geller, “Imaging the World”

intersection of the neoliberal environment and history of mapping have produced this complex mapping assemblage that most of world considers the de facto authority and the standard against which other maps are measured.² This is evident by the sheer numbers that access the platform: more than 1 billion unique, active users use the mapping products every month and more than 1 million developers use Google's map API to develop applications. As Google has stated, "As we were trying to create a map *of* the world, we created a map *for* the world."³

Environment of 2.0

The digital environment of Web 2.0 provides a peer-to-peer network, and produces a new collaboration space. This new horizontal network transforms communication and content production from the previous hierarchical organization in which one active producer distributed content to passive receivers. Open Source as a new mode of producing software also emerged, aided by the ability to distribute portions of the project across geographically discontinuous spaces, and enabled a variety of users to complete segmented portions.⁴ This particular environment of iterative processes marks the spirit in which Google operates in its mapping operation, and also defines the enthusiasm and range of participation at the individual level. While earlier open source projects were coordinated in the matter, the increase in efficiency within this new collaborative space has allowed a greater diversity of users to add content to projects built from an open source model, with Open Street Maps being the most relevant example.

² Pogue, "There's a New iPhone." Recent review of Apple's new iOS by New York Times technologist, David Pogue makes this point clear, as have many other reviewers, "Apple still has work to do before its Maps app has anywhere near the quality of Google's Maps app."

³ Google, *Next Dimension*, McClendon at 44.00.

⁴ A longer discussion of the history of open source and the tensions that emerge from a neoliberal environment will be taken up in the following chapter. For the moment, understanding the architecture of web 2.0 and open source as mode of production establishes the general condition

Given the wide variety of need and application that an ‘active practice of constructing and communicating spatial knowledge’ produces or generates, the utility of maps and the variety of information and data to communicate produces a new platform and environment around which citizens of any community or interest group could participate to build a map. It was now feasible to locate events of importance or highlight unique services for a particular demographic population. Google’s mapping platform is particularly adept at encouraging and incorporating user contributed content, and the availability of the API to a variety of developers has created many innovative uses from the base map, but increasingly, the functionality of Google Earth and the interest in Street View has expanded these efforts in all directions.

Map ‘mash ups’ became increasingly common as the user groups experimented with the potential of map production based on existing data, running the gamut from functional, practical uses to critical or controversial ones.⁵ More significantly, it empowered communities in developing regions that lacked a mapping agency or were subject to oppressive and exploitative practices as a result of their ‘unrecognized’ status, by giving them the means to produce their own maps. For developing nations, this was an opportunity to assert their existence and engage in the power struggle that occurs at the moment in which a territory establishes the subjects that inhabit a particular place, and the identification of boundaries and resources that create the need to defend those same elements.⁶

⁵ The critical ‘counter-map’ established itself as a means to present a socio-cultural critique generations earlier, which has its own intellectual lineage, drawing from Surrealist, Fluxus and Situationist antagonistic impulses that seek to trouble the experience of navigating with a map by changing the terms, motivations and experience that results. The Situationists specifically sought to detourn the kind of sanctioned knowledge that the map represented through its semiotic register. Farman specifically points to this layer of new knowledge production in light of new Web 2.0 technologies as a way to ‘trouble’ the master narrative of structure vs. agency and the top-down, authoritarian power environment and attendant discourses that seek to update the panoptic and surveillance society discussion that result from new satellite technologies and images. See “Mapping the Digital Empire,” 468.

⁶ Kitchin and Dodge, “Rethinking Maps.”

With the US, the establishment of standards and new technology thus cemented the shift in the production of maps. The government, no longer generating the content of the maps, became a consumer of the mapped information.⁷ In many instances, the government provides the data for free, but relies on private entities like Google to disseminate the information and render it meaningful,⁸ or, in other words, make it ‘actionable.’ The private paper map industry that sought to fill the need via computer programs couldn’t update as fast as the Internet environment could. As the heady dot-com days of the 90’s gave way to leaner, skeletal operations of the post dot-com crash, innovative technology operated on minimal budgets.⁹ The spirit of open source and its user-generated code and content created a unique environment in which crowd-sourced data could feasibly produce the same product that a profit-generating corporation could. Human ‘sensors’ that collected and interpreted data gave way to a radically new knowledge politics.

A new minoritarian mapping environment

The empowering spirit, in defiance of the capitalist mode of production as well as free from the control of the government, simultaneously gave a large swath of the population the voice and the tools needed to contribute to a larger project to their benefit, as well as generated the satisfaction of seeing abstract knowledge have a force in the world and be actualized in a concrete, useful application.¹⁰ More importantly, the ability to customize a ‘patchwork’ map that

⁷ This is evident in the government’s need of Google’s mapping services during Hurricane Katrina, Google’s involvement with other natural disasters, as well as the emergency response technology that many local governments are subscribing to, as a result of the comprehensive and accurate information that already exists.

⁸ Leszczynski, “Situating the Geoweb.”

⁹ McClendon, his account of working at Keyhole and the other virtual software company described the environment of lean budgets, located here: <http://www.theverge.com/2012/9/17/3322854/google-startup-mergers-acquisitions-failure-is-a-feature>; or see Google *Next Dimension*.

¹⁰ This sentiment is expressed by Google, but also is present in VGI literature, with Sarah Elwood being an important figure, as well as Agnieszka Leszczynski, Michael Goodchild, among others. As wealth of literature surrounding ‘digital activism’, including authors like Leah Lievrouw and Joss Hands also embrace its potential. However, not all literature sees it as productive potential and highlight the digital divide and surveillant techniques

has the same standards of other maps under the NSDI established protocols; the authority of the locally produced map reflects their needs while also has the factual legitimacy by following the same standards. Volunteered Geographic Information has emerged forcefully to fill a perceived and real need no longer filled by the government. Mapping phenomenon was sexy again and reinvigorated geography and produced a new string of neologisms and updated concepts, including ‘geoweb’, geotagging, neogeography, critical GIS, volunteered GIS, among others. In the process, a new discourse emerged surrounding the character of the production and its potential and implications. This enthusiasm is particularly evident in the range of scholars that see the potential for participatory projects and democratic distribution to a variety of publics, creating an entire field of study within Geography.

One of the early stated goals of Clinton’s Executive Order was the ability of “fostering development of a variety of educational and training opportunities to improve the collection, management, and use of geospatial data.”¹¹ The overall effort relied on ‘creative partnerships’ that were becoming the norm within the neoliberal regime, in which the government continued to retreat from many of its nonessential services and let a private partnership fill the void. Volunteered geodata from citizens is one such creative partnership that has produced a range of data, from urban design issues in local communities to astronomical observation by space enthusiasts; identifying the location of historic photos to tracking bird migration via custom birding apps, as well as local community maps and resources, such as mapping fruit trees on public land or similar resources of public interest. In response, a range of organizations and institutions citing other crowd-source projects as inspiration, and social scientists studying the feasibility and veracity of conducting research through crowd-source data collection.

that web 2.0 and computer spatialization create as a result; included here are Stephen Graham, Reuben Rose Redwood, Michael Crutcher & Matthew Zook, among others.

¹¹ See page 771, <http://libraries.maine.edu/Spatial/gisweb/spatdb/gis-lis/gi94096.html>.

These particular practices have generated an enthusiasm for crowd-sourced activity in general, as the previous activity of mapping existed under the auspices of skilled cartographers and state sponsored efforts. Citizen could now interact with mapping interfaces like Google Earth and Maps and have an ability alter the map in different ways, thus wholly challenging the very notion of knowledge production and a ‘central map’.¹² Perhaps more importantly for its long term potential and sustainability, it generates a sense of purpose for the participants within the community who take part in this larger collective effort. In practical ways, however, users contribute to the very system they directly benefit from, like traffic monitoring apps that alert the driver of potential commute issues, where user participation is what makes the app function. Technology has made this ‘volunteered’ information run in the background, with automatic recording of data without the conscious action of the subject.¹³ This particular aspect is cause for concern, as a user transmits and makes available a range of data without knowing the full implication of their actions. Privacy advocates continue to work to educate consumers on these practices and recommend safeguards to corporations that wish to utilize this data.

One key component in this crowd generated, open-source production is the underlying corporate support that often sustains these efforts. The software applications are typically written by those employed in the corporate world and their salaried work underwrites the ability to devote labor to non-profit efforts like Open Street Map, a FOSS (free and open source software) application. The program and its data is hosted by Bytemark, a traditional for-profit company. They host the site in exchange for free advertising. Recently, Open Street Map has partnered

¹² Farman, “Mapping the Digital Empire,” 467.

¹³ Traffic App Waze produces near real time traffic speed information via voluntary sending of GPS information to the server. Other Waze users can then assess their commute. Google maps also generates real time traffic information from its users (though it’s not clear how ‘voluntary’ this is) by determining speed in relation to GPS points. Google’s recent *acquisition* of Waze for over \$1 billion points to the importance of securing the crowd generated information, the technology that runs it and the software designers behind. See also See Cohan, “Four Reasons.”

with Microsoft, which supplies Open Street with satellite imagery and receives data layers from them in exchange. The original impetus for Open Street Map, however, was a result of the exorbitant premium the British government charged for access to spatial data. In an effort to free information from the government, a citizen led movement generated their own local knowledge outside of the capitalist system. This environment, however, is still beholden to capitals interests, as non-profit and open source efforts such as these are given server space from corporate entities, with advertising in exchange.¹⁴ This particular new economic condition is what some theorists are calling wikinomics, one that is particularly effective harnessing crowd production without the typical capitalist equation and ‘the extraction of profit from surplus labor’.¹⁵

The mapping gap was quickly filled by a ‘creative partnership’ with the private sector and ordinary citizen involvement. With Google and other online competitors, there was a clear economic opportunity in creating the world’s map, and the need was patently clear. Being tied to Google’s already powerful search function, the ability to reach a large audience and tie business searches to advertising opportunities ensured success, as long as the key guiding principles were adhered to: comprehensiveness, accuracy and usability. A commercially produced map service like Google’s (among a host of others) is a critical free resource for businesses wanting to show their location on the map and for individuals wanting to locate an address for navigation. The online map is now critical to mediate and bridge the online and physical environments through which users move, extending in all directions from the previous condition of the mediated

¹⁴ Leszczynski, “Situating the Geoweb.”

¹⁵ Ibid., 80. Citing Tapscott & Williams. Tapscott & Williams are clear in their celebration of this new citizen or user-generated content and see its potential as one that can be unleashed and harnessed in many ways, including new models capitalism that seizes the ‘collaboration economy’ in unique ways. Most concretely, the ‘app’ craze that surrounds the iPhone gives one insight into this new environment, in which users generate the content, such as the WAZE app; while social media sites are also prime examples, with Facebook being the obvious success. Facebook is ‘delighted’ that so many users develop a constant news feed, which keeps many engaged and the advertising revenue stream flowing. This falls within the unique conditions of what I call “lean” production.

experience of a new physical environment.¹⁶ Moreover, users of Google's Maps have a direct investment in the accuracy of their Maps, and Google makes it easy for users to report errors, thus making future explorations easier. With the development of Smart Phone technology in the last 10 years, the need to have maps while being out in the world brings us full circle to the mediated experience of the individual navigating an unfamiliar portion of the city. No longer constrained by the paper boundaries of the map, the new inhabitant has the deep map of Google at their fingertips, and its increasingly sophisticated construction customizes the map for the user, according to their past search preferences.

Effects on Wayfinding and human cognition

As perhaps an 'addendum' to the Aspen Movie Maps, and the influential work of Tolman, Lynch and Appleyard, a wave of researchers are attempting to understand what, precisely, are the long term implications for our cognitive function when our movements are dictated, rather than self-generated, and how we actively navigate in a variety of situations in relation to the changes in technology and media environments. The increase in individual devices that provide different modes of assistance supports a clear need to better understand what the cognitive benefits and implications might be if we rely on one particular strategy over another.

The two dominant strategies for this decision making are 'response strategies', an automated habitual way of moving through the world, prompted by directional cues; and spatial memory, which actively recalls landmarks and relationships to a particular orientation. Like the

¹⁶ Google is quite clear in how they see this operating, and given the rise of online access and the number of users that utilize their maps, there is much to support this position. Manuel Castells offers another view that points to this condition, "what does not exist in the media does not exist in the public mind, even if it could have a fragmented presence in individual minds," in *Communication, Power and Counter-Power*, 241. The extending of ideas via the media apparatus, following Castells *Networked Society*, are powerful avenues in which communication, power and ideological positions are extended through the social field. Google's consistent message behind the 'need' to bridge these worlds with their map is powerful and circulates through society in myriad ways. This view is also compatible with Deleuze's concept of the Virtual, in which ideas circulate in discontinuous ways.

two forms of spatial knowledge, these two wayfinding strategies are equally important and work in tandem, and both serve us well in spontaneous situations of daily routines. Recent research has convincingly shown that each of the wayfinding strategies activate different regions of the brain.

The hippocampus portion of the brain plays an important role in spatial memory and navigation abilities, with the posterior portion thought to reflect the site of stored spatial memory. Studies of small mammals using spatial memory for food storage have revealed an increased hippocampal region in relation to seasonal demands. An early influential study conducted on London taxi drivers examined the brain structure of the hippocampus across right-handed male cab drivers from London and control subjects, and found cab drivers to exhibit a substantial enlarged posterior portion of the hippocampus.¹⁷ London cab drivers are a unique population to determine the level of plasticity of brains and to what degree relying on spatial memory affects the structure of the brain.¹⁸

The findings highlight the plasticity of the brain and its ability to accommodate the increased spatial demand on this particular population.¹⁹ Comparisons made between the length of time as a cab driver revealed a positive correlation to time and the size of the right posterior hippocampus. In other words, the longer one spent as a cab driver, the larger that region of the hippocampus, removing the potential hypothesis of a spatial predisposition. In the control subjects, the anterior region of the hippocampus was larger. In the findings, occupational dependence on spatial navigation provides evidence for functional differentiation, and the posterior appears to be “preferentially involved” when accessing previous learned spatial

¹⁷ Maguire, et. al. “Navigation-related Structural Change.”

¹⁸ Ibid. The cab drivers have an average of two years ‘being on the Knowledge’ training, in which they are required to learn and memorize the city of London. They are not equipped with GPS devices, nor can they consult maps for wayfinding. Throughout their shift, they continually access the mental map and stored memory of the city.

¹⁹ Ibid. The research study methods included two different brain scans, one general, another specifically oriented towards measuring the posterior. The results of the findings corroborated the site of spatial memory, controlled for age and health.

information. The anterior hippocampal region is accessed (and in combination with the posterior) during the ‘encoding’ of new environmental layouts.”

Of particular interest is that store of representations of the city is more extensive in taxi drivers. Over time, the grid continues to be more fleshed out, as knowledge of districts and short cuts knit the city together in a more comprehensive way, thereby resulting in an enlarged hippocampus and the location of the mental map.²⁰ The paper suggests that the hippocampus may have ‘evolved’ to handle the need for navigation as environments became more complex over time. Compellingly, The paper posits that “prolonged accumulation of nonnavigational information may also produce similar hippocampal changes.”²¹

While the paper ends with some speculative findings, the questions implicitly raised regarding the structural changes in the brain with a decrease in spatial memory navigations have been taken up in more recent studies. In a studies published in 2004 and in in 2007, researchers at McGill University examined how the gray matter in the hippocampus changed as a result of aforementioned navigational strategies.²² The study assessed an equal number of self-reported strategies to determine the brain activity and level of accuracy that resulted from attempting to navigate a virtual environment in a radial configuration.

As a probe test, the study removed landmarks, challenging the spatial memory group, in order to determine which group was more effective in attaining the study goal and to measure the brain activity over the whole group. The study proved that the group relying on spatial memory experienced more errors in the process and took longer to complete the task when landmarks

²⁰ A later study conducted by Maguire, et. al. “London Taxi Drivers,” also corroborated the original findings. It compared taxi drivers with London bus drivers. Subject to the same amount of driving stress and hours, the bus drivers had a significantly smaller posterior region, as a result of driving the same routes on a daily basis; whereas the taxi driver needed to be familiar with the entire city on demand.

²¹ Maguire, et al., “London Taxi Drivers.” And for our purposes, the increase of handheld mobile maps and street view changes the way in which we ‘encode’ new environments, highlighting an array of unintended consequences.

²² Iraia, et al., “Cognitive Strategies Dependent;” Bohbot, et al., “Gray Matter Differences.”

were removed. The response strategy group efficiently navigated the environment with fewer errors. However, the study reported 40% of the spatial memory subjects switched to the more efficient response mode of navigation.

Individuals using spatial memory exhibited a higher amount of brain activity in the hippocampus, which directly affects other critical brain functions. While spatial memory was inefficient for this test, the amount of brain activity remained higher than the subjects relying on a response strategy or directional prompts. The ‘response’ subjects exhibited more brain activity in the caudate nucleus; its role is one of performing in an automatic manner. Existing research suggests its adaptive mechanism enables the brain to optimize familiar behavior and is key for adapting fast responses.²³

The second study investigated correlations between navigation strategies and covariance of activity of the hippocampus and caudate nucleus. The second study confirmed the activity of the hippocampus for spatial learners, whereas those relying on response strategies exhibited activity in the caudate nucleus. In spatial memory subjects, the study also revealed the density of gray matter of the hippocampus as inversely correlated to the smaller, underutilized portion caudate nucleus. In response strategy subjects, the caudate nucleus gray matter was dense, while the hippocampus density was low. The research findings suggest that there is a ‘competitive interaction’ between the two memory stores in the brain, each one being optimal for certain tasks.

Perhaps most intriguing, the regions anatomically connected to the hippocampus exhibited an overall increase in brain activity in spatial learners. With the coactivity being mutually beneficial for higher brain activity, the caudate nucleus does not exhibit the same

²³ Iraia, et al., “Cognitive Strategies Dependent.” Citing Poldrack et. al; their findings are also consistent with Macguire’s existing research.

results. While the actual cognitive functions of individuals do not vary with either mode of navigation, the greatest implication of this finding lies in the role of low-density gray matter in relation to the onset of Alzheimer's disease. For researchers, this is an important step towards understanding key areas to focus on for preventive and restorative brain research.

With spatial memory increasing activity in the overall region, this also highlights the potential danger of relying on turn-by-turn navigation instructions, mapped information and images to help us find our way efficiently. Continual neglect of spatial memory strategies and the low matter of the hippocampus that results from relying on response strategies may have long-term health consequences. Given the newness of this emerging phenomenon, it is far too early to see the actual impacts of this shift. As more users rely on desktop and mobile maps and wayfinding devices that automate and optimize daily trips, spatial memory may ultimately decline, as individuals become less dependent on their own cognitive map, and more dependent upon the up-to-date computer map to give them precise locations and directions.

Additional research reveals similar results for other navigational assistance. Research conducted to assess the affects of GPS, maps and direct experience in both wayfinding behavior and spatial knowledge acquisition further substantiates the potential implications.²⁴ Navigation requires cognitively complex operations, a general sense of current orientation and the destination in relation to successfully execute the journey. This happens on a daily basis in familiar environments. When placed in unfamiliar surroundings, the processes operating in the 'background' during habitual navigation become apparent. Given the increase in technologies, the initial findings are expected and also illuminating: verbal instructions were better than route maps for drivers; participants using standard 2D maps could locate themselves easier and reach their destination faster than 3D visualizations; and a general 2D map was more efficient as a

²⁴ Ishikawa, et al., "GPS-based Mobile Navigation System."

locational tool than satellite/aerial imagery.²⁵ This survey confirms that there are a range of conditions and responses to navigational needs. The implications of relying on one form cannot be reduced to a binary assessment of good or bad; rather, the plasticity of the brain allows for, and relies on, a modulation between strategies. And one might argue, sometimes more information is simply more information.

A study of 66 college students extends this survey, dividing between modes of navigation: GPS, maps, direct experience, and gave them six different routes to follow. In most instances, the distance was longer, the pace was slower, there were more stops, wrong turns and attempts at reorientation for GPS users. Their topological sketch maps after the journey were the least accurate and this group rated the task as being more difficult than the group of direct experience. The participants that produced the worst sketch maps also *perceived* the task to be more difficult, take longer, travel further, less likely to reach their goal and was error-prone, regardless of the actual outcome. The physicality of the screen, the inability to understand the location of the goal and waiting for directional prompts can create a great degree of uncertainty and relies on a large amount of ‘trust’ in technology. This uncertainty changes the perception of time and heightens all the senses and emotions that accompany the activity. The study reported the most improvement over the six routes in GPS users, a clear indication that a user acclimates and develops a level of comfort over time.

While wayfinding was most the difficult for GPS users, users navigating by ‘direct experience’ created the most accurate sketch maps and had the best sense of distance and direction; they were most successful in reaching their goals, traveled the fastest and experienced the fewest stops and redirection. The direct experience test group was taken through each route once before setting out on their own. Their performance was based on a second experience,

²⁵ Ibid., 75.

which might account for some of the differences in speed and efficiency, but map users did not perform as well as the direct experience subjects. They had a map of the area, knew their starting point and end point and they could reference the map as much as necessary.

‘Configurational’ understanding, or translating the 2D representation to the phenomenal world requires sophisticated translation. The study points solidly to our *resourcefulness* in navigating without a map still functions well and efficiently. When given a visual crutch, we rely on continually assessing our progress in relation to the defined goal, while the automated device that promised the most efficiency proved to be most difficult and inefficient. *At first*. We simply need to trust the machine to guide us along, turn when prompted, allowing the posterior hippocampus to function on autopilot.

Additional research has yielded similarly compelling results. Researchers from Saarland University reported similar findings of spatial knowledge acquisition for GPS users, with subject exhibited good route knowledge and poor survey knowledge when using GPS; subjects using maps exhibited nearly perfect route knowledge and better survey knowledge.²⁶ The findings reveal that in an unfamiliar environment, many groups are better served by traditional maps than by automated navigational aids like GPS. While drivers benefit from hands-free directions and produces a safer driving environment, there is a hidden cost for the efficient navigation. For pedestrians, the use of GPS and other navigation assistance is also detrimental to acquiring spatial knowledge.

This experiment produced two unique aspects. First, the encoding principle of moving through the environment and cognitively orienting oneself in the environment against a two-dimensional representation is an active process. It produces a more firm spatial orientation and

²⁶ Munzer, et al., “Computer-assisted Navigation.” The study did not examine direct experience situations, only aided navigation experiments.

capacity for recall, compared to the passive reception of GPS verbal directions, where ‘shallow processing’ of voice direction in relation to the environment requires minimal amount of cognitive focus. One just needs to turn when the voice says to ‘turn right in 300 ft’. Second, the study revealed that having additional information available to the user during navigational procedures was rarely utilized. The additional visual prompts supplied to both user groups was not acted upon, nor did it influence the learning of the environment. One speculation from these findings is that more information is often simply more information. The brain handles a visuo-spatial situation through both the hippocampus and caudate nucleus, giving it more information to process the environment is unnecessary.

The consistent findings for computer aided navigation are becomingly less speculative, however. GPS results in poorer memory of a route. The ‘working memory’ processes that result from active encoding processes of navigating the world and manually (cognitively) reorienting oneself has a direct correlation to long-term memory. Allow the computer to ‘recalibrate’ for us, rather than requiring ourselves to do the mental processing and rotating, has clear implications for our ability to continue to build upon everyday spatial learning, and extends in many directions. For the researchers, the imperative and challenge to this new mediated environment is thus, “It remains therefore a challenge for an intelligent human-computer interaction design to find a way to both present information and to require the user to deal actively with this information.”²⁷

While map users fared far better than GPS users in terms of spatial memory, all ‘maps’ are not equal in terms of the active cognitive requirements. A 2009 study revealed that mobile map users performed worse in acquiring spatial knowledge of distances compared to the paper

²⁷ Ibid., 307.

maps group, and their configurational knowledge between location types exhibited differences.²⁸ The study offered two hypotheses: mobile map users would outperform paper maps due to the additional information, or, mobile map users would perform worse due to the attentional demands of the device.²⁹ With mobile devices offering automatic positioning, the passive state of the user is thus encouraged, relying on the device, rather than making active decisions based on the environment.³⁰ Reliance upon the device, however, leaves the user in a distracted state, as a continual reorientation is required and attending to the device competes with the actual environment. Rapidly processing multiple streams of information, the subject must continuously and subconsciously assess which task should be committed to memory or which can be discarded. Multitasking often produces error, or an inability to keep track of all elements or location information.³¹

As much of the wayfinding research concludes, our movements and need for navigation are goal oriented. We have a destination chosen in relation a current location. Previous navigation aids often consisted of maps in the glove box, or a metropolitan road guide on the seat or floor of the vehicle. Pedestrians and tourists may carry a fold out pocket map of the city, as were common for travelers, but its status did not have the same ubiquity as mobile maps do today. Indeed, one of Google's strategies is to understand user behavior and mobile search statistics. Many mobile searches are goal oriented and present commercial opportunities. Being out 'and about', users having access to maps efficiently closes the gap between the route and survey knowledge of the

²⁸ Willis, et al., "Comparison of Spatial Knowledge."

²⁹ Ibid., 103. A seminal study by Held & Hein in 1963 established learning is greater in a spatial environment in which the subject is active engaged and making motivated choices, as opposed to passive movement or being led or acting as a passenger. It is often observed that a driver has more recollection of the route than the passenger does, as one is in an active encoding state and the other is a passively surveying the environment and adjusting focal interest intermittently.

³⁰ Willis, et al., 108.

³¹ Ibid., 101. Citing Lindberg and Garling, 1983.

user in relation to the actual environment, establishing the starting and end point, regardless of where the user is, simply by asserting the floating blue marker in relation to the ease of dropping a marker for destination.

This work of closing the gap for oneself is lessened. The ‘home’ or ‘office’ anchor of the cognitive maps of Lynch’s era is no longer necessary; a mobile user doesn’t need to orient to an anchor to find a new location. The anchor is thus wherever the little blue (or red, or black) GPS dot is on the mapping screen, and getting directions to a search query is as simple as pressing a prompt for walking or driving directions, creating a dispersed ‘network’ of anchors potentially decenters home base. As the Saarland study concluded, mobile map users have focused ‘end-point’ knowledge of journeys; *but what lies in between these points remains a blur*. Rather than building a comprehensive network of route and survey knowledge, the distributed points of knowledge, somewhat ironically, begins to resemble the very psychogeographic map that the Situationists sought to create, one that was built upon exploration of the city. These spaces of the Situationist City were connected spaces of ambiance, small micro-spaces that changed without notice, “the sudden change of ambiance in a street within the space of a few meters,” where the “appealing or repelling character of certain places” influenced a drifting movement through the city.³² These new micro worlds that Google helps us navigate is not based on ambiance, but a path of least resistance. .

We’re all explorers now

Cartographers in the past have always been focused on getting people from point a to point b, the maps were built for people, for explorers, people were traveling from one country to another on a ship they needed a map to guide them. But if you look at what has happened over the last few years, all of us, have actually become explorers. We may not

³² Sadler, *Situationist City*, 90-91. Quoting Debord.

be navigating the world in terms of going on a ship for 6 months and discovering new worlds, but we are trying to discover these micro-worlds around us.³³

Google's recent promotional video gives a quick account of one history of the map and the ways in which Google has redefined the modern map. No longer at the hands of cartographers helping explorers get to their destination, Google has expanded the definition of what it means to be an explorer, the function of the map and the different instances in which we can now consult the map to prepare us for arrival and moving through space. As a two-dimensional space, Google has mapped the world and continue to map indoor spaces and trails, with the algorithms generating turn-by-by navigation. Moving from the home computer to mobile phone technology, our maps travel with us, and our need to access them while moving through the world is an efficient way to locate ourselves in a variety of situations in order to efficiently get to our next location. Our *actual* need to locate ourselves in a variety of environments hasn't changed over time. It remains as much a need today as it was in the early machinations of the capitalist city that produced a variety of new environments, each with their own spatial requirements and the attendant infrastructure that served these new sections of the urban realm. What *has* changed is our ability to rely on this new navigational tool and the ease and comprehensiveness that is at our fingertips.

The efficiency that is available to users of mobile phone technology is undeniable. The appeal of turn-by-turn navigation was made apparent with the production of gps devices that were sold by a variety of manufactures. Car rental companies, seeing both a need for their customers and an opportunity to increase rental fees, make them available to out-of-town travelers who often require assistance with navigating a new environment. Ordinary automobile owners purchase devices to aid their local travel needs, finding them helpful in larger

³³ Google, *Many Dimensions of the Modern Map*.

metropolitan regions, as well as the ability of the device to offer a reroute while in transit, making them attractive for commute options. New automobile manufacturers are partnering with these technologies, installing them as standard features and hardwired into the system. With mobile phone technology continuing to increase its market share, the tension between the 3rd party provider and the individual driver with their own data package will continue to grow, especially as the automotive industry meets the increasing demand for mobile usb connection points and a/v connections. These facilitate communication with the mobile device and make the voice-activated turn-by-turn directions in Google's mobile map app friendlier to the hands free driver.

Irrespective of the mobile technology and its larger implications for cognition and wayfinding, the general populace has a more comprehensive map on demand. Google's entry into the map market occurred at a unique time in which the paper map was static and ineffective in most cases, yet a provider of a reliable electronic map had not fully established itself as a clear 'winner'. What Google offered was a 'dynamic' map, one that better responded to user queries. It saw the value of 'previewing' destinations before arrival both as a service and as a potential motivator in consumption. The usefulness of making the physical environment part of their index of the world's information was patently clear, even if the execution was not easy. As a key manager of the mapping division, McClendon makes a very clear observation about the role Street View has within their larger mapping efforts,

“[I]t was really the highly responsive nature that let people interact with it, this really changed how people used maps. And then when we added satellite imagery, this gave people reason to visit the places that they had never been before, so they could see it for

the first time. And we add street view that really gives you that sense of familiarity of places that you are going to visit.”³⁴

McClendon’s description of the different kinds of navigation Google provides is portrayed as an opportunity for the user to accumulate different kinds of knowledge about a given place. Each type of representation provides its own layer of information, each one richer than the previous; and together, provides the user with a wealth of knowledge before they even leave the house.

The appeal of exploration is to experience something new. Indeed, the very definition of *explore* is ‘to travel in and through an unfamiliar country or area in order familiarize oneself with it.’³⁵ An explorer is thus one who seeks out this process of familiarization of an environment. *Being unfamiliar does not require completely foreign territory, but rather seeking out that which is unknown to us.* Google aids us in the exploration through their mapping function and through their graphical interfaces that enable ‘flying’ to a location in Google Earth, zooming in and transitioning seamlessly into Street View, with the navigation in all directions fluid.³⁶ Their conception of the modern map is to make these *terrae incognitae* visible, even at the smallest scale, “We may not be navigating the world ... but we are trying to discover these micro-worlds around us.”³⁷ For Google, the everyday unfamiliar is as important as the Unfamiliar, and they are working to index all of it. Street View excels at this particular aspect, and makes the unfamiliar familiar, across all scales. From the micro-climate of a neighborhood intersection or street parking signs to another part of town one does not typically frequent; from a new city, the banal

³⁴ Google, *Many Dimensions of the Modern Map*, at 1:04.

³⁵ To wit, this definition is the first definition of a Google Search: <https://www.google.com/search?q=explore+definition&ie=utf-8&oe=utf-8&aq=t&rls=org.mozilla:en-US:official&client=firefox-a&channel=sb>, accessed on June 19, 2014.

³⁶ Specifically, as Kingsbury and Jones suggest quite simply, who *hasn’t* gotten a thrill and sense of loss, flying through all these environments that are once familiar

³⁷ Google, *Many Dimensions of the Modern Map*, at approx. 0:15.

or the exotic, to far flung remote regions like the Amazon River, all are available online for anyone to explore.

Curiosity of the visual platform and what can be ‘seen’ begets a larger curiosity about the world. Where inevitable questions of ‘what does my house look like?’ moves to ‘what does my childhood home look like?’, to various other mental connections that emerge instantaneously.³⁸

The contagion of this exploration is exemplified by recent a promotional video, with a catchy, fast-paced jingle:

*What do you say we buckle up and we go for a little ride?
Cairo, Shiloh, Moscow, Chichen Itza
Krakatoa, Shenandoah, Mauna Loa, Tower of Pisa
Warsaw, Aqaba, Shangri-La, Transylvania
Nome, Rome, Stockholm, Lyon, Mauretania
Khartoum, Rangoon, Cancun, Saskatoon
Kowloon, Cameroon, Brigadoon, to the moon!
Let's go everywhere man
Let's go everywhere, man
There's lots of fun out there, man
We gotta have our share, man
Get out of your chair, man
Let's go everywhere.³⁹*

The footage is a combination of Google Earth and Street View footage and zips along the places outlined above, as a visually sophisticated exquisite corpse. Formal elements blend from one image to the next, identifying strong visual lines as a guide for the next scene. The seamless production, in relation to the fast paced lyrics are intended to generate an infectious curiosity about the world and the endless places one can travel, first virtually, then presumably, out into the world.

³⁸ Or, as a Google Earth addiction site alludes to, as have the aforementioned artists trolling Street View for images, one can get lost for hours moving through the virtual environment, constrained only by personal time commitments and curiosity, “When I was introduced to Google Earth, I was told it would rob me of about 40 days of my life. That was clearly an optimistic prediction. I’m waaaay past that.” www.keegan.org, as cited in Kingsbury and Jones, “Benjamin’s Dionysian Adventures.”

³⁹ Google, *Hello World*. As of March 02, 2014, the video was viewed more than 1.36 million times

In the classroom, it is a powerful educational tool, allowing students to explore places in relation to textbook narratives or current events; it also serves to whet our appetite when planning a vacation or investigating lodging conditions in advance.⁴⁰ Google seeks to make these many storied places of the world visible, from UNESCO heritage sites like Stonehenge to remote sites like Antarctica; from cultural iconographic places like NASA to the ski slopes of Olympic contests. The visual image immediately gives a level of familiarity with a particular place and produces a first layer of understanding. The scene is ordered and our own horizon quickly situates it, as long as it is visually contiguous with our own environment. The explorer in us seeks out these visual images also in effort to satiate a particular curiosity. In my own case, the desire to see what the ‘steepest street in Seattle’ might look like prompted a look at Street View. This recalls listeners of Kunstler’s podcast, whom often viewed Street View to gain a more complete sense of the concepts he was articulating, and thus prompting a suggestion to give virtual tours based on Street View footage so that viewers could follow along.

We have long since been acclimated to an image of the visual world, but the thrill that arises from being able to virtually navigate this virtual world takes us from a basic world of representation to a dynamic world of approximation, both in a navigational sense and as a level of familiarity. We are no longer constrained by the framed two-dimensional view of a travel photograph, we are given the ability to ‘see’ what is to the left or right of the image and explore a larger context. The assimilation that occurs gives us a sense of ‘understanding’ and a shortcut to knowledge, much like the subjects of the Aspen Movie Map whom were able to navigate

⁴⁰ One of the successful elements of Airbnb.com enables the user to view the general area of the lodging in Street View. This gives the user some confidence of the location, given the relatively informal arrangement of the lodging. Unlike hotel chains that have user reviews and a verifiable business address, Airbnb offers a home environment for a different travel experience, which can be a little unsettling without enough information.

effortlessly, based on the visual interface; including the one subject whom knew to take a shortcut, based on his erroneous navigation of the virtual version.

It can be seen as ‘helpful’ to know visual navigational cues in advance, and can build confidence in navigating unfamiliar terrain, especially in a foreign environment in which one might feel like a ‘vulnerable’ tourist searching for an address that is ‘opaque’ to one’s own particular sensibilities. There are, of course, less desirable effects of viewing parts of town or cultures with which one has no experience and then forming opinions based on that representation. This potentially has far more insidious and deleterious consequences. Often we are not even cognizant of making judgments based on the representation, and when a series of decisions are made based on a representation, those that are subject to this bias or discrimination suffer as a result. The ‘politics of aesthetics’ here looms large in all of these mapping practices, as decisions to include particular geolocated phenomena is as subjective as the decision to withhold it. Neither suggests malicious intent by way of the mapper. At best, it can serve as a representation of which a certain segment of the population was concerned or found value in making visible.

What *has* changed over time is the range of maps produced, from the royal mappers of the states and institutions to the nomadic mappers of the people that complicates the truth claims and the choreographed message of royal science. Many artistic practices exemplify this impulse, and many research agendas embody this same spirit, creating a hybrid map that challenges truth claims while radically expanding the aesthetic content. Recent changes in technology creates an opening for the range of maps that can be produced, through geo-coded spatial data of GIS or open source software of mobile apps, and enables a range of interests to produce their own spatial data and then distribute it across the social field. New knowledge claims reveal the

tension between expert knowledge and local knowledge, and the politics inherent in the single narrative versus the multiplicitous dialogue becomes evident. At the same time, this level of production highlights the sheer potential of data points that can be mapped.

We're all cartographers, too!

This contemporary condition of the wave of volunteerism draws from the resources and collective capacity of the crowd. A recent surge of popular nonfiction works give evidence to the seductive and utopic idea of collective work, with titles evoking ideas like *Cognitive surplus*, *Here comes everybody*, *Groundswell*, *The Wikipedia Revolution* and a host of other variations. They simultaneously evoke the rhizomatic connections of the environment of 2.0 in relation to the empowering capabilities that are latent with untapped potential. This continues to extend the original libertarian impulse and spirit that surrounded the potential of the Internet from the beginning. At the same time, an increasing number of dystopic accounts are also emerging, highlighting its darker side. Eliciting sentiments such as *The net delusion*, *Digital disconnect*, *Consent of the networked*, and *You are not a gadget*, the new urgency attempts to highlight the increasing environment in which the potential of web 2.0 is continually co-opted by a less hopeful agenda. These include government control, capitalism exploitation and devaluation of labor, or the deleterious effects of the digital environment for democracy. Unsurprisingly, a separate line of releases have focused on how corporations and individuals can 'win' or make money in this new economic environment, perhaps most notably, *Wikinomics*. It was an early attempt to harness the financial potential of this new mode of operating, and many of the hopeful titles above implicitly highlight this possibility. And perhaps, as evidence of what is really at

stake for many, *Program or be programmed* presents the either/or situation to either rule or be ruled by the new capitalist machine of web 2.0. Who wants to be ruled?

In a recent article, “Crowdsourced cartography: mapping experience and knowledge,” geographer map scholars Martin Dodge and Rob Kitchin examine this unique condition of web 2.0 and the preponderance of participants that contribute freely and willingly.⁴¹ Like the neologisms that emerged within Geography to research these new geospatial tools, so too a new string of neologisms describe the knowledge production in a web 2.0 environment, one that is described as a ‘read-write’ media,⁴² where users contribute and consume content. This is a distinct shift from the previous environment of ‘broadcast media’ where users were *mere consumers* or receivers of content. With the ability of users to contribute freely, new platforms and efforts have emerged; both as a response to actual needs as well as novel explorations of its potential. For large projects that seemed too daunting to execute, distribution via an open source environment made the creation of projects like independent mapping data in Open Street Map possible. In the same spirit, Google’s mapping efforts rely on users to notify them of errors of their expansive platform; or in some instances, to map the country from the ground up when required, with India or North Korea being recent examples.

Dodge and Kitchin point to this emergence specifically as an opportunity to examine some of the implications that result from this unique environment. They encapsulate three of the dominant arguments that are currently circulating among researchers and scholars in light of volunteered participation, which include ‘prosumption’ cartographers (Ritzer), citizen scientists or ‘volunteered geographic information’ (Goodchild), and a critical voice towards the ‘ignorance of the crowds’ (Carr). All theoretical versions rely on free, volunteered labor of

⁴¹ Dodge and Kitchin. “Crowdsourced Cartography.”

⁴² O’Reilly, “What is Web 2.0.”

citizen/individual participation, each participating in the larger project advanced by some corporate-like entity or organized effort.

The prosumer is a hybrid producer and consumer, a fully enmeshed agent that solicits his labor, thereby potentially disrupting the capitalist model. Ritzer and Jurgenson analyze the recent Web 2.0 trend in relation to similar models of the existing ‘prosumer’ ethos,⁴³ including self-check stands at grocery stores, checking oneself in at the airport, and ATM withdrawals, among others.⁴⁴ Struggles between labor power and exchange value are at the crux of this tension, with the market forces unable to support the amount of labor necessary to fulfill many of these previously wage earning positions. According to Ritzer and Jurgenson, the current environment of Web 2.0 elicits a different subject relationship, and the production and the role of exploitation is questioned. “The idea that the prosumer is exploited is contradicted by, among other things, the fact that prosumers seem to enjoy, even love, what they are doing and are willing to devote long hours to it for no pay.”⁴⁵ For the authors, this enjoyment stands in stark contrast over the willingness to perform roles as the exploited consumer, like filling one’s own fountain drink being one of their examples, where efficiency or freedom to self-manage is offered as rationale, in exchange for the effort required and the cost saving measures for the corporation.

In a particularly telling passage, the authors point to a particular condition in which the consumer seems to actually desire their own repression, to recall D & G,

Can we say that the prosumer is exploited? The fact is that many people seem to prefer and to enjoy prosuming, even in the cases in which they are *forced* into this position.

Traditional prosumers being handed an empty cup and being forced to fill it – sometimes

⁴³ Which arguably could merely be ‘chalked up’ to neoliberal ideology and ‘freedom’ for the consumer to manage their own affairs and purchases. While I think this is actually fairly accurate in some respects, it simplifies the argument and the pernicious condition that exists within this socio-psychological condition.

⁴⁴ Ritzer and Jurgenson. “Production, Consumption, Prosumption.”

⁴⁵ Ibid., 21

over and over – at the soda fountain in a fast food restaurant not only *gives them the possibility* of more soda at the same price, but also *empowers them so that they can decide how much*, if any ice, they want, as well as *giving them the ability to create* unique concoctions of various soda flavors. On Facebook, empowerment lies in the fact that one can choose exactly how one wants to present oneself and can alter that presentation at will.⁴⁶

The hinge, of course, is the sense in which the consumer feels undue expectation to perform tasks where previously not required. Offering self-check stands at a grocery store as an alternative pay system is different from requiring all customers to self check their purchases. Offering convenience functions different than requiring the customer to fill their own soft drink, as the ‘fountain’ is often removed from the production line behind the counter of fast food establishments, thus the customer is given an empty cup and is required to fill it. Free refills are offered in exchange for the labor exerted.

The citizen scientist is a more focused version of this active participant, one who is an agent that is also fully enmeshed, but trained to observe phenomena in the world and record/report the empirical observations. While Goodchild identifies a prosumer-form of participant as well, his emphasis and interests resides with the level of quality control that comes from the scientific need for data accuracy and how that has impacted mapping as a practice.⁴⁷ This role has a long history in the sciences, where studying large patterns, particularly migratory ones, rely on a large distribution of observations, as is evidenced by more than 100 years of the Audubon Society’s Christmas Bird Count. The scientific community is limited within the territory it can actively observe; drawing on local enthusiasts thus brings together invested

⁴⁶ Ibid., 25, (emphasis added).

⁴⁷ Goodchild, “Citizens as Sensors.”

amateur labor power to fuel the key data collection processes. New technologies of Web 2.0 and GPS encoded smart phones enable armchair enthusiasts to actively record when out in the world, with new apps designed to facilitate citizen involvement. The aforementioned article by Goodchild was written during the emergence of this mode of participation as a unique phenomenon, and he saw the unrealized potential of active human sensors serving as critical warnings when timing is of the essence. Humans move through the world and actively interpret and new technology tracks their movement. Understanding how one might harness this activity of ‘on the ground’ citizens during natural disasters offers unique potential.

The ignorance of the crowds thus stands as an indictment of the amateur participation, one that is fickle and untrained, underpaid and exploited. While there is a strain of thinking that, with enough data points, the crowd is reliably accurate (Shirky), Carr argues that in reality, the crowd is uneven in its level of detail, and unreliable in its unbiased accounts.⁴⁸ Moreover, given its uneven quality, its trustworthiness is also suspect. Overall, it grows in uneven directions, subject to the whims of its participants and selective coverage. Recalling Ranciere, what is visible to a community is accepted politically, if not in practice then as an established idea. What remains hidden is not due to its absence, but its imperceptible quality of ‘importance’. The danger is thus the visibility of the collective perception of what is relevant, legitimate and valued compared to the marginalized voices that are not recognized. While Carr speaks specifically of Wikipedia (and his example of ‘Flintstones’ having an entry double the length of an entry on Homer) this can also be extended to marginalized communities that do not have the leisure time nor the technological tools/abilities to assert their own community’s relevance. As culturally relevant, more knowledge is readily known about a cartoon than about one of the earliest and

⁴⁸ Carr, “Ignorance of Crowds.”

important works of fiction. Spatially, if a community does not appear on the map, it does not exist to the larger social field.

Within these conceptions of the active user-cum-producer, Google's preference is clearly with the active citizenry. The Citizen status is an invitation to join a community, not to idly produce digital representations that find its way online. It is the active, engaged inhabitant of lived worlds that has information and local knowledge, not a producer-consumer hybrid that is at once active and passive. What is relevant to its users is relevant for the map, in the process, it exposes the collective social field to a proliferation of 'relevant' mapped data points. A press release of a recent mapping effort for North Korea succinctly encapsulates this sentiment, "To build this map, a community of citizen cartographers came together in Google Map Maker to make their contributions such as adding road names and points of interest."⁴⁹ The local citizens have deep knowledge of the world through which they move, and it is this kind of knowledge or 'understanding' that can develop the comprehensive and accurate base maps for which Google is known. More importantly, in the countries Google has not been granted permission for Street View access, its proprietary mapping information is non-existent, as much of the base map is derived from the data from the Street View mapping efforts. The company recognizes the need for local experts to fill in the map with reliable data. By contributing, users can make sure the map reflects the world they care about.⁵⁰

At a recent Google Geo Community Summit, the attending Google official made the Citizens' role quite clear in his remarks, "*You* are now the mapping agency of the world, and many of the mapping agencies are recognising (sic) that fact."⁵¹ Google, as an early fledgling search 'start up', recognizes the difference between top down and bottom up efforts, and the

⁴⁹ Google, Lat Long Blog, "Detailed Maps of North Korea."

⁵⁰ Google, *Map Together with Google*.

⁵¹ Google, *2011 APAC Google Geo Users Summit*, Ed Parsons, at 35:15.

meaning derived from them. “The large, top-down approaches to making maps that traditionally the industry has followed for many thousands of years are changing very rapidly... They now go from a bottom-up approach, where local experts, people like yourselves are making maps, they are updating the maps, because you are the experts in your local neighbourhoods.” Similarly, in their map-a-thons, their call is to all citizens to put their knowledge on the map, with a reward structure of products and recognition by awarding ‘levels’ to active users. Moreover, it is not the mere production that Google values, though it values that too; rather, it is the knowledge one can contribute to a larger project, from road updates, recreation trails, commercial establishment and countless others. In their Map Maker tutorial video, Google emphasizes the volunteer mapper working alongside other mappers, inciting a sense of camaraderie, inclusion, and meaningful participation; once reviewed, the edits and additions are available online, “for all the world to see.”⁵²

Recently, World Bank has announced their partnership with Google, to bring the Map Maker technologies to developing countries.⁵³ World Bank has initiated many efforts to help communities identify and map essential services and critical resources. More than 2,500 projects have been mapped by the World Bank, and harnessing citizen cartographers through mobile technologies would allow them to effectively scale up their efforts and provide more communities with the data they need. Recognizing the lack of accurate data for local citizens, this presents an even larger problem when a natural disaster requires quick emergency response. With Google’s infrastructure, the mapping efforts are streamlined and made efficient; their philanthropic efforts of donating technology closes the critical digital link. Local communities

⁵² Ibid.

⁵³ World Bank, “World Bank and Google Announce.”

are given the tools required to ‘put themselves on the map’ and assert their existence in the two-dimensional representation of space.

The World Bank sees great empowering potential from these new tools, enabling citizens to make themselves visible, at the same time, it enables citizens to not only spatially locate and manage resources, but identify illegal activity and identify where development should occur.

“Where once charts were vital to guide mariners to safe harbors, today's interactive maps can guide development to the places it is needed most. Crowdsourced mapping platforms can serve as a foundation allowing citizens not just to map but to give feedback on the reach and quality of the services in their community. And that information can be used to improve service delivery, fight corruption and track resources. Citizen cartographers, yes, *but also citizen monitors, citizen evaluators, citizen-driven development.*”⁵⁴

The empowerment enables citizens to make visible on the map, and as previously mentioned, this act of inscribing is an act of power, regardless of how it is ultimately utilized, “In the 17th century, imperial cartographers had an advantage over local communities. They could see the big picture. In the 21st century, the tables have turned: Local communities can make the biggest on the ground difference. Crowdsourced citizen cartographers can help make it happen.”⁵⁵

“Google Maps Is Changing the Way We See the World”⁵⁶

The headline of Wired’s early article on the new mapping mash up phenomenon states in no uncertain terms how important Google’s maps are, and specifically, how important it was to the movement of novel mapping mash up efforts. Opening their code to developers and users, the entire Internet community generally and geography specifically saw the potential of spatially

⁵⁴ Antsey, “Empowering Citizen Cartographers,” (emphasis added).

⁵⁵ Ibid.

⁵⁶ Ratliff, “Google is Changing the Way We See.”

capturing individual knowledge. For the user that voluntarily creates their own mapped information, their interests determine what is ‘worthwhile’ to map. A transition between mapping ones own interests and mapping for the community cognitively shifts the individual conducting the mapping practice. An early article in the *Atlantic Monthly* examines this then new form of mapping, highlighting this acquisition of knowledge, “While we think we map places we already know, perhaps we also map to learn that which we do not.”⁵⁷ With the unique and sophisticated cognitive work required to synthesize three dimensional space and two dimensional representations, this sentiment offered by the *Atlantic Monthly* is contiguous to the more scientific explanation: our phenomenal world is enriched by understanding spatial relationships. As individuals that seek new knowledge, we are necessarily changed by the acquisition. The pivot between mapping to learn that which we do not know is a pursuit of acquiring knowledge by identifying a ‘gap’ in our understanding. This pursuit is necessarily subjective and unique to each individual.

What happens when we are in pursuit of data, or are motivated by something other than knowledge acquisition? A recent article by Matthew Wilson seeks to examine this particular condition in which the individual solicits their labor in participatory mapping efforts. In “‘Training the eye’: formation of the geocoding subject,” Wilson analyzes the survey tool that trains the citizen to assess the environment according to predetermined categories. The survey tool was developed by a New York City foundation developing the device for street audit conditions; a Seattle nonprofit adapted it for a pilot study in which they engaged citizens to assess the ‘features’ and ‘conditions’ of neighborhoods. Wilson analyzes the language and categorization of the survey engaged through moments of training. The training given to citizen observers produces a particular kind of knowing subject, one that incorporates specific language

⁵⁷ Mallonee, “Everyone Makes Maps.”

of the government in relation to agendas of specific neighborhoods. For Wilson, ultimately, the questions he seeks to uncover are how are these trainings embodied, and does this embodiment enable ‘constructions of difference’? In other words, does the subject draw negative correlation between certain ‘types’ of information, such as suspicious activity and shopping carts, or does the documentation of ‘homeless people’ and ‘street furniture’ render both as mere ‘objects’?⁵⁸

For Wilson, the gaze and the gazed upon are co-productive; map making is a mutually constitutive act of producing subjectivities and territories, whereby certain formations condition map-making while mapping enables the formation of certain bodies and subjects. The gaze can be understood as taking ownership of the object gazed upon, *though this need not be the case*. For the subjects whose vision is influenced by predetermined geocoding categories, subjects assume ownership or authority with which to survey and assess the environment. For neighborhood involvement, establishing a sense of ownership and attachment to place is critical. Citizens investing effort in surveying of their environment might make them more invested in the community planning process. As key figure of the Seattle project Sandy Weng states, “Ownership of communities is a very important thing in the success, the sustainable success, of the community, so it just makes sense that geographical tools would really be the best thing to use in reinforcing people’s sense of place and sense of ownership of that place.”⁵⁹

Wilson’s argument thus rests on linking neighborhood concerns to municipal action is actualized through this survey code; in the process, the practice of codework ties individuals to ‘place’, reinforces discourses of ownership and personal responsibility. “Geocoding subjects are thus constituted through the linkages between the act of ‘seeing’ and its materialization in the

⁵⁸ Wilson, “Training the Eye,” 367. Wilson provides a reproduction of the audit worksheet.

⁵⁹ Ibid., 364.

form of data and through these ownership discourses.’⁶⁰ For Wilson, this takes place through the training, in which the subjects are given new conceptual tools and vocabulary to think about the built environment. This changes their perception of understanding as they set out to document the built environment, now armed with ideas of which they previously were (at least potentially) unaware. This process is an augmentation of understanding, not a complete overcoding. Rather, Wilson draws from Harway’s cyborg, in which the individuals had their own particular subject position prior to the training. Through the technology, their subjectification became altered in terms of their cognitive practices as well as their engagement with the street environment through this handheld device. Ultimately, Wilson argues that narratives and experiences were funneled through the impersonal system that is oriented towards negative assessment, one in which the subject subsumes as the temporary authority of judgment through seeing and documenting.

With the map being so closely tied to ‘power’ and giving citizens the tools and training to create map for themselves, this empowerment of local knowledge production thus stands as a hopeful respite within a neoliberal environment, where the responsabilization of the citizen to produce and maintain their livelihood *can also* produce a sense of agency for the marginalized voices that are not ‘visible’ on the map; to create the sense of place and ownership as advocated by Sustainable Seattle. At the same time, the ability to offer this hopeful branch, such as Google’s call to all citizen cartographers to map their world, can appeal to this hope and empowering spirit. In the process, they have volunteered labor to produce rich layers of information on their base map.

As citizen cartographers think to add their local knowledge, they are transformed into the same knowing subject that is a local authority on establishments or street and bike routes. For the

⁶⁰ Ibid.

citizen scientist, both in the viewing of the field and recording empirical observations, and other 'official' observers engaged in empirical data gathering, perception of the phenomenal field is thus a sticking point. With citizens tasked with surveying, their perception is influenced by a checklist of things to observe and record. For the local knowledge, the citizen is required to assess what is worthwhile to include on the map. For those that are made aware of errors, the act of 'reporting a problem' shifts the subject position to one who reports problems, thus transitioning from a consumer of media into an authority of local conditions. However, to draw a boundary around Wilson's compelling argument, this transformation need not be a permanent, adopted condition. Much like Sartre's man in the park that oscillates between the perceiver and the perceived, as individuals, we also oscillated in between these two states. While this condition of being transformed may feel like a responsabilization of the neoliberal subject, it is also immanent production. The danger is thus 'identifying' with the role of someone who maps and reports problems, and how that rationalizing process creates a different condition based on investment of desire.

In both Street View and in the map platform, Google makes it easy for users to report a problem, and the company relies on this productive work to keep their maps accurate and up to date. A less onerous tool has also emerged for the mapping platform, one that allows individuals to construct their own panorama Street View style photos and upload them to the mapping platform, extending the reach of Street View. This introduces a degree of randomness and chance into the visual coverage. The Street View walking stick program extends this activity further, with the interests of its users making its way onto their epistemological plane, complexifying, enriching and capturing the various knowledges that circulate in the social field. Individuals thus take credit for expanding the quality of the information by sharing their knowledge; in the

process, there is a transference of ownership on a symbolic level, as an individual gets personal satisfaction from the contribution. With the reward recognition structure and Google's hope that everyone will 'want to join them' in mapping the world, the offer of joining a collective effort for a large good becomes explicitly clear.

With Map Maker, this sharing of power is explicitly articulated in the title, "Google Gives Local Users More Power in Map Editing." With the program, mappers that Google deems "distinguished" get enlarged reviewing ability to improve the map within their state, country or region of expertise.⁶¹ Participation is but one layer; the more active the participant, the more recognition one receives, and more authority. In Map-a-thons, there are prizes for the most edits. In the recent India Map-a-thon, the winner of the contest performed more than 32,000 edits on the map over 42 days. In real terms, this would require performing an edit every two minutes for the duration of the contest, without sleeping. On the product forum blog, there was a questioning of one's ability to perform quality work at that level. In response, the winner posted, "First of all Mapathon was for 42 Days not for 30 Days, Kindly correct yourself, there were many peoples who were doing very hard-work they were taking only 2 to 4 hours sleep. 'There is nothing impossible for people who believe in hard work.' You can also do that, **Thanks.**"⁶²

Empowerment turns enslavement. The top winner received an Android Tablet, a t-shirt and a certificate of participation from the long hours, offering a glimpse at the new modern 'sweatshop' and the desperation that results from living below subsistence conditions. In giving so much time to the effort, the participants signal a real shortage of employment opportunities; in some instances, it suggests a household effort of contribution, rather than a single user. It is also an explicit signaling incentive by the user. This hope to rise above the other user cartographers

⁶¹ Crum, "Google Gives Local Users." Also reblogged on Crowdsourcing.org website.

⁶² Google, Map Maker product forum, (emphasis original). Vishal Saini, on 11/4/13, in response to AdelTeo.

and be recognized by a powerful multinational like Google has its own cachet, one that could finally present an opportunity to pull an entire family out of poverty into the new information economy of plenty.⁶³ In exchange, Google now has a solid base map of India, produced by citizen cartographers, all hoping to win a phone or tablet for their participation. These small tokens of appreciation seem like empty gestures for a company whose earnings could be broken down to earning nearly \$2000 every second. For those that donated 42 days of their life for a \$1000 device and a t-shirt, it is difficult to not be critical of this ‘new economy’ that Ritzer and Jurgenson see as being generated by a pure ‘enjoyment’ in adding knowledge to a corporate map.

Critique of the participatory model

While scholars and researchers examine the phenomenal field and attempt to theorize what the significance might be for the larger social field, the fact still remains that users continue to participate, and corporations and governments eagerly accept and/or exploit the labor that was once bought. While the *labor* model may have changed, capitalism is uniquely capable of extracting income opportunities in relation to market forces. This negotiation of perceived expectation and the ability to participate in an enjoyable activity, regardless of lack of compensation is particularly unique, one that draws from the unique subject position and the motivation for participating in the first place. Thus, for the prosumers in Ritzer and Jurgenson’s framework, the rationale is thus organized along the lines of ‘I may be working for free, but at least I enjoy what I do.’ Conversely, Goodchild wonders, “Why is it that citizens who have no obvious incentive are nevertheless willing to spend large amounts of time creating the content of

⁶³ As Manu.A states on 10/31/13, “thank god...thank you all.. I won a Samsung galaxy tab 800 and got an invitation to google india Bangalore office ... :-)”.

VGI sites?”⁶⁴ This echoes, somewhat ominously, Harvey’s similar standing question for the neoliberal subjects, in which he wonders how individuals were willing to give up so much for so little in return.⁶⁵ Or recalls, even more ominously, the citizens of a fascist regime, ‘why did the masses desire their own repression?’⁶⁶

This coterminous questioning, sets the stage and establishes the imperative of understanding this unique tension between Neoliberalism and the potential of Open Source, and thus offers a particular insight into the circumstances in which the message of ‘freedom’ is co-opted by capitalism as a freedom for efficiency. As consumers, we willingly give up one kind of consumer freedom for an offer that seems worth the exchange, whether a discounted price or an unmediated experience; the consumer is responsibilized into performing functions for oneself. It is this elision of *functions that one must perform*, the degree of burden one feels and the ability or *capacity to assume* these responsibilities *that stands in tension with the process of rationalization* in which we narrativize the choice made as being one of a better outcome or ‘worth’ the acquiescing of freedom.

Returning to Ritzer and Jurgenson’s work on the prosumer, their intellectually savvy position and understanding of the complexity of the situation is revealed in their positionality, “Of course, a Marxist might argue that this is all just a modern version of ‘false consciousness’, this time manifested by prosumers rather than the proletariat in a production oriented economy. However, it is probably more likely that prosumers really *do* like doing these things and they are not simply being manipulated into such feelings by the capitalist.”⁶⁷ For participants producing projects like OSM, one could utilize this perception of ‘preferences’ in relation to the work that

⁶⁴ Goodchild, “Citizens as Sensors.”

⁶⁵ Harvey, *Neoliberalism*

⁶⁶ Deleuze & Guattari, *Anti-Oedipus*, (hereafter, AO).

⁶⁷ Ritzer & Jurgenson, “Production, Consumption, Prosumption,” (italics original).

is completed. Steven Coast, founder of OSM, states that one of the difficulties they face in making a comprehensive map with turn-by-turn navigations work as well as Google's is the contributors' apparent *lack* of interest in coding this detailed information. As Coast says, "entering turn restrictions is just not as fun as entering trails."⁶⁸ For Google's operation and the number of people that use their maps, it does not need the same level of participation and interest to fix errors, as the company simply has so many users⁶⁹ to make the process more seamless. For those wanting to use OSM, the relevancy and accuracy of information is called into question to a greater degree.

Ultimately, for Ritzer and Jurgenson, their early formulations of a theory of the prosumer capitalism are 'solid' in construction and consideration. It is not another instance of business as usual, rather, it signals a new model entirely,

"The position taken here stands in contrast to Humphreys and Grayson (2008) who argue that when corporations are involved, prosumption is simply the creation of 'temporary employees' and thus does not indicate a fundamental change in capitalism. However, in our analysis, entire business models based around prosumers (the so called 'temporary employees') who are unpaid and given the product for free *indicates the possibility of a new form of capitalism* built upon the four principles outlined in this article."⁷⁰

This position is less celebratory than a position like Tapscott and Williams, whose efforts celebrate the potential to harness this capacity. It is worth noting, however, that despite Ritzer and Jurgenson's conviction of this new mode of capitalism in which people willing contribute with no compensation, Ritzer himself has turned cautionary. Many of his more recent blog

⁶⁸ Fisher, "Global Domination."

⁶⁹ This is in line with Raymond's famous aphorism, 'given enough eyeballs, any problem is shallow', which alludes to the many perspectives that might engage the problem in a different way. With maps, the sheer number of users results in a greater likelihood that someone will report a problem

⁷⁰ Ritzer & Jurgenson, "Production, Consumption, Prosumption," (emphasis added).

posts⁷¹ wade into the very murky territory he confidently theorized: “While in the past capitalists thrived on exploiting poorly paid employees, it is now creating an even more exploited class of unpaid makers. Seemingly oblivious to the exploitation built into this system, makers are happily contributing to the emergence of a new, even more exploitative, capitalist system.”

This shift of conviction is not a new development in the technological discourse. For many who were insiders or early celebrants, there have been many moments to feel disillusioned by the potential of crowd production and its democratic potential. Jaron Lanier has been a vocal presence, speaking at large tech gatherings to help initiate a new awareness of this condition.⁷² As an insider and one of the early creators of virtual reality, his influence and experience makes him an important voice to hear. Evgeny Morozov is another prominent figure, a tech activist from Belarus, an oppressive authoritarian state.⁷³ As an active figure, he saw first hand how authoritarian governments could co-opt the liberating potential of the democratically revered web 2.0 gadgets and turn it into a insidious form of censorship, not unlike how Hitler was able to utilize mass media to garner the attention of the masses, bringing a particularly poignant reality to Benjamin’s fears for the ‘democraticization’ of art via of mechanical reproduction.⁷⁴ He saw its potential to liberate via the politicization of aesthetics (socialism), but he also saw its potential oppress by way of aestheticization of politics (fascism).

It remains, then, to consider the potential implications of crowdsourced participatory models that are models of production. While Carr is rightly critical of the dangers to the capitalist model of production, it *is* worth contemplating whether there is value in sustaining such a suspect model. For the user, having free open-source software is a real benefit, and has a

⁷¹ George Ritzer, blog, “Resilience of Capitalism,” accessed on January 22, 2014.

⁷² Lanier, *You are not a Gadget*

⁷³ Morozov, *Net Delusion*.

⁷⁴ Benjamin, “Work of Art.”

real impact on the ‘digital divide’ and the economically disadvantaged. Having free operating systems, publication platform and professional word processing not only diminishes the power of a larger multinational like Microsoft, it also places more technology in the hands of communities that benefit enormously from this ‘liberated’ information and code. The danger, however, is the reliance upon the individuals that are willing to continue to produce these free tools for free.

While it is liberating for many, it turns enslavement for the contributors of these projects that are built from the open-source agreement.

Lanier’s concern over the devaluation of creativity is real, however. While many create for the sake of creation, suppressing their potential to earn a modicum of earnings from their effort will change the cultural system as a whole. As more creative individuals take up full time employment to pay for food and shelter, it diminishes their capacity to create, resulting in a net loss for society as a whole, simply as a result of ‘devaluing’ the creative act and the desire to want information to be ‘free’. Intellectually, this model also raises many questions for the future of ideas and knowledge. The open editing platform of Wikipedia raised many contentious truth claims, with liberal and conservative viewpoints battling for their voice to be heard, resulting in needing to assert more ‘control’ over tone, format and socially accepted points of view.

The multiplicity of perspectives is thus given new currency, and the question of ‘whose’ story is told is more critical than ever. For production of knowledge for citizen participants of marginalized communities, this is empowering. However, the veracity of the data is thus subjected to different ‘burden of proof’ to show that citizen-produced minoritarian knowledge is as good as sanctioned, majoritarian intellectual projects. Studies are conducted merely to prove the validity and veracity of conducting research in this nomad-scientific way, while sloppy or biased royal knowledge is produced regularly, with far less oversight when the ‘methods’ section

is flawlessly written. Sarah Elwood, a prominent geographer engaging a feminist critique of knowledge production, sees the potential to shift the debate of knowledge politics. She defines knowledge politics as “the way in which individuals and institutions leverage digital spatial data and spatial technologies in negotiating social, political and economic processes, often doing so in ways that rely upon the differential influence and authority that is granted to particular forms of knowledge or representations.”⁷⁵ Her assessment is that to date, there is not enough theorization of the implications and potential that comes with introducing new dimensions in the epistemological and ontological claims advanced by research. While these new technologies offer new opportunities to advance local knowledges, it simultaneously structures our visual experience in a new way, and as Wilson suggests, constructs a different subject position based on conceptual containers and introducing modes of judgment where none might have not previously existed.

For researchers that have a meta-level analysis of participation in participatory action research, this engagement is critical and still developing and like any emerging condition, it will be ‘awhile’ before clear assessments can be made. However, there exists a legion of researchers that seek to utilize this participation to scale up the ambition of their research agenda, giving little consideration to this meta-level narrative that is unfolding. While some of the arguments offered by Dodge and Kitchin focus specifically on the threat to the cartographic project, they are supportive of the active user that contributes to the overall cartographic goal.⁷⁶ Their argumentation appears to side with Ritzer and Jurgenson in admitting into the equation the contribution of individuals that ‘enjoy’ the participatory quality of contributing to research

⁷⁵ Elwood, “Emerging Research.”

⁷⁶ The specific concerns expressed by Dodge and Kitchin can be identified as: the need to continue financial support for cartographic endeavors; to maintain relevance of the discipline as a worthwhile endeavor; as well as fend off the trivialization of the importance of this knowledge production. Given that ‘anyone’ can be a cartographer now, there is much at stake for the livelihoods and identities of ‘cartographers’.

agendas. In other words, if individuals truly enjoy participating, how can research seize this productive potential? The point of tension within this debate is thus the level of accuracy that can be obtained, the intellectual veracity that reflects on the researcher in question, and the resources required to continue to produce new knowledge.

I would argue that, along the lines of Carr and extending Lanier, that the real danger is simply devaluing labor. The capitalist system will survive and thrive in an environment in which they can tap unpaid labor to produce a product or have the labor populate a platform, earning millions or, in the case of Google, billions in advertising.⁷⁷ The capitalist machine is not concerned about accuracy of data or according proper authorial designations. The machine is concerned with production. Even better still is to have more surplus as wage labor continues to shrink. More troubling still is the overall condition in which knowledge production continues to be devalued. While researchers and scientists work tirelessly to advance knowledge in their field, the current neoliberal environment and the lasting effects of the recent downturn economy has shown a sharp decline in funding universities appropriately. While the State shrinks its scope of obligation and relies on the private sector to fill the gap, the state also reduces its educational investments.

The private sector has little incentive to fill this gap, unless the research is directly beneficial to their position. Scientists and researchers, still tasked with the need to advance knowledge to secure an increasingly tenuous tenure track environment, continue to need data from which to make observations and build new models of understanding. Dodge and Kitchin are explicit in their interest in examining this unique environment we are currently confronted with,

⁷⁷ Or, to quote O'Reilly in "What is Web 2.0," "Network effects from user contributions are the key to market dominance in the Web 2.0 era.

“It is, we believe, worth considering the opportunities and benefits that might arise through crowdsourced and presumptive cartography practiced by citizen scientists...More broadly we consider what cartographers and human geographers could gain by exploiting crowdsourcing in creative ways to do new types of research and perform different kinds of learning by doing.”⁷⁸

Particularly insidious is their express goal to ‘exploit’ the free labor of crowdsourcing. It begs the question as to whether the work of academic research within this mode of rationalization is less ‘evil’ than the corporate entities that seek to make money off of unpaid workers. While the ‘goal’ might be construed as morally more ‘palatable,’ each party seeks to advance their bottom line. The only difference is that one operates on dollars and the other operates by the exchange value generated by the knowledge production. In both cases, each seeks to exploit the unpaid labor that fuels their endeavor.

A conclusion of sorts

There are, few, if any, hard conclusions to be drawn from this particular nexus of spatial coding practices, those that assert power to exploit the free labor and those that acquiesce their own labor and time in exchange for a perceived cultural good that is fraught with political power, imagined or otherwise. In real terms, however, care must be taken to not overcode user practices with theories that accord too much power to the structural social and political forces, as much meaning can be made irrespective of the capitalist forces and motivations. As Kingbury and Jones compellingly suggest, theorizing tools and the social reception that only takes into account ‘Apollonian’ determinations reproduce a one-dimensional meaning and conservative reading of its potential effects and implications.

⁷⁸ Dodge and Kitchin, “Crowdsourced Cartography.”

Allowing for a Dionysian understanding is also critical, for it allows for the openness and uncertainty of technology. The hope and fear that comes from the Apollonian order of the dialectical condition is complexified through a Dionysian ‘minor’ political theory, one “that is never foreclosed but is, rather, vigilant to the immanence of technology-in-use.” Moreover, it specifically gives more agency to the spectator, or our case, user, and the meaning that is produced as a result of the co-constituting practices of individual desires and the social forces in which affect and are affected by these discrete practices.

These entangled threads and investments in the social field are located at a unique nexus or intersection. On the one hand, we have the structural conditions of the neoliberal environment which has significant influence in the present condition. On the other hand, we have the immanent production of open source, one that attempts to counteract the structural, top down environment at this intersection. Both operate in a mutually reciprocating relationship, one of co-constitution, rather than a teleological or *causal* relationship. The feedback loop of the social field transforms the given present conditions in unique ways, and it is this transformation that allows immanent desiring production to shape and influence the responses of the top-down structuring molar forces of the social field. Understanding the oscillations between these two poles and the tensions that emerge from this political economic dynamic becomes a critical point to assess the contemporary cultural condition.

04_Political-economic Dynamics : Historical Impulses

Defensible Position

Despite all the ‘good’ that Google has done, they have had no shortage of negative press and are involved in various lawsuits as a result of what some see as nefarious activity. The company has infringed upon intellectual property, trademark laws, personal privacy, and failed to censor content when required; its overzealous attempt to make *all* their advertisement relevant caused them to overstep what some see as critical privacy boundaries; maximizing advertising markets earned them unwanted attention from the Federal Trade Commission (FTC) for anti-trust accusations. Their unparalleled success puts them in another unique, albeit compromising position. Through their efficient and relevant search, the financial advantage allows them to continue to innovate in technology applications, extending into the mobile market, computer market, tablet market, and more recently, Google Glass. The applications that extend across these product lines form a dense, striated technological plane of all things Google.

What is unique about this particular striation is its quality as a supple plane, one that thrives on innovation and adaptation. Experimental projects that utilize their tools are encouraged and often sanctioned by Google, and their engineers are encouraged to continually push boundaries in all directions, often through beta testing. Their omnipresence and influence in so many situations is causing concern across a number of registers. And it is the *variety* of registers that begins to point to the pervasiveness of Google as a company, as an ideology, as a religion, as a unique economy and the ways in which it affects the present milieu.

Brief History of Neoliberalism

In one respect, the neoliberal economy/regime created the perfect conditions for Google to emerge as strong as it has. The American neoliberalism that emerged in the 1950's was defined as an emphasis on human dignity and freedom.¹ This strain of political economy proposed that human well being was best advanced by enabling or liberating individual freedoms and entrepreneurial spirit, one that recaptured belief in private property as an ideal means to obtaining and securing a free society. Thus, this neoliberalism promulgated by Hayek was characterized by strong support of property rights, free markets and free trade. In this configuration, the state has a minimal presence. The primary function of the state is reduced to supporting the structures that uphold the ideals of property, market and trade. If the market does not exist, the state's function is to establish the market and then recede into the background. Over time, opposition to state intervention came to include the position of the state being too slow to efficiently respond to market conditions, and therefore should remove itself from as much regulation and control as possible. Structures that were in place that intervened in carrying out these ideals needed to be dismantled or deregulated, in order to free up the capital and maximize individual's freedom to participate in the new market conditions.

The 'turn' towards neoliberalism was a result of complex machinations of political upheaval, economic crisis, and the colonial and imperial power of the United States in the postwar era. The aftermath of World War II sought to mitigate any further political adversarial conditions while at the same time, limiting the reach of power of governments. It also sought to ward off economic conditions that precipitated the Great Depression in the 1930s. Popular New

¹ Cf. Harvey, *Neoliberalism*, 1-38; Peck, *Construction of Neoliberal Reason*. While Foucault produced notable scholarship on the birth of neoliberalism, Foucault was writing at a time where the real effects of neoliberal economic and development strategies had yet to be fully felt. Specifically, Lazzarato, "Neoliberalism in Action," points to the absence of money as instrument in Foucault's discussion, and given the level of revenue and lack of material output in Google's operation, it seems more productive and insightful to engage contemporary thinkers.

Deal policies began to break down in the waning years of the post-war economy, coupled with the energy crisis of the early 1970's, major steps were proposed that sought to 'liberate' capital from the regulated market. The freeing up of capital created international lending conditions that enabled foreign countries to borrow from US banks. This new formulation produced conditions whereby failure to repay resulted in restructuring of policy and services, rather than loan forgiveness.

This movement not only transferred the Neoliberal agenda across many international governments, it also created financial security for banks with favorable terms. In the US, these same financial conditions were handed down to local governments. During the economic crisis in the 1970's, in part spurred by overproduction of goods and volatile market of oil, there was a dramatic shifting of urban governments forced to repay debts, rather than benefitting from a loan forgiveness plan. Concretely, the new financial terms mandated repayment of debt before spending on social welfare programs. While the urban territories were subjected to multiple external forces that caused a radical transformation of demographics as well as a redistribution of wealth, local city governments were left to operate on a much smaller budget, leaving a real gap in services that it once provided; a gap that was ultimately intended to be filled by the private sector, rather than subsidized government programs.²

As the movement from measuring profit by production levels towards measuring profit by financial gain took place, the shift signified a diminishing status of material goods in exchange for the privileging of financial instruments. At the same time, an increase in technological production furthered this transition to an immaterial economy, knowledge production in the arena of patents shifted the output to a wholly different scale and conception of 'goods' that could be bought and sold, thereby enlarging the definition of what constitutes

² See Harvey, *Neoliberalism*, especially chapter 2.

‘property’. This transition in particular enabled diversification of corporate production into a variety of markets. The technical term is defined as ‘vertical integration’, *while its effects are more akin to a horizontal coverage* across the social field.³ No longer defined by their material production, corporations could expand in all directions, instantiating a new wave of primitive accumulation, as foreign markets were accessed for cheaper material labor while new wages were directed towards knowledge productions of ideas and abstract products.⁴ The ‘diversified conglomerate’ was now comprised of a range of household names and services, with the practice of income from one sector covering losses in other sectors becoming increasingly common.⁵

While the economic forces enabled many of the neoliberal policies to become adopted for many pragmatic reasons, Harvey points out that one key to the longstanding success of the neoliberal order must also be understood at the individual level and the ways in which one of the tenets of neoliberalism, individual freedom, was able to capture the minds of such a diverse selection of society as comprehensively as it did. The seductive ideal of ‘freedom of the individual’ is one that has broad public appeal and easy to support, “Neoliberalization required both politically and economically the construction of a neoliberal market-based populist culture

³ In technical terms, this diversification is described as ‘vertical integration’, in which a corporation offers a comprehensive suite of services, covering as many consumer needs as possible. This creates a unique condition, whereby a consumer’s myriad needs can be met by a single company, which has a *blanket effect* of horizontal coverage, resulting in the customer satisficing with the convenience offered by this horizontal coverage or ‘vertical integration’, in industry parlance. Adhering to horizontal effects eschews the siloed effect of disciplinary or corporate portfolios and emphasizes the ability for one company to access as many users as possible in as many situations as possible. *It is, rather, focusing on ‘how it works’ rather than ‘what it means’.*

Technically, however, a blanket effect is termed a monopoly, and thus results when only one company offers a particular product, like Windows, in which consumers have little choice. This was the official ruling of the most recent Anti-trust case against Google. They have ‘vertical integration,’ not a monopoly on one sector. This has particularly important implications for other situations in which reaching the masses through a variety of means is an important way to form a larger movement. Cf. FTC ruling, <http://business.time.com/2013/01/04/googles-federal-antitrust-deal-cheered-by-some-jeered-by-others>

⁴ Peck, “Postneoliberalism,” does a thorough job of describing horizontal agility. Lazzarato, “Neoliberalism in Action,” provides a Deleuzian analysis on how the risk is spread across the company through financialization, 122-23. The ability to subsidize risky investments is thus offset by safe, money-making products and services. Ultimately, it comes down to the double nature of money, buying power versus credit power. Buying power is *pouvoir*, while credit power is *puissance*. Money for credit has the ‘power to rearticulate the economic chains’, D & G, AO, 271.

⁵ Harvey, *Neoliberalism*, 32.

of differentiated consumerism and individual libertarianism.”⁶ In concrete terms, the transference of support of individual freedom to freedom of the marketplace, one that espoused consumer choice, reflected both aesthetic taste and lifestyles. This created a newly liberated subjectivity, precisely at the same time when the socio-political tension that characterized much of the world in the 1960’s in which a general outrage and distrust of government policies emerged.

With its emphasis on individual freedoms, neoliberalism is well suited to co-opt any socio-political movement that also espouses individual rights or has an anti-statist agenda. Cultural practices saw a dramatic shift, as a variety of ‘institutions’ in society were increasingly challenged and were viewed as part of the larger machinations of the government, and among others, at the core of the unrest were challenges to many kinds of authority: parent, education, corporate, bureaucratic and state.⁷ “Neoliberal rhetoric, with its foundational emphasis upon individual freedoms, has the power to split libertarianism, identity politics, multiculturalism, and eventually narcissistic consumerism from the social forces ranged in pursuit of social justice through the conquest of state power.”⁸ Notions of ‘consensus’ became increasingly difficult to navigate and achieve in an environment driven by the ideology of the individual: a shift from a ‘society’ to a collection of individuals, where dominant norms and conventions gave way to individual expression.⁹

This individual expression was seized by enterprising individuals that sought to make the computer accessible to hobbyists, linguistically exemplified with the adjectival notation of ‘personal’. That the production of a computer for the individual was produced by the scrappy individuals in the garage tapped into the hacker aesthetic. This not only stood in opposition to

⁶ Ibid., 42

⁷ Ibid., 41

⁸ Ibid., 41

⁹ Exemplified by Margaret Thatcher’s statement, “There is no such thing as society. There are individual men and women, and there are families” in Harvey, *Neoliberalism*, 23.

government rules and regulations, but more importantly, it also stood as stark contrast to the business-as-usual business plans of the technology conglomerates. This transference of knowledge and power to the individual in their ‘rec room’ was evident in the range of magazine and newspaper articles that appealed to this entrepreneurial spirit and renegade attitude. This transference also transferred the responsibility of the entrepreneurial hacker to meet the individual needs of hobbyists, rather than waiting for the corporate entity to produce off-the-shelf models that tapped into the desires of the eager technological explorer.

Present day tendencies and theoretical shortfalls

While earlier versions of neoliberalism emphasized a strong, structural phenomenon, today the structural characteristic persists, but is far more *diffuse* in how it operates. Specifically, there is an increasing emphasis on the *dynamism* of the economic and development engine, the contingency inherent in horizontal extension that minimizes risk and the importance of intellectual property of technological progress, as well as the intellectual products of financial instruments and schemes made possible by the speed this technology has brought.¹⁰ As ideas and money move around the globe at a greater speed via the Internet and algorithmic trading, the individual moving agents create far more ‘movement’ within the neoliberal environment than the previous formation.¹¹ More explicitly, a renewed focus on the structural accounts have yielded a recognition for a need to see Neoliberalization as a ‘lived phenomenon’ that offers an explanation that is complementary to the structural accounts, “ones that keep agents and agency

¹⁰ See Peck, “Postneoliberalism,” 107-8.

¹¹ In “Postneoliberalism,” Peck tirelessly makes the claim that Neoliberal environment is necessarily dynamic, with uneven development across the world, with the strategies ‘deeply and indelibly shaped by diverse acts of institutional dissolution, but this destructive moment is more than just ‘brush-clearing’ phase; it is actually integral to the origins dynamics and logic of Neoliberalization. It stands to reason that the more fluid and dynamic the structure, the more individual movement would be possible. In *Constructions of Neoliberal Reason*, “This is no bloodless, semi-automatic process, but the work of situated social actors, who along the way displayed just about every human flaw, coupled with a share of vision and determination,” xii.

in sight.”¹² Within this theoretical debate a critical tension remains, and particularly relevant for our argument here. Some scholars are emphatic in stating that the theory of Neoliberalization as it pertains to subjects fails to fully assess the motivations and self-determined actions of the subjects.¹³ More specifically, when the subjects are from a society in which there is no conceptual framework for defining ‘individual freedom’ as an ideological motivator, the theory remains as one of authority, a top-down assertion of the agent’s actions and the meanings behind them.

As a molar phenomenon, many agents and their practices can be understood within this framework. However, and importantly, the molecular motivations are unique to the individuals. While some may consciously reproduce the ideological characteristics, it is the specificity of the action within the spatio-temporal context that must be considered. That capitalism and the neoliberal condition are able to capture the labor and investment of the subject is but one side of the equation; every attempt must be made to access or uncover individual motivations for a more thorough account of the contemporary condition. Ong’s stated position is that neoliberalism “is a technology of governing ‘free subjects’ that co-exists with other political rationalities”¹⁴ and it is *precisely* the specificity of the interplay between the actors, the political institutions and the rationality that ‘defines a particular configuration’, one that is neither predictable nor reducible.¹⁵

Given these broader movements within neoliberalism, both historical and contemporary conditions of not only the broader political agenda but also the individual consumer and the

¹² The ongoing debate between Peck, et. al. with Collier and Ong, and Ong independently, asserts not only the heterogeneity of neoliberalism and its agility to correct itself according to the movement of actors, but also a need to identify the broader structural characteristics when relevant. Peck references the debate in *Constructions of Neoliberal Reason*, xii, but “Postneoliberalism” and Ong’s “Neoliberalism as Mobile Technology” are written at the height.

¹³ Cf. Ong, “Neoliberalism as Mobile Technology;” and Barnett emphasizes its shortcoming in “Publics and Markets.” Ultimately, both Ong and Barnett assert that Neoliberal theory is successful in reproducing the subject conditions it seeks to find.

¹⁴ Ong, “Neoliberalism as Mobile Technology,” 4.

¹⁵ Ibid., 5.

consumer culture that emerged in response to the ‘individual’ freedom message, we can examine Google within this entangled framework and imaginary.¹⁶ Google argues for freedom or democratization of information; all information should be accessible and useful. Freedom of information is a worthwhile message to support, one that has broad public appeal. Google’s very existence exemplifies this individual freedom, ‘entrepreneurial’ in spirit and crystalized as an idea within an academic environment free from market constraints, one that moved to the idealized mythology of ‘garage’ office space, recalling the formative years of Apple’s microcomputer. Their independent, renegade attitude of developing their product on their terms defied both the institution of the governing financial body, as well as the voices of ‘authority’ of venture capitalists. The government’s early ARPANET experiment became the Internet, and its commercialization created a market, from which the Government receded in different ways.¹⁷ And increasingly, we see the uncertain role of the government being constantly debated, to what degree censorship, to what degree regulation, application of sales tax across state lines, with the most recent debate surrounding the cost and control of user access by service providers.

In line with reduction of government programs, we see the private technology industry providing tools and services that the government cannot provide, financially unable but also practically incapable. The pace of the government is frequently likened to a slow moving beast,

¹⁶ This idea of an ‘imaginary’ of neoliberalism stems from the various meanings, interpretations and uses that have utilized the concept in neoliberalism in countless ways. What is critical here, depending on the phenomenon, the narrative of neoliberalism and neoliberalization can be applied in a blanket manner which obscures the actual characteristics of what is actually happening in the phenomenon in relation to held definitions of ‘neoliberal’ and a larger negative association that currently exists. Cf. Boas and Gans-Morse, “Anti-Liberal Slogan,” and Peck, *Constructions of Neoliberal Reason*, esp p x-xx. This particular excursus here attempts to embrace a deleuzoguattarian pragmatics or schizoanalysis of how it is works, rather than focusing on what it means.

¹⁷ This debate is lengthy, and most recently, the need to serve as mediator over the commercial interests that supply actual access to the internet, at what cost, and in what relation to the quantity of data that is consumed at the individual level has caused both renewed desire for government to step in, while a renewed special interest consortia have lobbied aggressively for more regulation and even more deregulation, depending on the special interest. Google has joined the ranks of those arguing for more regulation. As content movers, they have less interest in limited access, while those moving the actual content seek to be compensated for large data consumers, or better still, can place a premium on faster access, thereby filling their coffers through privileging certain clients.

mired in bureaucracy. The technology industry moves at a lightening speed; the ability for a company to meet needs quickly and efficiently is a result of both a deep understanding of their market and the development of new products, but also its ability to innovate quickly,¹⁸ unhampered by bureaucratic channels.¹⁹ The sentiment, “state decisions on matters of investment and capital accumulation were bound to be wrong because the information available to the state could not rival that contained in market signals”²⁰ exemplifies this condition in concrete terms. With education, we can see the ways in which Google has taken a larger role in bringing technology to the classroom, both in terms of the tools it makes available to educators as well as the philanthropic efforts to help bridge the technological gap. Included in this effort is the manufacture of inexpensive machines and cloud software that does not require expensive licensing fees or large hard drive space.

More critically, Google’s ability to provide crucial information and communication support during natural disasters encroaches on the fundamental role of the state to ‘preserve these freedoms at all cost’.²¹ Not only has the government reduced the investments in social services and critical infrastructures, but increasingly, this reduction is only further highlighted during natural disasters when *actual* ‘crisis management’ translates into lives saved. This situation was writ large in the aftermath of Hurricane Katrina, which exhibited *not only* a lack of preparedness, but *also* a lack of available technology to triangulate on the ground conditions, in addition to the obvious infrastructural failures. Private enterprise can provide all the key resources to enable the government to carry out these essential services of preparedness, time and resource management

¹⁸ Levy, *In the Plex*.

¹⁹ Ibid., 323-5. The story of the Googler, Katie Stanton, that went to Washington DC is a good example, one that found themselves too constricted by the slow-moving policies of the government; when confronted with the Haiti earthquake, Stanton set up a series of response networks to meet the needs on the ground quickly. At first, the individual was admonished for not considering all the implications before acting. Their realization was simply, ‘at Google, we just simply acted on something we saw to be a problem.’

²⁰ Harvey, *Neoliberalism*, 21.

²¹ Ibid., 64.

tools. Government neither invests enough, nor can it keep technological pace with the agile communication, technology and intellectual resources that Google has readily available; it is now the *scope* of the disaster that determines whether Google gets involved.²²

From a 'product' perspective, Google's primary product is Search, an immaterial and abstract string of code; its market prowess resides with the patent of PageRank. Their main source of revenue, however, is through a similar algorithm that matches advertisers with keywords and those conducting searches; one that is directly tied to, but dependent from Search. Their social and media tools function primarily as hosting sites, and their larger projects like Google Books and Street View scan existing content and make it available online.²³ The intellectual power of their employees enables Google to extend their reach into other services, thereby continuing to add to their intellectual property, patents. Their success has enabled them to acquire startup companies whenever a product compliments their offerings or will advance their market share.²⁴ Like many of the corporate conglomerates, Google has extended backwards through primitive accumulation, in this case, acquiring the intellectual power of startup companies as the resource, and forwards in all directions into different demographics and distinct target audiences.²⁵ Advertising auction AdWords is an income-generating machine and subsidizes every other product Google develops or acquires, including resource intensive products like Street View.

²² Google.org, Crisis Response, FAQ.

²³ Vaidhyathan, *Googlization of Everything*, 48-49. Vaidhyathan categorizes the range of services that Google provides to highlight that in very few cases does Google actually create content. They either link users, host content, or scan existing content, in order to link users.

²⁴ This is evident from their website company history, which gives a comprehensive account of many of the milestones of the company, including a running list of companies required and how that company was folded into the line of products, the most relevant to this project being Keyhole, which later became Google Earth and has been fully integrated with Google Street View.

²⁵ This is often exemplified by the partnerships that Google enters into, like AskJeeves. The online site was struggling financially before Google agreed to provide relevant ads to their user's queries. The proceeds were shared, giving the site the needed income and giving Google access to a particular audience that was untapped by their own search engine.

The Internet user experience is an individual one, and while a user may belong to an online community, those allegiances are tenuous. While many social networking sites like Orkut, Facebook or Google Groups have implicit codes of conduct, those codes are limited to the unwritten rules within that domain. Simply leaving one site to engage in a different demographic or interest group is much different experience than belonging to different social milieus in the world, which are often dependent upon the mutual sharing of a spatio-temporal context, one that begins and ends with the parties present. While the online social community does not necessarily leave users as atomized as some sociological studies might suggest,²⁶ the community or society of online communities²⁷ have clearer boundaries than the neighborhood one lives in and moves through daily.²⁸ This ability to interact according to the individual user's interest exemplifies the liberty of consumer choice and the ability to form ties based on individually held beliefs and relevant cultural practices. Institutions and authorities have even less presence and influence online, at least symbolically.

Those conducting search have their choice of engines, and it is the particular user-subject, one who 'googles', that embodies the very ideals that form Google's product. The very transformation of 'Google' from a noun to verb, with its adjectival iteration is symptomatic of a particular identity construction that embraces the company spirit on multiple levels. Users originally responded to the simplicity of the interface, the efficiency of search, the relevancy of the results. The user was no longer weighed down by sifting through websites that are not

²⁶ Sherry Turkle has written extensively on the dangers of electronic interaction and the isolation of online activity, and point in which interactions and sense of privacy shifts as a result of online communities. However, many agree that online communities are forms of communities, which can be a meaningful form of interaction.

²⁷ And arguably, this is becoming less so, as many online sites are linking social media venues. One example of this might be purchasing something on Amazon.com and sharing it on Facebook, simply by clicking the blue 'f' icon. This then advertises to your friends on Facebook what you just purchased. The layering of information across a variety of registers blurs the discrete boundaries between different sites.

²⁸ Specifically, if one does not want to engage the Facebook community, one can simply not go online, not post an update, etc. In the lived world, not engaging becomes more difficult, unless one elects to not leave the house, which is more difficult to sustain than not logging on to Facebook.

reputable or simply irrelevant.²⁹ With the development of tools, Google has created more opportunities to enfold the user into its brand identity, who in turn endorses and/or wholly embraces the efficiency, accuracy and the cultural ethos of the company, with many users using them religiously.³⁰

While some may only use Search, additional services like Gmail and YouTube captures a wide demographic; with the latter, the myriad videos include entertainment, music, online tutorials, and viral news, among many others. It creates a monolithic horizontal platform in which ‘everything’ is on YouTube. The mapping division also has a range of users, from simple navigation, curiosity, research, news reporting, and countless others, and its platform stands as the measure of accuracy and arbiter of spatial location representations. In short, *the sum of its parts adds up to complex cultural assemblage*, and this range of tools and services manages to touch a large portion of the Internet community. Critically, there is no ideal individual user, nor is a consensus required to maintain a strong user base. It is the *heterogeneity* of the users that Google is interested in, and every effort is made to reach as many demographic groups as possible.³¹ It is here we can see its ability to split social groups by appealing to the atomized individual.³² As their suite of tools appeal to different demographics, the functionality of their search feature extends to a larger plane, one that has far more movement than the intensity of users around a particular tool. Allegiances towards Google emanate from an appreciation of a

²⁹ Mayer interview, *Inside the Mind of Google*, at 9:00 to 11:00, also, Vise and Malseed, *Google Story*; Auletta, *Googled*, and among others, all give an account of the general perception during the early transition to Google, as being a ‘life changing’ experience of efficiently searching.

³⁰ Ken Hillis, Petit and Jarrett, *Culture of Search*, make a strong case regarding the religious adoption of Google, as covered below.

³¹ Vise and Malseed, *Google Story*. This is exemplified in the account of their partnership with AskJeeves, among others. Throughout, the account of their ‘partnerships’ is one motivated by increasing their user base, including WAZE, among one of the recent high profile acquisitions.

³² Recalling the above discussion regarding the success of neoliberal rhetoric to destabilize group formation over a social cause.

well-functioning feature that is offered free of charge. In this technological realm, cultural beliefs and values trump socio-political ones.

Google has constructed a particular technological plane that continues to capture the attention of the world, both through the ease of use and its perceived omniscience. It is as if Google understands us as individuals, as unique manifestations of subjectivities, made possible through data collection and a smart algorithm that is continually refined, with relevant results measured against what other similar users are selecting, based on a similar search.³³ Google's express goal is to 'focus on the user' and to make results 'relevant'. It does not seek to govern or control behavior.³⁴ In essence, the very construction of the Internet and the ideals espoused by Google are deeply libertarian, and it is this shared value with neoliberalism that presents complex contradictions, with manifestations that oscillate between two poles, one empowering, the other an exercise of power, or to recall the articulations of Deleuze and Guattari, *puissance* versus *pouvoir*.

Open-source Environment

Many of the early theorizations of the Internet point to its libertarian potential at the core.³⁵ The previous technological model of media was a hierarchical single producer to one-way 'reception' by many consumers; the various communication media presented a unified product,

³³ It is the sheer mountain of data that enables Google to make connections between similar searches and situations. What results is less an accurate picture, but an approximation of a user within certain conditions.

³⁴ CNBC, *Inside the Mind of Google*, at 19:10-19:34. This is exemplified by Schmidt's oft quoted sentiment, "If you are doing something and you don't want someone to know, then you probably shouldn't be doing it in the first place." Or, "Judgment matters." As Schmidt acknowledges, "we are all subject to the Patriot Act." Self-control and governance of acceptable behavior is the norm.

³⁵ Lawrence Lessig, an important Internet scholar and intellectual property law lawyer; founder of the Creative Commons, a non-profit organization that seeks to make copyright licenses free for public use to help spur innovation and creativity. In *Code 2.0*, Lessig's account of the history of the emergence of the Internet at its heady days of libertarian potential point to the freedom of government regulation as being a buoyant optimism, given the 'cyber' quality of immaterial space and freedom from laws and regulations that beings negotiate physical relations. This utopian vision was, of course, short lived.

like a news program, with the range of consumers as anonymous receivers of the information.³⁶ This one-way reception offered little feedback to the producers, and the efficacy of the message, whether content or advertising, was difficult to measure. The Internet, especially in the current era of 2.0 architecture, enabled a horizontal, many-to-many connectivity based on transforming the architecture that enabled data to move freely across a network. Opening up new, horizontal ways of communicating, the utopic characteristic of this new ‘unmediated’ means made it possible to conceive of an ‘ungoverned’ sphere, one that embodied lofty ideals of a perfect society without the role of the state. “The space promised a kind of society that real space could never allow—freedom without anarchy, control without government, consensus without power.”³⁷

What makes ‘cyberspace’ particularly ripe for this belief is the immaterial, spatially unrestricted environment that allows individual behavior to remain unchecked and ungovernable, at least in theory. With sites not spatially defined nor constrained, the producers of information were able to influence the conceptual direction of the Internet, standing in stark contrast to the physical world and the parcelization of territory and subsequent property laws to manage individual behaviors and practices. It effectively *unmoored* all previously meaningful laws that controlled behavior in relation to tangible property and the public realm.³⁸ In the early heady days, the general consensus thus seemed reflect the idea that laws could be made, but the ability to enforce them would be impossible.³⁹ Having an unmoored system, with individual users

³⁶ Yochai Benkler influential article “Coase’s Penguin” and Eric Raymond’s “Homesteading” or “Cathedral and the Bazaar,” among many others, highlight the shift of networked communication and the resulting advances made by Peer-to-Peer environments that not only created a new model of cultural production, but a new mode of production outside of the market.

³⁷ Lessig, *Code: and other laws*, 4

³⁸ Streeter, *Net Effect*.

³⁹ Lessig, *Code: and other laws*.

controlling the means of production, signaled the potential for online exchanges to operate outside of the capitalist system and instead engage with a ‘gift economy’.

The individual user could seek out information at will, the freedom to self-select from a rapidly expanding online community of different socio-cultural persuasions enabled users to embrace their own inherently heterogeneous composition as individuals; one where many interests were no longer restricted by geographical boundaries or confined by the norms held by one group or culture. The ability to embrace this multiplicity, or even have the freedom to engage in interests not readily available within one’s socio-economic or cultural milieu, is profoundly libertarian: the ability to govern oneself and associate with like minded individuals that need no longer foist their ideals upon other members of society. Since many users were also producers, the advocates and supporters of libertarian ideals believed this utopian, parallel society was possible. In addition to self-governing, the language used to build the Internet, Code, was seen as a ‘good’ that could be kept from monetization. Contributing to the common goal of developing software that could be customizable, an entire online community and general ethos emerged that embraced these ideals.

As imagined stewards of this new society, a variety of organizations emerged to establish best practices and codes of conduct, including Free Software Foundation, Peer to Peer Foundation, Open Source Initiative, among others.⁴⁰ This effort was less about establishing rules to control behavior, but rather, codes that established a foundation upon which society could coalesce around a new ‘commons’. While the online communities that have emerged in relation to libertarian ideals warrant a lengthy discussion, what is of particular interest here is the code of conduct that has been established specifically for open source software, free software and the

⁴⁰ It is important to note that each of these organization have different stances that shed greater light on the nuances of the ‘free’ and ‘open’ character of code.

‘creative commons’; in short, immaterial products produced with free labor. Each of these organizations seeks to define fair use as it applies to the code product that is open to all developers to maintain and use, eschewing the corporate business model of proprietary efforts.⁴¹

Code was thus seen to demonstrate the qualities of a public good and various debates emerged over the precise definition and potential limits of a ‘free rider’ environment, in which the bulk of the work was produced by relatively few. Within these various articulations, it is explicitly stated that developers who utilize this particular code cannot charge for software built from it. Free software, or freeware, was produced under the understanding that the code could circulate freely, and any updates made to the code must follow the same stipulation. Shareware arose as a means to generate a modicum of earnings from a largely volunteer effort and relied on the honor system: users that found the software helpful were encouraged to pay a nominal fee. Often this was regulated by a ‘trial’ period or limited functionality without purchase.

Open source emerged as a compromise and economic answer to freeware. Certain lines of code emerged that were critical to a variety of applications, and working from the same lines of code produced a more efficient operating environment by imposing quasi intellectual standards, much like the electrical standards of plugs for an entire country. In this configuration, developers contributed to code that remained free to use and circulate, and fixes to existing open code must remain available to all users. Customization or services provided in excess of the code remained legally distinct from it. A developer or corporation can then charge for the work they performed that exceeds the code; or if the code is customized for a particular client, the entity can establish a price based on the differential of the customization. This adjustment resolved

⁴¹ Of interest, however, is a general sentiment among the community that one knows how to interact with and respect the implicit intellectual property of others. Raymond’s essay, “Homesteading” seeks to establish the principles that guide Open Source, while maintaining that there are many reasons for individual participation.

several issues: freeware often languished after awhile, as there was little incentive to maintain the code; freeware was also often full of bugs and the incentive to debug software was minimal.

There is, obviously, no economic model for producing free software that is profitable. But there is an incentive for producing free software. There is a real disincentive to produce free software that fails to work. In this instance, the producers and the users both lose. The incentive to producing legitimate, functioning, free software has its own unique exchange value: legitimacy and respect among the open source community and the larger community of developers.⁴² In general, developers wanted to be associated with a project that had lasting potential or generated a lot of interest. With open source, the community of developers that contributed to the project was larger in scale with greater visibility. Strings of code are more likely to work more efficiently when customization takes place, including the development of ‘patches’ written to alleviate competing coding lines.

For producers, having a large intellectual community to draw from makes troubleshooting problems more efficient with a greater rate of success. Moreover, developers no longer have to reinvent the wheel when lines of code are used in a variety of applications.⁴³ With the ability to charge for a portion of the efforts, the energy investment of developers allowed for a greater variety of individual motivations, and the desire and ability to preserve and maintain lines of code resulted from the myriad programs that utilized existing open source lines in products. The freeware version required customized code to remain ‘free’; open source allowed the developer to charge for any measurable customization or deliverable that fell outside of the purview of ‘open source’, producing financial incentive to expand the code in different directions. Previously, individuals were part of the common ‘free’ cause of producing software

⁴² Raymond, “Homesteading.”

⁴³ Terranova, “Producing Culture.”

outside of the capitalist system. With open source, individuals could still contribute based on a desire for personal satisfaction, but *revenue potential* also enabled signaling incentives.⁴⁴

Developers could exhibit their talent through solving difficult coding problems, with a greater likelihood of visibility. This simultaneously established respect among their peers and made their skills marketable to other projects, either for future employment opportunities or access to lines of venture capital.⁴⁵

For many, open source was seen to be a direct response to the monetization policies of corporate environment, one that had been under the influence of neoliberal policies of Reagan, Bush and the Clinton White House. Intellectual practices were priced out at a premium in the marketplace, with the rush to patent proprietary ideas and financial instruments creating an increasing uneven playing field among a variety of actors. In cyberspace, there was a real opportunity to change the environment of ‘business as usual’. Intellectual property rights were eschewed for the common goal of producing a basic infrastructure from which everyone could benefit. The new stewards of this conduct were less a ‘governing body’ and more akin to a voice of reason. Failure to abide by the rules set forth to protect the collective commons could result in a lawsuit, but the emphasis was on a self-governing user conduct to enable a continuance of a lightweight governing structure over cyberspace’s architecture. The ethic or code of conduct here thus becomes an essential basis for establishing practices and conduct that benefits all who choose to engage in this line of business.

⁴⁴ Lerner, Josh, and Jean Tirole. “Some Simple Economics of Open Source.”

⁴⁵ Ibid.

Corporate Response

Those active in the open source community saw its success as a direct affront to the corporate strategies and held that the corporate environment would have no choice but to adopt this ‘gift’ economy structure. If corporations were producing similar quality products that were proprietary and had a value attached to it, the consumer could easily elect to choose the free equivalent. With value established according to what the consumer was willing to pay for a good or service, the proprietary product was instantly devalued if a free, equivalent version existed. Within a short span, the corporate structure *did*, in fact, adjust to this new environment. They too saw the value⁴⁶ of having free functioning code from which to begin. Bundling of proprietary elements with open source code was considered legitimate in the eyes of the open source movement. While many individuals contributed freely to open source, it was through established positions within corporate environments that allowed for the developers to accept ‘delayed reward’ of personal satisfaction, as their ‘immediate reward’ was satisfied by income received by corporate entities.⁴⁷

Corporations thus directly benefited from having an employee that was intimately familiar with the open source codes who could build new products. They also benefitted from having an army of talented programmers trying to solve bugs, without needing to pay for the labor force required to solve those problems.⁴⁸ Instead, updates to the open source code were made available, and their in-house talent could then proceed to incorporate the changes in the proprietary software. As gesture of goodwill, many corporations contributed to open source as well, either through the donation of labor time or donating existing code that could be improved

⁴⁶ Woods, “Commercial Bear Hug.”

⁴⁷ Lerner and Tirole, “Simple Economics.”

⁴⁸ Ibid.

upon by legions of developers.⁴⁹ Maintaining code in a rapidly changing environment like the Internet is labor intensive and has a real amount attached to it in wages paid. Releasing the code reduces the burden of maintenance, while also garnering a weight in the overall field from which other products are built.⁵⁰

Essentially, these conditions of ‘value added’ features built on common infrastructural lines produced a unique condition that could be considered the equivalent of a ‘lean manufacturing’ environment of the technology industry. With the value of the product determined to be by the portion the customer is willing to pay for, the corporate strategy of reducing ‘overhead’ and waste that did *not* contribute to the value has long been an established business practice, most notably by the automotive industry but also during downturn economies, where cost analyses enabled manufacturing environment to cut costs but retain the same level of output. Technology built from proprietary sources no longer held the same value, but *customized* software and the services provided could be priced out on a different scale. By reducing the development time of the product, the corporation could focus on additional features; the outcome was one of producing more with less (manpower and wages paid). While the amount charged for a given product may have decreased, the profit margin reflected the value added, rather than the time lost in development, where hours of programming may yield no results for months or even years.

For Google, their early days were borne of the same spirit that produced the movement of the FSF and eventual OSI. On record, the company is forthcoming with the corporate contribution to the open source movement, both in terms of paid man hours provided, ‘back end’ code contributed, as well as individual ‘20% time’ the employees give to personal projects that

⁴⁹ Weber, “Political Economy of Open Source.”

⁵⁰ With high profile entities like Google distributing lines of code, the quality of the code carries a certain cache and establishes itself as the de facto choice for the base logic of additional applications.

frequently operate under the auspices of Open Source.⁵¹ Most recently, however, a growing hostile environment appears to be brewing. Google has initiated a ‘patent pledge’ that attempts to create a less hostile environment to those contributing and using open source code against entities that elect to randomly sue for infringement of code.⁵² They make many of their API’s available to developers that seek to build off of many of Google’s product lines, most of which are propriety but free of charge to the consumer.⁵³

The unique tension that has arisen in an environment of freely contributed code that enables entities to utilize and customize the code for a marketable product has created rifts within the community over what constitutes fair use, what constitutes ‘free riders’, how ownership of lines of code can be attributed properly, while still enabling the capitalist mechanism of retail sales to recuperate the expenses of contributing the code in the first place.⁵⁴ In fact, what seems to be missing from the entire discussion of open source are the ways in which the capitalist machine is able to axiomatize the Open Source ethos and fold into the incessant field of production, capturing not only the expressional content of ‘open source’ but the formal content of the actual open source code.⁵⁵ Some of the contradictions that exist within their behemoth status in which many ‘advancements’ in products/services attached to their image continues to extend their reach and domination. The ‘good will’ is continually under threat, and

⁵¹ Cf. Google Developer, Open Source Programs Office page, as well as the Google Open Source Blog.

⁵² Google, “Patent Pledge.”

⁵³ This first tension made itself known when Paul Rademacher hacked the Google Maps API to create, HousingMaps.com to map Craigslist apartment posts onto Google’s map. Google’s stated quandary was “sue him or hire him” and they were forced to make a decision immediately about making that information available to other developers. See Fisher, “Global Domination.”

⁵⁴ Weber, “Political Economy of Open Source.”

⁵⁵ This is my own tentative positing. In all of my research, there is little critical analysis of Open Source as aiding the capitalist project. Some emerging voices exist, however. Jaron Lanier, a tech insider, is critical of the cultural production of the masses as diminishing the importance of individual creativity; Spreeuwenberg & Poell offer a critical assessment Google’s adoption of Open Source on its terms, and highlight the Android phone as an example of open source in relation to the propriety data the company retains. But at the intersection of the neoliberal business environment and open source, there appears to be a real absence of critical assessment. This recalls Boas and Gans-Morse argument that neoliberalism as an anti-liberal term, while open source is a pro-liberal condition, in which little criticism has been uttered against a movement that offers such potential.

the ‘signaling incentives’ to participate in Google originated lines/coding competition skews the market and motivations.⁵⁶ There is a complex nexus of competing desires in the open source environment: there is both a need to participate with an eye toward future potential; a desire to achieve personal satisfaction not received in normal employment avenues; the ability to ‘fork’ an open source project is fraught with potential consequences; and the desire to be part of a larger project/movement keeps many developers active within this community.⁵⁷ Capitalism, in turn, is able to axiomatize this desire to contribute and reterritorializes their free labor that built a functional technological plane on which to erect proprietary products.

Open source and Neoliberalism: tension and compatibility

The desire for self-governing and individual freedom has deep resonances with the Neoliberal environment.⁵⁸ The original motivations of neoliberalism were precisely the same ideals that embodied the development of the personal computer and the early formation of the Internet; and with the transformation of the neoliberal agenda over time, there remain clear resonances that greatly complicate this original perspective, one that taps into an empowering narrative. The conditions have produced two radically different outcomes. As property has become increasingly intangible, Neoliberalism’s emphasis on property has shifted to patents and the property incorporated into intellectual production, with the most germane example being an

⁵⁶ This is perhaps most evident at Google I/O 2013 and the enthusiasm that was expressed when Google executives specifically placate the developers that need access to the lines of code.

⁵⁷ Lerner and Tirole, and Raymond, highlight the multifaceted desire behind open source efforts, with signaling incentive being a large one. An early article points to an already early fading ‘altruism’ of Open Source as early as 2001. What appears clear is that the *motivations* for participating are many; the assumption that *all* coders give their time for selfless reasons- for the good of code- is patently false. That is but one layer of motivation.

⁵⁸ While it might be a result of specific language/literature specific to different academic/disciplinary work, as previously stated, I have yet to find a body of literature that explicitly looks at open source as it has been co-opted by the neoliberal agenda. In fact, a recent article by Pasquinelli, “Google’s Page Rank” articulates the problem of ‘new media criticism’ as being incapable of addressing the political economic angle in a satisfactory manner. And political economy that looks at surplus value in the ‘cognitive capitalism’, I would argue, is too entrenched in the mechanical function of extraction and accumulation to fully understand the intention that is at the core of Google’s larger project, which is not to simply be a machine of profits.

abstract line of ‘code’: 0s and 1s placed in a particular order, with varying commands.

Developers employed by a corporation that also contributes to open source software both engenders brand cachet as well as has direct access to large community of code writers.⁵⁹ The employee thus becomes the valuable property,⁶⁰ as their contribution to open source products makes them more intimately knowledgeable of the code and the amendments needed to customize the software for particular applications. This amendment thus becomes eligible for patents and is monetizable. While the entire value cannot be recuperated, the established baseline raises the efficiency of product development and ensures a greater potential for success, resulting in real economic value.⁶¹ In short, it is of great benefit for venture capitalists to support contributions to open-source software, as it streamlines the labor and research required to make a product market ready.⁶²

Much like the movement of the neoliberal environment that sought to reduce the role of government and regulations, the Internet and the early pioneers also saw a virtual sphere that would be mostly free of government control and regulations. The deep seated desire to be free of government first created the conditions to establish a lightweight ‘conduct’ infrastructure, one that was easily co-opted by neoliberal agenda that sought to reduce the ability for the state to intervene. As the government goal to reduce financial support of social welfare became entrenched, private industry stepped in to fill the gap, often using creative means to meet need

⁵⁹ See Moody, *Rebel Code*, 237-252.

⁶⁰ This is also evident in the acquisition of startups and other companies by larger entities like Google. Not only are they buying the intellectual capacity of the organization, contingent employee retention notwithstanding, but the purchase of the company also encompasses the patents that are held by said company. In the business, it is often said that the easiest way to acquire access to a patent is to purchase the company. It is in this sense that Pasquinelli is in error to state that Google has no intellectual property to defend outside of Pagerank.

⁶¹ Terranova, “Cultural Production.”

⁶² See Lerner and Tirole, “Simple Economics.” Explicitly, one of the benefits is the training and education young coders are receiving as a result of participating in this movement. The corporation no longer needs to spend as many resources to train young engineers; they arrive with a base level of knowledge of open source and can immediately get to work on customization.

while relying on volunteers to donate time to the cause. Corporations that directly donate ‘labor’ to the open source efforts directly benefit from this access to a deep wealth of knowledge without having to financially provide for the same level of intellectual power ‘in-house.’⁶³ Perhaps more tellingly, there has been an embrace within government of the open-source environment as being a model for innovation illustrates the ideological resonances between a neoliberal government and an open-source architecture.⁶⁴ Or, more specifically, the published statement articulates this position explicitly, “The President's Information Technology Advisory Committee recommended that the federal government support open source software as a strategic national choice to sustain the U.S. lead in critical software development.”⁶⁵ While the early statement of the Advisory Committee was recommending use of open source in the Federal Government, since then, there have been many gains at the State and Federal level.⁶⁶ The government, utilizing freely available lines of code to economize their efforts of software development points the to desire to shrink the government, rely on private industry and citizen involvement in order to maintain a competitive edge while reducing the resources required to perform this necessary task.

As a government agenda, the ‘innovation’ that is capable at the level of open source production thus ought to serve as a model for a lightweight government, minimal regulations to manage an otherwise ‘smoothly’ functioning system. Open source thrives on the ‘privatized’

⁶³ Somewhat less optimistically, Terranova gives a quick account of Netscape making their code available to developers, only to lay off many programmers shortly thereafter. While this might not be a causal outcome, or one that motivated the release of code into open-source terrain, it is clear that Netscape benefitted from having many different minds working on bugs and fixes of their coding platform, without having to financially compensate them.

⁶⁴ This is explicit in the Code for America website, but an increasing interest in lightweight platforms to make government more efficient through citizen participation are numerous. See <http://gov-oss.org/> and <http://opensourceforamerica.org/> as but two examples.

⁶⁵ Nitrd.gov, “Panel on Open Source,” as cited in Benkler, “Coase’s Penguin.”

⁶⁶ The interactive timeline reveals the various events, code releases, articles published and policy changes that have happened since the first report in 2000, at the end of the Clinton era, <http://gov-oss.org/>. Today, Open Source for America advocates for increased integration of Open Source within the government. As one Board member, Tim O’Reilly stated, Code sharing is a major cost-saving opportunity for government. There are countless government agencies at the federal level, not to mention at the state and local level, that perform similar functions. Yet each of them does its own development, driving up costs.” Featured as one of an ongoing series of quotes, see <http://opensourceforamerica.org/>.

manpower through the donation of time, in order to produce lines of code that power countless applications. Government seeks to empower private industry, from volunteer/ nonprofit orgs to corporate entities, to provide the services that the government provided, so that a reduction of scope of the government was feasible in the first place. It follows then, somewhat *unsurprisingly*, that the US Government would embrace open source to maintain the competitive edge, without having to add more jobs to the Government payroll, which is the simplistic definition of ‘expanding the size of the government’.⁶⁷

Returning to the various accounts of neoliberalism as an agile theory in terms of the range of agendas it can capture, we can see some interesting pressures, where the neoliberal framework can effortlessly co-opt the libertarian impulse of open source by encouraging and supporting individual employee contribution. Whereas the old neoliberal model was predicated on protection of physical property and patents, the new model is predicated on the people as property. Contributing to the overall project, to gain access to patents and to make the production of new proprietary patents easier and less cost-intensive is an example of a lightweight model, economically and as a form of a governing coda.⁶⁸

In one respect, there is the *appearance* that business has determined code to be a public good, much like the roads that are required to do business. Previously, the road network was built from the payment of taxes to the government, provide the infrastructure reduces the economic burden on companies that all use the same road, while achieving the desired result. With the computer, many businesses rely on some of the same string of code- here no longer

⁶⁷ Benkler offers this scenario in stark contrast to private industry asking volunteers to help build automobiles, and that as a society, this proposition seems inconceivable. Benkler’s point is that is out of character for the government to state such a position is of the same degree of magnitude, but given the Governments belief in shrinking its reach, this seems not only inevitable, but also given.

⁶⁸ Raymond, “Cathedral and the Bazaar.” Industry assessment is that the cost to maintain software is 40 percent more than development. Using open source code reduces the time on both the development and maintenance side.

physical- and it is beneficial to ‘pay’⁶⁹ to have that infrastructure⁷⁰ available to them.⁷¹ While this infrastructure is directly tied to a healthy business model, it is one that the Government can also access. No longer needed to even build the roads, the government’s function is thus reduced even further, for it is now private industry that paves the way forward through innovation of common coding. It is a redefinition of property, and how different patents can build off the same code and create new property, without having to do all of the heavy lifting themselves.

Desires and motivations

Ultimately, what is especially critical to examining the tensions between the impulses of both open source and neoliberal environments is to understand the individual motivations or desires that guide participation in one or the perpetuation in the other, rather than resorting to a blanket explanation of ideological beliefs that are espoused or adhered to within the particular ethos.⁷² For many developers and programmers, it is not only worthwhile to participate in a larger community driven project, it also feeds the ‘ego’ or makes the time spent more enjoyable

⁶⁹ Pay, in this respect, is in-kind payment, in lieu of tax responsibility. The economical enfolding that occurs here warrants a different political economic analysis that is outside the scope of this work. But this new arrangement, while represents a real financial responsibility of the company, rather than paying a tax to the government that would be used towards open source development, the intellectual time is donated rather than a monetary cost assessed. The company can choose how to use their intellectual power and towards which efforts, while simultaneously benefitting from their contribution in a much more concrete way, unlike the tax structure which is pooled and distributed without taxpayer input.

⁷⁰ And in the current environment of patenting intellectual lines code and the very thoughts that go into producing that code, using open source is almost foolproof in the ability to get started.

⁷¹ And it goes without saying that the Internet uses the same ‘highway’ metaphor, establishing the role of the government in laying the groundwork of its architecture. Having established it, the government privatized access by commercializing it, with the same few utility providers benefitting from the use of their established lines, first phone, then cable.

⁷² Ideology, like neoliberalism, is a term rife with different definitions and uses, one that is both a technical philosophical term and has a generic definition of ‘a held set of beliefs’. Following Deleuze and Guattari, ideology thus obscures what is specifically at work at the level of the social machines as it overcodes individual unconscious desires. Rather than applying a set of ideas as a concrete assemblage, it remains critical to examine the various lines of desire that inform these positions that are often termed ‘ideological’. This satisfies two goals, it highlights characteristics that are shared across distinct categories like neoliberalism and open source, but it effectively blurs the rigid categories as a way to better analyze the characteristics that can create a supple plane that moves from puissance to pouvoir. This continuum or oscillation between two poles is essential to understanding the complexity of the phenomenon that is at work here.

when it is directed towards a project that one enjoys. That their efforts are co-opted by a neoliberal environment may be true, but it does not alter the motivation of the individual users who want to take part. The corporation that donates time and manpower to the effort, may, in fact, financially benefit from their participation in countless ways; but their real contributions extend well beyond their bottom line and reach deep into the Internet and to young start ups, non-profits, and countless other entities that greatly benefit from the collective effort that produces software that works and reduces the financial barrier of cost of access. The neoliberal condition ultimately creates a double bind, and one can theorize the different ways in which it is insidiously operating, but it represents only one, albeit likely, dominant thread or force that has produced the present socio-politico-economic nexus of Google's presence on the Internet.

04_Political-economic Dynamics : Suicidal Lines, or pushing boundaries

Given Google's established antagonism towards traditional corporate environment, it comes as no surprise that many of their business practices are actively pushing boundaries in new directions. Given the 'youthfulness' of the Internet, *many* businesses are pushing traditional models and norms, from data and privacy to copyright infringement, not just Google. The Internet and its new digital sphere has challenged many existing laws across the legal plane. Cases are continuously heard out of the need and interest in establishing legal precedence where none currently exists. This is evident in the express language of legal proceedings, as well as a range of scholarship that examines the theoretical implications of the new digital sphere; scores of legal notes have been written and published, examining some of the legal implications. Google Street View alone has been the subject of dozens of legal notes regarding privacy and surveillance since the tool went live.

Google's continued financial success and cultural position has made them a target for a variety of lawsuits, with Google being the defendant in many infringement issues, including trademark, intellectual property and copyright; several privacy lawsuits, predominantly stemming from their Street View project have been settled, while their dominance in online advertising has earned them additional scrutiny from the Federal Trade Commission (FTC) for monopolistic business practices. In many of the cases, the outcome has been seen as a pivotal or crucial one that could challenge Google's entire business model and future internet activity if defeated, while winning cements their practices and establishes clear legal precedence going forward. Their cavalier attitude and moxy are critical elements for their success and innovation, but this success comes with a cost. While many see their wins as a correction in outdated

business law; some of the core tenets that are being challenged, such as copyright infringement with the Google Books program, have the potential to radically alter the social field and capitalist model of publishing, with artists and creators being directly impacted.

Within the particular context, the emergence of a new mode of business practice that is radically altering the social field begins to sketch out the practices of Google and its intense drive to organize the world's information as more like a vector of desire, an intense line of flight that is transforming the social field in its wake. The line of flight has been productive for many aspects, opening up new lines of knowledge, more efficient ways to access information, resulting in an ontological and epistemological shift.¹ Simultaneously, this line has wrought destruction to many existing norms and conventions, and the litany of lawsuits gives evidence to how much the company has challenged commonly held practices and assumptions of economic, intellectual, and socio-cultural milieu. This condition is perhaps best exemplified with the oft-circulated sentiment, "Google's leadership doesn't care terribly much about precedent or law."² The previous articulation of the planes and the lines of flight that shift those conditions, Google's 'healthy disregard for the impossible' and its disregard for the laws that structure the very conditions that made their meteoric rise possible reveal the more destructive tendencies of their intense desire to organize the world's information, no matter the costs. This unique parallel of transforming the socio-cultural forces and practices and reorganizing them on the line of their project resonates with the way in which the tendency of fascism infects the social field, causing destruction in the process.

¹ Hillis, Petit and Jarrett, *Culture of Search*.

² Levy, *In the Plex*, 353.

Trademark Infringement

Google's incorporation of keyword searches to generate targeted advertisements enabled Google to deliver relevant advertisements to go with their relevant search results. Advertisers could determine how much they were willing to pay for advertisements and Google set the minimum bid in relation to keywords. This ability to set prices according to popularity of the keyword enabled small companies and obscure products the ability to compete with large companies with a big advertising budgets, at the same time as pairing the products with a market in search for them.³ From the beginning, Google had stringent guidelines regarding the appropriateness of the ads (no bidding on 'child pornography') and the relevance of the ad in relation to a keyword search (such as Coca Cola not considered relevant to 'sustainability'). This resolved the previous scattershot pop-up ad problem of annoying presence and irrelevant placement. It also prevented companies from bidding trademarked names. So while a large company could place a large bid on popular keywords, they would only get top placement in ad space if their ad bid were deemed relevant to the keyword search by the algorithm.

Shortly before Google's IPO, the company softened its policy on trademark bids. In this view, if someone were searching for one product by trademarked name, it would be likely that they were also searching for similar products.⁴ It also had financial benefits: companies could bid on their competitors, so while a search for a trademark name like 'Patagonia' would return the website for Patagonia, ads for Patagonia if they paid for them, as well as a competitor ad by

³ This is best exemplified by the custom cowboy boot maker that had a strong cult following based on word of mouth; once they started bidding on keywords, the number of potential customers and actual buyers increased exponentially. Bidding on 'custom cowboy boots', coupled with having a high page rank, this small Texas company immediately saw the value of advertising, as the results were strongly correlated with their online traffic in relation to their ads.

⁴ Vise & Malseed, *Google Story*.

Columbia.⁵ While there is legal precedence for companies to mention their competitor's name or product in the ad, the visual or audio advertisement was broadcast to a large audience, whether or not individuals were interested in 'technical fabrics' or not. The legal basis rested upon fair use and accuracy of depiction; this ensured product comparison without slanderous intent.

Geico sued Google in 2004 over allowing competitors to buy ads based on Geico as a keyword search. While they stated it was 'fair use' of trademarked name in normal advertisements, Geico's argument rested upon the targeted 'keyword search' of Geico as being an illegal use of trademark name. Geico believed that a customer searching for 'Geico' would only want to see results of Geico. If customers were presented with other competitors, the multiple companies on display would confuse them; as a result, Geico stated they were losing business through this illegal use of their trademark name and sought to recover damages. Google's counter argument was that competitors placed bids on Geico as keyword, as their product offered was relevant and similar, which enabled users to see a range of insurance providers. The ads were located away from the actual search results, which ensured that users would not be confused. Furthermore, while customers may be looking for Geico specifically, often people obtain several quotes before changing insurance carriers. Google saw this shift in policy as being helpful for the end user, "it didn't want to interfere in the free exchange of ideas that could benefit its users, who might want to see a range of competitive pricing and information."⁶ The crux of Google's argument rested on its role as search engine, and the

⁵ The algorithm that sorts and ranks keywords and ads is highly complex. For the purposes of illustration, if Patagonia placed an ad for their brand, and Columbia placed an ad on Patagonia's as well, Patagonia's ad would still be the most relevant, even if Columbia outbid them.

⁶ Ibid., 222.

undeniable fact: their customers were both the advertisers and the end users. Given that, Google maintained that they worked to strike a delicate balance of meeting both customers needs.⁷

The trial's outcome had the potential to greatly impact Google's business model, as well as "the denizens of the growing Google Economy, the thousands of people around the world whose livelihood was tied inextricably to Google's continuing growth."⁸ Seeing a potential battle ahead, during their public offering, the company was obligated to reveal to potential investors that the change in policy might leave them vulnerable to trademark infringement lawsuits, which might directly impact their income potential. The trial itself was seen as key to setting a legal precedence in this new online advertising realm. A ruling in favor of Geico would curtail growth potential in keyword search; a ruling for Google would greatly expand the latitude offered to sites like Google, that neither encouraged the ad placement nor generated content as a whole. They were merely the host of content and therefore their liability was limited.⁹ It was, what many saw, a new legal landscape,¹⁰ one that seemed to offer Google many opportunities to assert its legitimacy, both culturally and financially. "In this respect, the case was on the legal frontier, the kind of place here Google found itself most comfortable as it created new domains for engagement in technology, business, culture, high finance, and now, in the law itself."¹¹

In more concrete terms, Geico was protecting a brand name and reputation that took generations to build; Google was protecting an entire business model. Ultimately, the burden of proof lay with Geico, as it claimed its decrease in new insurance policies was the result of Google's new Adwords model; Google was merely hosting advertisements, one of which

⁷ Ibid., 225.

⁸ Ibid., 223.

⁹ As defined by the Digital Millennium Copyright Act, covered below.

¹⁰ Lessig, *Code 2.0*. Lawrence Lessig is one notable Internet legal scholar, focusing on copyright and property issues of the new, virtual realm of the Internet. The emergence of the Internet brought with it a whole new host of considerations that needed a new approach.

¹¹ Vise, *Google Story*, 223.

happened to bid on ‘Geico’ as a keyword search. The judge ruled in favor of Google, as advertising precedence of using a competitor’s name has long been accepted as fair use. Geico’s claim that the ads led to confusion was not established as a significant concern, given Google’s then placement of ads clearly separate from search results. Underlying the larger concern that extended well beyond Google’s business model was potential implications that might result from legally limiting the use of trademarked names as keywords. Further extending intellectual property rights to ‘keywords’ could be detrimental to the new emerging Internet economy and intellectual property law as a whole.

Intellectual property infringement

One of Google’s earliest lawsuits resulted from intellectual property infringement. Google had already established itself as a forceful search engine that determined page ranks based on web links to sites and organized them via a specific algorithm. Google’s early business model imagined itself to have a tripartite structure, earning licensing fees, hardware fees and advertising, of which they imagine to yield 10-15%.¹² As the company developed its advertising business, a variety of other efforts were circulating online, seeking to improve the efficacy of ads. An early competitor, GoTo.com was mixing ads with Search Results, based on keyword search. While successful at the early stage, GoTo struggled to establish themselves as their own search engine and subsequently focused on providing ad content for external sites.¹³ In an early TED talk, the founder of the service presented on how their service worked. Google was horrified that ad results would sully the purity of the actual search results and it could build a better model from the ground up.

¹² Levy, *In the Plex*, 84.

¹³ *Ibid.*, 87.

Page and Brin were adamant to maintain their relevance model and continue to focus on user satisfaction. They sought to formulate a way in which the ads would be as relevant as the search results, based on the same principle algorithmic ranking. Working with engineers, they developed an ad auction based on Keyword Search, with the ad content placed alongside the search results. Companies could set their highest bid for a keyword, but the placement of the ad was determined not only by the bid for placement of keyword, but was also by the relevance of the actual product. This prevented advertisers from bidding on popular keywords in which had little relation to the product. This unique model was user friendly for advertisers, the price of entry for advertising was low, and the advertisers determined what they were willing to pay, and either bid high enough to secure the top placement, or their product was determined more relevant than the highest bidder, thereby securing the top spot for smaller fee. Users, finding links to products they were already searching for, it was argued, would find these advertisements helpful and be more likely to click on them, rather than ignore them or see them as a nuisance. Seeing the new model of advertising, users appeared to find these ads as relevant as Google thought they would, as their advertising income immediately offered explosive financial gains.

Within this context, as GoTo prepared to go public and changed their name to Overture, it was evident that the company did not take the precaution of filing for patents for their advertising scheme and the financial valuation suffered. The existing patent law states a company must file for a patent within one year of public exposure to maintain their intellectual rights to subsequent claims of financial benefit. Overture missed the window, but filed regardless. The timeline of 'public exposure' is a murky definition in this new, legal landscape; an argument could be made for 'beta' testing prior to actual public exposure. Google's model was too closely aligned with Overture's ad for highest bidder, and Overture filed a lawsuit based

on infringement of their (now) patented ad placement model: patent # 6,269,361. During the process, Yahoo acquired Overture.

Google was preparing for their own IPO and their entire business model now hinged on this new wildly profitable ad feature. While Google believed it could win the settlement, it was more expedient for their IPO was to settle out of court. The agreed upon figures gave Yahoo 2.7 million shares of Google stock, or 1% of the company. It was expected to be worth \$290-365 million, based on initial projected offering.¹⁴ The settlement terms gave Google perpetual usage of the patent, and Yahoo was to sell half its shares once Google went public. The offering price ended up being slightly lower than the lowest figure, resulting in less ‘award’ money for Yahoo.

In this instance, the intellectual property rights focused on a conceptual framework for ad placement, not the specific algorithm that placed the ad. Google built their own algorithms and sought to ‘do it better’ than the Overture model, changing many key ways in which it functioned. The murky terrain of intellectual property has a concrete quality when the process is a material product and mode of production. A competitor can often market a similar product but must make substantial changes to warrant a visible difference in the two products. With computer code, the material product might appear the same, but the manner in which those results are achieved might be radically different. The patenting process has created countless lawsuits along these lines, as well as advance demands of product release where features infringe upon established products.¹⁵ Having a competitive lock on an idea or a physical movement reveals the uncertain territory that businesses unwittingly enter into when the product is primarily immaterial.

¹⁴ Hansell, “Google and Yahoo Settle.”

¹⁵ A notable recent example is Apple’s patenting of the physical two-finger motion of enlarging the image on the screen of the iPhone. In product review, they demanded Google to remove that feature from their Android phone. See Levy, *In the Plex*, 221.

Copyright Infringement

In 1998, Congress passed a major overhaul of copyright protections. The Digital Millennium Copyright Act achieved two clear goals: it extended copyright protection to cover the illegal distribution of works in online environments. With technologies making production of a digital copy easier, the need to protect the intellectual content from digital distribution becomes increasingly critical in order to maintain the traditional business model of selling works under traditional copyright protections. Simultaneously, the Act also limited the liability of the Internet Service Providers (ISP), seeking to define a key distinction between merely hosting content and users that actively upload illegal copies. For content hosting sites like Google, this was a key law that has made much of their products legitimate and safe from legal action.

Limiting the liability of the ISP for uploaded user content had one clause: the owner of the copyright can notify the ISP and request a legal take down of copyrighted material. The ISP has to comply with this request. Effectively, this results in the owner of the copyright to act as policing authority, and the onus is on the owner to locate the infringements. Viacom helped author the Act of 1998 that limited the liability of ISPs. Viacom, however, is the parent corporation with major entertainment programming, a large portion of which ends up on YouTube, uploaded illegally by users. Suffering from policing fatigue, in 2007, Viacom sued Google for copyright infringement of 160,000 copyrighted video clips, placing damages at \$1 billion.

In 2010, the judge ruled in favor of Google, stating that digital copyright law was clear. The ISP has no legal obligation to block copyrighted content. It is up to the owner of copyright to police the Internet. The provider is required to remove content on notification, but 'burden of enforcement' falls on the owner. While Congress passed the law to protect corporations from

user behavior, the main intent was to reduce legal hurdles that might stand in the way of developing the Internet; while still giving copyright owners recourse to collect damages.¹⁶

What makes YouTube particularly difficult is sheer size and disparate user groups. Culture and politics happen here, as well as academic lectures, software tutorials and mindless entertainment. Google is more active in policing the content on the site due to the potentially harmful material that might offend users, as well as abiding clear Federal laws regarding child pornography or other culturally offensive acts or statements. As an international phenomenon, however, this potential to harm becomes increasingly tricky. Users play a role in flagging material as ‘offensive’. People may take offense over the content, or even the author of that content. Determining what content is offensive to which public is not always clear-cut. Striking the right balance of a tolerant society while being mindful of cultural gaffes puts Google on dangerous grounds of being the moral arbiter of what is considered acceptable. Moreover, international governments are not required to observe or adopt the same legal instrument as the United States. The conviction of three Google executives by Italian authorities serves as a reminder for the level of responsibility the company might be held to, regardless of laws of Google can presume to operate under at home. In this case, the conviction resulted from failing to prevent offensive content from being uploaded and consumed in the first place, regardless of following ‘take down’ requests.¹⁷

While the cultural implications of Google assuming this role are cause for concern, perhaps of even greater consequences to the future of the Internet and access to knowledge lies in

¹⁶ Vaidhyathan, *Googlization of Everything*, 35-36.

¹⁷ This is recounted in Vaidhyathan. The republican candidate’s ad was flagged as offensive, with a debate as to the nature of the content or the reputation of the individual for saying morally offensive statements. Likewise, Google has seen in some markets that competitors abuse the ‘take down’ policy by flagging competing products as ‘infringement’ of copyright or trademark. Such a system does not adequately provide a fine grain assessment for ‘take down’ and abuse of the feature.

their Google Books project. On the surface, this project exemplifies their core mission: to make the world's information available; books are a critical element of knowledge production and a significant layer of information. Censorship of content and banning access to texts has taken place in this country in the past and likely by all governments throughout the world. While some countries continue to censor content more assiduously than others, at the crux of the authoritarian argument is restricting access to knowledge that might prove harmful to the government's ability to control their subjects. In other words, knowledge is power. Google's move to scan all published books is a move to radically democratize information. Published works still represent the pinnacle of scholarship and privileged place as a voice of authority. While there is an increasing amount of published content online, the legitimization of recognition by the publishing industry and academic disciplines acknowledgement of 'worth' is important. Or, as Vaidhyathan states, "Written words on paper still express best the deep human thinking,"¹⁸ rather than online sites that often better reflect the schizophrenic, fragmented nature of the web.

For strong supporters of the potential to democratize information, either through ease of access by removing financial or other socio-economic barriers or making a space for more voices to be heard, there is a real value and great potential in the book scanning project. It allows access to out-of-print texts, it overcomes financial barriers that enable libraries to procure variety of books that exist, as well as enables marginal texts to find a new audiences. Academic researchers and students have found great value in being able to search a text for key passages, regardless of owning the physical copy; the scanned online version is critical to be able to decide if it is a text worth locating in physical form. In the early formations, key scholars like Lawrence Lessig, a scholar on open source and Internet democracy, was a key supporter, as well as many of the

¹⁸ Ibid., 150.

university libraries that saw a real value in having a digital copy for many of their non-circulating volumes.

One critical snag that has caused the project to proceed in fits and starts is the actual copyright system built by lawyers, meant to govern physical copies and the distribution of content.¹⁹ Google's early means of acquiring copies to scan were to contact those in possession of a legally owned copy: university libraries. With their permission, Google established a non-invasive scanning system that would scan all pages with minimal damage to the spines. In turn, universities would receive a digital copy for their institution, with the intent to increase access to key texts, as well as more rare, non-circulating texts. Google would then have a digital copy to scan and analyze as part of their larger project of making all information accessible. For works in the public domain and out of print, this opened up a key niche market, as sales of public domain texts are possible in the online sphere. As Google continued its project, a variety of voices expressed concern over the scope of the project, including the early supporters that were key to getting the project off the ground.

In 2008, after four years of extended argument, a crafted settlement over what the role copyright should have in an increasing digital age appeared to dodge some key legal and philosophical questions, in an effort to satisfy the financial concerns of the publisher's guild. In the process, the settlement set up a forward thinking system for book research and distribution. Instead of satisfying the original concerns, the settlement was far from resolved, and raised even more questions from original supporters, ranging from monopoly of information, lack of competition in the out-of-print market and increasing privatization of information 'ecosystem'.

¹⁹ Copyright law itself has increased in importance with the age of reproducibility. Early works did not face the same risk as works do today, with a range of apparatuses that can capture the content of the page. From the mimeograph, the photocopier caused alarm among many in the publishing industry, and has only been exacerbated by the scanner and the ease of transmitting an electronic digital copy of a text.

Google sought to access the copyright standards of ‘fair use’ of the web and apply it to printed books. Over time, many saw it as exceeding the ‘fair use’ clause and would make it eventually too powerful. Larger question emerge regarding Google’s ‘fitness’ to undertake privatization at this scale, but the lack of government support and planning leaves universities unable to take on a project like this on their own. While some concerns might seem unwarranted at this stage, many concerns focus on Google’s control over historical and intellectual heritage that poses a potential danger to learning. Still occupying the realm of ‘what if’, the questions²⁰ seek to engage a larger discussion that does not seem to be taking place at the policy level, one that is less focused on the Google of 2013, but more on the Google of 2023 and beyond, or, in more explicit terms, ‘can we trust them to continue to make decisions that have ‘democracy’ as its core principle?’²¹

Without ever going to court, the reworking of the agreement continued to fall short of concerns, with sale of books leaving Google the sole vendor, regardless of proceed portions streamed to the proper parties. With many out-of-print/expired copyrights, this leaves Google in a unique position to corner the market on a variety of books. A further revision of the agreement established unique arrangement with libraries, with Google providing a reading kiosk for patrons. Regardless of the reality of most libraries being woefully underfunded by its community, this raises important issues of commercialization of libraries. While Google maintains a Gmail login would not be required and any data collected would be anonymized, the unease of a corporation undertaking a project of such great proportion and consequence is not

²⁰ Ibid., 165-168. Questions like: should we allow the commercialization of the library? If Google places their own kiosks in the library, what sort of monopoly do they have, what will they do with the data, how secure is our privacy with regards to the books and pages viewed, as well as the length of time on the page. How willingly will they hand over this information to the government if asked, etc.

²¹ And somewhat objectively, this is a legitimate question to consider. As Google’s stance on their advertising policy has changed over time in the interest of increasing revenue, changing their policy of access to the information they have archived and made available is also subject to changes.

abated. For Vaidhyathan, the most troubling aspect is the far-reaching, potential effects without any public input. The project is revolutionary, will radically change how we think about ‘copyright, books, history, access, and libraries.’ Perhaps more critically, no public policymaking body oversaw its creation, no legislature considered any notions of an essentially compulsory license system.²²

In 2012, a resolution was finally reached and incorporated an ‘opt-out’ policy for the publishers. The earlier terms that Google crafted with the Publishers went virtually unchanged, but the new language gives publishers a choice whether they want to make their property available to Google. For critics of the case, the change amounts to a non-event in the scheme of things. A separate class-action lawsuit was pursued by the author’s guild, however, the Judge recently ruled that Google’s efforts were far more beneficial to society than the potential financial damages asserted under the lawsuit. If anything, the Judge offered, their work was given greater exposure with this effort than under previous arrangements.²³

What allowed Google the ability to step in in the first place is essentially a damning assessment of the neoliberal environment. Vaidhyathan points to this endeavor as “a perfect example of public failure.”²⁴ With the increasing move towards privatization in the Neoliberal environment, the public and political support for funding projects of this scope is lacking. Many libraries are facing budgetary cuts that impact their operating costs and the purchase of new resources; having funds available for an undertaking of this magnitude seems out of the question. Financial considerations notwithstanding, that the government has a tendency to let issues such as this be resolved outside of the court system and without policy review further points to the inclination of the current Neoliberal environment to reduce the reach of government by letting

²² Ibid., 155.

²³ Miller and Bosman. “Siding With Google.”

²⁴ Vaidhyathan, *Googlization of Everything*, 155.

the market ‘decide,’ “[r]adical change in information policy executed by a class-action settlement.... private law will determine public policy.”²⁵

Google’s ‘naïve’ proposal emerged at the time when people were beginning to grow wary of their efforts. Under the guise of promoting freedom of access, what instead appears is a darker trend in their overall movement, and with that, the potential to restrict access to books/content, and ultimately, the power that controlling such access might provide. Throughout the process of reaching a settlement, Google’s language has remained consistent with a moral overtone: the ‘real winners’ are the readers who are able to search millions of texts. “While this settlement is a win-win for authors, publishers and Google, the real winners are the readers who will now have access to a greatly expanded world of books.”²⁶ Vaidhyathan cites both sides as ultimately unwilling to go through the courts and take the chance, and instead opted to negotiate directly, circumventing due process. In part, largely what is at stake is what it might do to existing laws, with the outcome being potentially substantial and either curtailing or making stronger ‘fair use’ and users’ rights.

For Google, the ultimate wager was to exploit the instability of the copyright system of the Internet era by “resting a huge, ambitious and potentially revolutionary project on the most rickety, least understood, most provincial, most contested perch: fair use.”²⁷ For many, the copyright system has gotten too strong in recent years, with a variety of scholarship pointing the damaging potential and curtailing or stifling creativity and knowledge production as a result, and with the ‘CopyLeft’ movement by artists and creators, it creates even murkier terrain over who owns the intellectual labor: the artist or the corporation entity that makes it accessible to the broader public.

²⁵ Ibid., 155.

²⁶ Brin, “Library to Last Forever.”

²⁷ Vaidhyathan, *Googlization of Everything*, 168.

The maneuvering of the settlement attempted to enable Google to avoid what would likely be a losing outcome, for their scanning and making searchable entire texts far exceeds what anyone might determine ‘fair use.’ The scope, ambition and financial resources required seems to have left Google as the only viable entity to carry out this mission, and a larger, pragmatic question thus becomes, “how many efforts do we need to scan books? Isn’t one scan enough?” What remains open to speculation is the political positioning by Google, and what Vaidhyathan sees as a power play. Their arriving at a settlement outside of the courts enabled them to assert “its own dominance as the chief search platform...to corner the market on electronic library searches and delivery.”²⁸ Regardless of that speculation, and the ultimate pending outcome of both cases, their book project has disrupted the publishing industry and the copyright system.²⁹

As tech insider and pioneer of Virtual Reality Jaron Lanier offered as provocation in a recent manifesto, *You are not a Gadget*, this new environment of horizontality and collectivist production has the potential to stifle the individual creativity and its important contribution to cultural production. The devaluation of creative labor, while defying the capitalist model, poses great risks to the livelihood of those that must still live within the system, necessarily subject to the costs of food, clothing and shelter. So while exhibits like ‘From here on’ seem to celebrate the asubjective nature of authorship, rather than Authorship, or taking time-consuming efforts like writing and making them easily downloadable, free of charge, Lanier sees a real danger in taking this too far. Ultimately, the tensions expose the unstable foundation of cultural production, the meager earnings that result from them and the corporate interests that stand to profit, yet

²⁸ Ibid., 168.

²⁹ This is quite similar to what compact discs and software programs and websites like Napster that enabled downloading of music content onto computers and sharing it illegally. What the digital age presents, ultimately, is a tension between the old business models of production and sales and the new tools that the average consumer has at their disposal.

cover the production costs upfront. We must perch on the edge of a strata and experiment cautiously, to paraphrase D & G.

Anti-trust activity

As a result of the phenomenal growth and financial position, Google has been under increased scrutiny for anti-trust practices. The current environment has left them cautious when considering company acquisitions, forming new business partnerships and expanding into new markets.³⁰ As their Search product continues to power the market share of searches, their advertising tool remains the optimal way to place ads, as the ‘relevance’ factor has long since proven effective, and with Google garnering the most search traffic, the need to advertise elsewhere seems moot.

The first Anti-trust threat and investigation resulted from their interest in purchasing Double-Click, outbidding Microsoft. DoubleClick was a display service that tracked websites and introduced ads that pulled from browsing history. Google’s purchase of Double-click signaled a shift in company philosophy. It expanded the advertising options from key word search ads to include DoubleClick display ads. The logic that facilitated this philosophical shift was a focus on users’ browsing history, with display ads potentially being more relevant than the text-based ads.³¹ Google’s interest in DoubleClick turned into a bidding war with Microsoft, securing the deal was as much about keeping it away from the competitor as about the actual purchase. In the end, Google bought DoubleClick for \$3.1 billion. With such a large purchase, the public perception shifted, with a new focus on the extent of Google’s advertising power it would acquire in the process. The government immediately launched an investigative review to

³⁰ Ibid., 346.

³¹ Ibid., 330.

see if the deal violated antitrust law.³² With Google already experiencing what seemed to be ‘runaway profits’, the growing concern was that the purchase of DoubleClick would make Google ‘unstoppable’ in their earned revenue for advertising services rendered.

One main point of contention focused on the anti-competitive nature and Google being the only ‘viable’ advertising portal, giving it too much power and domination over the Internet. Google’s core argument was that it was not buying competition, it was merely buying a delivery service. They framed the argument of ‘market share’ as their corner of the larger advertising world, not just the Internet, including all forms of media, not just the Internet. “There is no such thing as a market share in search advertising because it isn’t a market.”³³ While Google was earning billions, it represented only 10% of the advertising industry.

The second point of contention focused on a comparison between Google’s position in 2007 and Microsoft’s position in the 1990s. Google believed the comparison to the Microsoft monopoly was misguided, as MS locked you into an operating system and the software available. Google’s service was free and “Competitors were only a click away”, was a common refrain uttered among Google executives. Their statement was supported by the power outage that forced users to use a different search engine when Google’s page would not load. Millions ‘simply’ switched to other engines. This data/event proved to be one convincing way to reframe arguments about ‘power and domination’ over the Internet.

Google’s argument was simple: DoubleClick is to Google what Fedex is to Amazon. They were two different business models; one facilitated the delivery of the product from the other. Google’s *initial* interest in DoubleClick was its delivery mechanism, and it was not until after the acquisition process began did Google see the unique power DoubleClick’s ‘cookie’

³² Ibid., 331.

³³ Ibid., 331.

offered. It radically broadened to scope of every user's browsing activity, giving ever more data. Together "they were going to end up with the Internet-tracking equivalent of the Hope Diamond: an omniscient cookie that no other company could match."³⁴ Overtime, a fully fleshed out log develops from users' interests and sites visited, stealthily compiled. However, for the FTC, the larger issue was anticompetitive, not privacy. The FTC did not see privacy concerns being unique to Google, and was not the subject of the investigation. "Google helped foment misunderstanding by not being clear about the unprecedented benefits it would gain in tracking consumer behavior."³⁵ The FTC cleared the way for the purchase agreement to move forward.

The purchase of DoubleClick changed the business model of Google. They now had the mechanisms to draw data on its users in different scales, both breadth and depth. Google was now the only company with the ability to pull together user data of this scope. Previously, a user was only tracked if it clicked on an ad, now with DoubleClick, the every site the user visited with an ad was recorded, regardless of whether it clicked on an ad or link. What resulted from this new tracking was the practice known as 'retargeting,' in which ad content placement is unique to each user, drawing from previous sites visited, as if to remind the user that they were interested in purchasing something. Once retargeting was in place, the results of Google's revenue was 'staggering'.

The 'retargeting' practice of DoubleClick was internally debated, when the new feature was released, it was paired with a new 'privacy policy' which gave users more control over the information Google held, as well as allowed them to choose what sort of ads they wanted to see. The overall logic stems from the fact that advertising dollars fuel content and the ability to maintain a site. For Google, making those 'inevitable' ads relevant was their way adhering to

³⁴ Ibid., 333.

³⁵ Ibid.

that doctrine, “so if there is a way to make it so that the message is truly relevant, then we said let’s do that.”³⁶ Given the breadth of information they have pertaining to each IP address, nothing could stop them from combining that information to create a more comprehensive user profile. For those logged into Gmail, even their personal identity *could* be attached to the profile information. Google, however, continues to maintain that preserving user trust is their number one goal and will not combine data to this level of resolution.

The change in their business model also seems hint at a change in their philosophical misgivings of advertising in general; it appears that the rules of the game have changed. Originally, they did not want advertising. Then text boxes with advertising links were ok, as long as they were relevant. With the purchase of DoubleClick, display ads were now considered ok, as long as they were pulled from a user’s browser’s history, which makes them relevant. This shift from ‘Making the world’s information accessible and useful’ to “‘Without the cookie, we weren’t making the impact on the world that you have to make to be successful’”³⁷ is significant. It highlights the transformation of their definition of ‘don’t be evil’ and what constitutes a ‘successful impact’: are its users looking for relevant ads, or are they really looking for information? Can Google reliably make the distinction between the different types of information that are not equivalent? Are users *wanting* to be reminded of the sites they visited? Might there be moments where a user is in a compromising position when an ad is targeting a site previously visited that is ‘sensitive’ in its content? This shift gives evidence to a re-articulation of their goals of indexing *all* the world’s information and how they imagine their services to be ‘helpful’ to the user.

³⁶ Ibid., 337. Quoting Google employee, Neal Mohan.

³⁷ Ibid., 335. Quoting Google employee, Susan Wojcicki.

When pressed for clarification on potentially sensitive privacy issues, Schmidt is on record on countless occasions for maintaining one critical position, “If you are doing something you don’t want anyone to know, then maybe you shouldn’t be doing it”³⁸ In tandem, there is an implicit belief at Google that notions of ‘privacy’ are no longer considered in the same way, nor should they be. Perhaps it is the interest-groups that raise the red flags, whereas general users remain largely unconcerned with the data profiles that are being assembled.³⁹ The level of assumptions that take place within this debate are too large to ignore, and the potential consequences remain too great to simply dismiss it is ‘inappropriate’ behavior one shouldn’t be engaged, if they wish for it to remain ‘private’. Within this context, Google extends their power to unknown reaches of the Internet, in which self-surveillance takes on a more significant meaning. These new tracking mechanisms seem to lurk in unknown places, with individuals potentially manipulating their own behavior before they even get online. That Google might potential alter users habits through their new means of data capture doesn’t seem ‘helpful’ at all.

In something of an ironic twist, the anti-trust investigation discerned that the deal would not result in an anti-competitive environment, even though it appeared to produce precisely that environment. Google’s profits are ‘leveling’ off to some degree, but continues to report double digit growth year over year. Its shares remained at an all time high, above \$1200/share before the split in March, 2014.. Their revenue is larger than most developing nations GDP and would rank around 75th out of more than 300 countries if it were a sovereign entity. In 2009, Google found itself the subject of yet another anti-trust investigation, this time for striking an ad partnership with Yahoo, one meant to keep it solvent and help it fend off its suitor, Microsoft.

³⁸ CNBC, *Inside the Mind of Google*, at 19:10-19:34.

³⁹ Katz, “Web Freedom.”

Google had a personal vested interest in keeping its two closest competitors from joining forces. Page and Brin had personal respect for CEO Jerry Yang, who had encouraged them to start Google. They wanted to help keep Yahoo free from Microsoft, as Yang was resistant to the offer of \$48 billion, and further bolstered by Google's attention. Google maintained that antitrust implications were inevitable with the Microsoft deal, and instead, Google offered Yahoo a partnership that would give them more revenue by serving some of Yahoo's search customers with Google's ads. With Google's ad system as productive as it is, it would result in bigger profits for Yahoo. This partnership would give them more revenue to keep them autonomous, despite Microsoft's attractive, but inflated, offer. This partnership would presumably also give Google even more profit and exposure. Yahoo turned down the Microsoft deal.

Instead of creatively dealing with their top two competitors joining forces through an attractive partnership with Yahoo, Google's offer was suddenly under scrutiny of the Department of Justice. Spurned, Microsoft encouraged antitrust efforts against Google. Microsoft demurred that it was 'educating' policy makers on the new digital competitive landscape.⁴⁰ Additional counsel was subsequently hired, with notable antitrust litigator Sanford Litvack. Litvack was not an academic lawyer interested in the nuances of the law. Rather, the counsel prepared a broader complaint statement, set to charge Google with several counts. Under Section 1 of the Sherman Antitrust Act, calling the Yahoo deal a restraint of free trade; under section 2, Google was charged with an illegal attempt to monopolize.⁴¹

⁴⁰ Somewhat lovingly known as 'screw Google' meetings. Levy, *In the Plex*, 344. While this narrative is particularly candid, as are many of the popular press accounts, it is still factual. I have attempted to retain this tone, in part as I believe it represents the high stakes in all of the major lawsuits. In all cases here, the setting of legal precedent and Google's success at fending off lawsuits engenders a fair amount of 'awe' in the media and those that write about them.

⁴¹ *Ibid.*, 345.

This charged hinged (again) on the definition of the sphere of advertising influence and whether online advertising was considered its own market, or if it was part of the worldwide advertising market, including radio, television and print ads. Litvack framed the assertion as Google earning 80 per cent of search ads, leaving every online advertiser forced to patronize Google; this language gave a direct glimpse into the angle from which Litvack would forcefully argue. Google, in their self-interested zeal to keep their own competitors from combining, brought undue attention to their wildly successful ad revenue scheme. Schmidt attempted to discuss the terms with Litvack, in an attempt to placate concerns of their potential to increase the market, but ultimately was unsuccessful. “I tried hard. I talked to Sandy. *It was an example where we’re running against other people’s agendas and their worldviews.*”⁴²

Faced with a pending court filing that would accuse Google of being a monopoly, Google terminated the deal with Yahoo within 3 hours of the legal filing of complaint with the Department of Justice. Without an active deal, the government had nothing to rule on and the case terminated investigation. Says Litvack, “We would have ended up also alleging that Google had a monopoly and that [the yahoo deal] would have furthered their monopoly.”⁴³ A year later in 2009, MS earned Yahoo’s search business for a fraction of the original offer, for \$1 bn.

In 2008, the American Antitrust Institute held a panel discussion regarding the power Google wields. Christine Varney, successful in pushing the Microsoft antitrust suit, offered fresh thoughts for the new era, with Microsoft being a problem of the previous era, before the Internet. She asserted that the current problem was Google’s monopoly in Internet marketing, regardless of their coming into that dominance lawfully by way of a highly successful algorithm. Her assessment, in no uncertain terms, “Google is quickly gathering market power for what I would

⁴² Ibid, 345.

⁴³ Ibid.

call an online computing environment in the clouds. When all our enterprises move to computing in the clouds and there is a single firm that is offering a comprehensive solution, you are going to see the same repeat of Microsoft.”⁴⁴

Varney points to a unique condition in which Google finds itself: its successful and valuable algorithm in relation to its unprecedented economic growth is nearly the reverse condition of Microsoft. While Microsoft locked its users into an operating system and software, forcing participation in a fee-based licensing program, it removed any competitive market for consumers due to its comprehensive platform. It could be argued that Google is effectively eliminating the competitive market through their free services. With most of their online tools free of charge, from word processing and spreadsheet applications, presentation software, navigation, email, free storage, free video conferencing, cell phone, etc., few companies can afford to compete at that price point. Their advertising revenue funds the applications and services and their rich resources of engineering talent are vast. It enables them to develop products for an amount that is negligible to their bottom line. At present, at the end of the third quarter, their revenue for 2013 is approximately \$58 billion.⁴⁵

As users, the level of usability of Google’s tools rivals MS Office suite; it doesn’t require a large amount of disk space and documents are accessible from any computer. For most users, having a sophisticated Office package that requires license updates is unnecessary, given that a comparable free version is available. Google, it could be argued, has had a negative impact on innovation and product competition in some sectors. Few companies have the depth of talent and the deep pockets that Google has when it comes to Research and Development. Open Source has already altered the economic model of normal capitalist models of production, but the

⁴⁴ Ibid., 346.

⁴⁵ Google, http://investor.google.com/earnings/2013/Q3_google_earnings.html.

stability of Open Source and its compatibility across platforms makes it an uncertain choice for a larger portion of the population that has basic needs and without the time, technical resources or skills to contribute to the production of another model.⁴⁶ For developing nations, the barrier of access is greatly reduced through cloud computing; Google becomes a natural choice to meet those needs. To participate in the larger online movement, all that is needed is Internet access, the hard drive storage capacity is not even an issue.⁴⁷ There is a collective confidence in Google being around in a few years, compared to a small open source effort that might be obsolete in a year.

In their eagerness to make the world's information accessible and to provide services of great value to their users, Google has decimated the very field that gave rise to their success as a young start up. While it is 'easy' to make an argument for a more equitable, anti-capitalist system, one with a reduced presence of corporate profit concerns and an eye on the bottom line at all costs, Google, in their zealous attempt to challenge the status quo have even more firmly installed those same conditions, in their attempt to disrupt the competition, continue to expand their market share of online revenues, their 'pure' message of freedom of information has been watered down by their increasingly flexible definition of 'information'.

In a somewhat ominous twist, the FTC launched another anti-trust suite. However, in 2013, it was definitely determined that Google was not engaged in anti-trust practices. In business parlance, the company's practices are seen as 'vertical integration' and there exists no legal mechanism to prevent vertical integration within anti-trust.⁴⁸ Ironically, however, it is the

⁴⁶ At least since 2004, this has been an actual concern. See Levesque, "Fundamental Issues." While some of these concerns modulate over time, for those without time or interest, participation remains a hurdle.

⁴⁷ And with Google's Wi-Fi balloons, access will be less of an issue as well.

⁴⁸ Manne & Rhinehart, "Market Realities."

‘depth’ of the vertical integration that has a horizontal effect of installing a striated plane, highlighting that the conceptualization of the problem is a spatial conundrum.

Invasion of privacy

Street Views primary role was to give users a virtual image of the environment. Google imagined that the service would be universally embraced as a helpful navigation aid, providing a representation of unfamiliar places, saving time and easing anxiety, or less ‘helpful’, “simply do some sightseeing at a remote location from the comfort of your LCD screen.”⁴⁹ Google gave little thought to the nuanced implications that might arise during the process of creating a visual archive of the built environment. As one of their highly secretive ‘moon shot’ projects, advance information was not available, and it was not until they had several cities mapped and online did they make an announcement.

In the New York Times, their first article in the first few days of its roll out appears to be writing from the frontlines, reporting on this new visual phenomenon that had many perplexed, some nervous, others angry and still many others amused. The story opens with an ambiguous line, “For Mary Kalin-Casey, it was never about her cat.”⁵⁰ Kalin-Casey, an apartment manager, happened to experiment with the new tool, typing in her apartment address, zooming in to her window, to see her cat perched in the window. She reported feeling ‘shaken’, “‘The issue that I have ultimately is about where you draw the line between taking public photos and zooming in on people’s lives,’ Ms. Kalin-Casey said in an interview Thursday on the front steps of the

⁴⁹ Levy, *In the Plex*, 341.

⁵⁰ Helft, “Google Zooms In.”

building. ‘The next step might be seeing books on my shelf. If the government was doing this, people would be outraged.’”⁵¹ Within days of rollout, the reporter was on the scene.

According to the article, the ‘web’ was ‘buzzing’ with potential privacy implications at the same time as *Wired* was soliciting screen shots for a feature, “Best Urban Images,” that users find while exploring Street View. Within days, images of an apparent break-in, young women sunbathing, images of men walking into and out of adult businesses surfaced, and was just the beginning of a long line of ‘sensational’ finds. As the Times succinctly states, “The hunt was on for quirky or potentially embarrassing images that could be found by wandering the virtual streets of the service.”⁵² This eventually led to bloggers making it a hobby to post the images, with the hope of achieving viral status.

In a statement issued in response to the immediate privacy concerns, Google stated it considered the privacy implications of its service before it was introduced, and takes such issues seriously. Of Street View, they offered, “Street View only features imagery taken on public property ... This imagery is no different from what any person can readily capture or see walking down the street.”⁵³ Google consulted many public service organizations to ensure sensitive handling of locations like women’s shelters that might place individuals at risk. Kevin Bankston, a lawyer for the Electronic Frontier Federation offered a measured assessment, “I think that this product illustrates a tension between our First Amendment right to document public spaces around us, and the privacy interests people have as they go about their day.”⁵⁴ In an ironic twist, Bankston himself was later found on Street View, shown smoking a cigarette, a habit that he was

⁵¹ Ibid.

⁵² Ibid.

⁵³ Ibid. As quoted in the times article.

⁵⁴ Ibid.

hiding from his family.⁵⁵

Many, however, were indifferent. Kalin-Casey had first posted her discovery and disturbed state on a blog “Boingo-Boingo”; in response, one user echoed the sentiments of Google, in that there is nothing private about what is visible from a car when moving at the posted speed. A consultant versed in mapping and imagery issues offered a reminder of the past standard court rulings: photographs taken in the public realm are within the rights of the photographer, individuals, when out in the public realm, have no expectation to privacy. The writer of the article slyly offered his own take of the scenario, concluding the article with a quote by Kalin-Casey, “ ‘People’s jobs are pretty public,’ she said. ‘But that doesn’t mean they want a shot of their sofa on Google.’” Followed with the rejoinder, “When a reporter first arrived to interview her, Monty the cat was visible in the window.”⁵⁶

This extended explication of the reception of Street View several days after its initial rollout highlights many of the implications that continue to circulate today, as more places are mapped and more people are exposed to the service. Shortly after the rollout, Google responded to the growing privacy concerns by blurring faces and license plates, offering those caught unwittingly some degree of privacy. They also offered a link to report a problem with the image. Users could flag troubling or embarrassing captures and Google would delete the image or blur the image more. These measures largely satisfied many of the early complaints, but there remained a discomfort with the growing virtual mirror of the built environment.

For other nation states, Google did not have unilateral support. Different countries have different expectations and constitutional emphases. To gain access, concessions or adjustments had to be made. Most European countries demanded the same level of privacy as the US, with

⁵⁵ Poulsen, “EFF Privacy Advocate Sighted.”

⁵⁶ Helft, “Google Zooms In.”

blurring technology the standard. Britain, France and Australia were among the first to be photographed and met with minimal resistance. Greece forbid photographing until Google had a more clear privacy policy to protect its citizens. Sweden and Japan required an adjustment of the photographing height. With many narrow, walled streets, the camera height exceeded the height of what is normally visible to the passerby, giving a view into yards and houses in some instances. Many countries required advance notice, and in several instances, a citizen blockade formed to prevent Google from filming. Germany had particularly tense relationship with the mapping effort, and required Google to blur building façades above street level if one resident requested privacy. Given the number of multi-family dwellings in urban neighborhoods, the result created a surreal environment in which many buildings were blurred within a certain proximity. At first glance, the street façades look normal; moving through the environment, blurred buildings emerge at random. India, in the interest of national security, determined that Google could not photograph at all. As is typical of most government structures, even from the street, pictures of many buildings are not permitted.

Despite the blurring and developing appropriate image retention policies, some still found themselves in compromising positions, either caught urinating in their front yard, inadvertently caught unclothed in the backyard or children running naked in the front; one politician was seen walking with an unidentified woman, causing rumors to circulate. As the archive finds use as evidentiary material and the coverage of Street View expands, more instances of public discomfort surface at the same time as a level of ‘comfort’ with the tool establishes itself. Individuals wishing to keep their home secluded and out of public eye found grounds for suit. Several other small lawsuits over the depiction on Street View have been attempted or

considered.⁵⁷ The Street View platform and the growing concern over the visual archive of the public realm has offered the courts and legal scholars an opportunity to revisit the landmark ‘Restatement (Second) on Tort Reform’ as it pertains to persons in relations and expectation to privacy.

A proliferation of legal notes all weigh in on the two key points offered by both Bankston and the image consultant, revisiting the history of ‘privacy’ as it has been established over time. In brief terms, privacy as a legal concept was first debated at the end of the 19th century. The rise in newspaper and photographic processes enabled a wider variety of ‘newsworthy’ material to be considered, and society pages often reported in great detail the activities of the elite. One Boston socialite purportedly ‘had enough’; her husband, Samuel D. Warren, a one-time lawyer, authored a note with his previous partner, Louis D. Brandeis. Published in the Harvard Law Review, the particular piece, *A Right to Privacy*, highlighted an increasing invasive journalistic practice, arguing that individuals had a right to be left alone, "The press is overstepping in every direction the obvious bounds of propriety and of decency. Gossip is no longer the resource of the idle and of the vicious, but has become a trade, which is pursued with industry as well as effrontery. To satisfy a prurient taste the details of sexual relations are spread broadcast in the columns of the daily papers.”⁵⁸

Importantly, these ‘details’ were thought to pierce the domestic circle and should be considered ‘out of bounds.’ Individuals, it was argued, should have Tort protection. The note gave shape to a variety of phrases and ideas, such as ‘injurious feelings’ and ‘the right to be let alone’, all of which slowly worked its way into the social field and courtroom argumentation.

⁵⁷ This is distinctly separate from the Wi-Fi data collection lawsuit that has been active for several years. State Attorneys General have settled with Google for damages as well as mandating stringent privacy training and guidelines for Google and its employees. While this lawsuit arose from Street View mapping, the lawsuit was not the result of Street View, but rather an ‘unintentional’ sweep of information, while driving Street View vehicles.

⁵⁸ Prosser, “Privacy,” 383. Quoting Brandeis and Warren.

The note was not immediately influential, but in the following years, more courtroom battles looked to this note as a means to negotiate an increasingly public life.

In 1960, the next major interpretation was from William J. Prosser, his article *Privacy* offered sound argumentation toward the Restatement (Second) of Torts,⁵⁹ and to what degree individuals can have expectation of privacy. His assessment of the Brandeis and Warren note left too much uncertainty under what conditions one could expect to enjoy privacy, and under what conditions a private entity was responsible to libelous and damaging statements or making information public knowledge without consent.⁶⁰ Prosser highlighted four main points for Privacy under individual tort, each highlighting a different, nuanced layer of interest:

1. intrusion upon seclusion, solitude or private affairs
2. public disclosure of embarrassing private fact
3. publicity giving false light in public eye
4. appropriation of name/likeness

His argument of public display hinged on contractual theory and the assumption of risk.

Contractual theory, for Prosser, states that reasonable people understand that entering the public realm makes their actions potentially visible to others. Assumption of risk, within this context, assumes that an individual knowingly puts oneself at a small amount of risk, given the social contingent nature of the public realm.⁶¹

A landmark case tested this Restatement, in which *Hearst v. Gill* sought to establish the grounds for right to publication and to what degree individuals have protection from the lens of the camera. A couple was photographed sitting on a park bench in New York City and subsequently was published on the front page of a lifestyle magazine. The couple, unaware they were photographed, sued the publisher for invasion of privacy and publication without consent.

⁵⁹ Segall, "Walking the Line of Privacy-Intrusion," 8.

⁶⁰ Prosser, "Privacy," 389.

⁶¹ Segall, "Walking the Line of Privacy-Intrusion," 8.

The plaintiff argued that they were enjoying a quiet moment together on a bench, and not broadcasting their affection to the world. The defendant argued that by nature of being in the public realm, their public display opened up them up to potential risk and therefore not protected under individual tort. The court ruled in favor of the defendant, arguing that the assumption of risk in the public realm was active, the couple voluntarily assumed they were having a private moment, when it was in fact *nothing but* public, therefore visible to any passersby.

The dissenting opinion, however, pointed to the tension that continues to exist in the present. While the plaintiffs were in the public eye, the opinion focused on the distinction between being in a local community or limited setting versus being placed on national stage. While the paper had a right to publish such an image in the ‘interest’ of the public, the publisher need not invade their privacy for the sake of journalism and self-interest. The opinion was more compelled by the privacy issues surrounding the individuals who suddenly found themselves in the national spotlight when their actions were not directed toward such attention. The nuance of the dissenting opinion focused on the level of comfort one has in the environment they are in, more so than a variety of ‘risk’ one faces in the public realm when abstracted out to an indeterminate setting. The close environment in which the couple embraced is different from willingly displaying affection for the national audience. Quite vociferously, the court ‘shouldn’t pay such short shrift’ to the invasion of privacy in this instance.⁶²

Since then, the burden of proof to establish intrusion of seclusion, public disclosure of a private fact, misrepresentation or appropriation within this Restatement rests on the plaintiff that seeks to recover damages as a result of ‘injurious’ acts of another. That tension rests precisely at the intersection that Bankston stated: the right to be left alone in relation to freedom of speech. Freedom of speech is far reaching, encompassing everything from freedom of religion to flag

⁶² Lavoie, “Online Zoom Lens.”

burning. Courts have long been wary of wading into a discussion about ‘what constitutes news’ as a single ruling could have chilling consequences on the entire media establishment. Internet content has proven to be no different, and in many cases goes much further, as mentioned above. The host of the content cannot be held responsible in most cases. Google’s practices of photographing the public realm and making them accessible to the world was within their right, and individuals in the public realm opened themselves up to a certain amount risk. The burden of proving ‘injurious harms’ is thus great- as Google objectively photographed the public realm; those captured in compromising positions put themselves at risk by being in the public realm in the first place. While the reasonable person may indeed be embarrassed, the representation is deemed factual. The leading consideration, to echo Eric Schmidt, is that ‘you shouldn’t have been doing it in the first place.’

Within this discussion, the legal notes have sought to articulate a need for another tort restatement, given the new environment of the Internet, the greater flexibility and mobility of the image, and the more opportunities for it to draw undue attention or misrepresentation of an individual. Bordering on technological deterministic arguments, many offer a shrill argument, stating that Google and Street View produce a chilling effect on behavior, stifling free speech⁶³; the inability to control personal information⁶⁴; the technology is powerful and its storage centralized, the ability to disseminate images without consent is effortless⁶⁵; public benefit is negligible⁶⁶; the program creates a threat to perceived safety.⁶⁷ Each of the arguments constructs a consequentialist position as the inevitable result is that everyone will engage in this behavior if we do not address tort reform quickly. A lone voice seems to emerge, that counters all these

⁶³ Blackman, “Omniveillance;” Lavoie, “Online Zoom Lens.”

⁶⁴ Lavoie, “Online Zoom Lens.”

⁶⁵ Kelley, “Computer with a View.”

⁶⁶ Ibid.

⁶⁷ Blackman, “Omniveillance.”

arguments, asserting the perfectly legitimate and applicable tort laws that are in effect.⁶⁸ The author's argumentation ignores their nuanced concerns, offering instead a utilitarian argument: within each applicable tort point, under most instances, the tort law performs as it should.

While the finer points of argumentation *are* the very material that wins cases in the courtroom, the 'facts' that still remain are the contingency of the photograph; the varying quality of discerning likenesses; the preconditioned associations that accompany 'reading' an image; the societal 'trust' in the facticity of the photograph; the evidentiary status accorded and preference given⁶⁹ to photographs that are 'objective', like surveillance footage and presumably Street View, to name just a few. That Google believed Street View posed no problems and thought it would be universally embraced points to their disconnect in technology and held beliefs, as suggested by Levy, an insider granted generous access to Google's operations, suggests. Their philosophy, according to Levy appears to be, 'do first, apologize later.'⁷⁰

While it is difficult to assess levels of blatant dismissal of norms and conventions and what often appears to be convenient manipulations of facts, their positions on various points of contention give evidence to an uncertain terrain of claims to privacy, both level of expectation and transgression by novel means. In the early photographs from Street View, many individuals held no preconceived idea of what a Google apparatus of capture might look like, or that there was risk associated with an unidentifiable apparatus, be it measuring environmental levels or photographing the public realm. This discussion seems of a different nature, and I would argue, moves it closer toward a visual wiretapping or eavesdropping argument than an invasion of privacy. As a 'moon shot,' their operations were secret, the apparatus had no visual likeness that one might be alert to adjust behavior, if required. For most people, given its height of 7 feet off

⁶⁸ Segall, "Walking the Line of Privacy-Intrusion."

⁶⁹ Purtova and Roosendaal. "Photograph Taken for Google's Street View," 187.

⁷⁰ Levy, *In the Plex*, 342.

the ground, it likely did not register in their visual field. While it still does not remove individuals from the assumption of risk, it does warrant a closer consideration of to what degree individual must operate in a heightened state of behavior as personal protection.

Google used an established argument to defend Street View, “people who stepped out in public had implicitly given permission for people to look them—and by extension, for GSV to capture their images in the course of documenting the physical world.”⁷¹ In their defense of the Boring suit, who sought to recover damages for invasion of privacy, they offered an equivalent argument, that the images they posted reflect the same images that might have been taken from any door-to door delivery service, that their ‘private drive’ did not explicitly say no trespassing, the argument of intrusion of seclusion did not hold up in court. What’s more, both Google and the Judge offered, was their very lawsuit brought far more attention to their property and their privacy than the Google image did, challenging their motivations for filing the suit in the first place.

More recently, however, Google has found itself in a unique position in which the shifting argumentation has both damaged the argument as well as caused the company to argue for new interpretations of the contemporary milieu. The recent Wi-Fi investigation and suits arose from the discovery that Street View cars were collecting data from networks that weren’t password protected, sweeping up what is called payload data, random information transmitted over open networks. While Google was merely driving through the streets, the software code that was operating in the background was running a separate project, Street View Wi-Fi, which was designed to note wi-fi signals to improve their accuracy. The code was implemented from another project (beta) that was found to be ‘useful’, but the claim was that engineers on the current project did not understand its intrusive nature. Google presented it as regrettable, and

⁷¹ Ibid., 341.

went public immediately. In the public eye, it was yet another form of surveillance and the web and blogging world was abuzz with their misstep. The engineer was later referred to as a ‘rogue’-operating without instructions. “Just as Googlers do *all the time*.”⁷²

As the scope of the data collection became apparent, it triggered investigations throughout the US and Internationally. It was a potential violation of data security laws, whether Google intended to collect it or not. In its voluntary participation, Google admitted to no wrongdoing, as it was unaware and never intended to capture the information nor did it make use of it. Privacy and consumer advocates like the American Consumer Institute have different sentiments and express the outcome as a ‘wrist slap’ and the fine was ‘not enough to deter bad behavior.’⁷³ Levy points to the particular socio-political climate in relation to the power that Google held, “the incident exposed the risks that arise when tolerance of a company’s information retention policies is at the limit. Even its tiniest mistakes called attention to the larger truth—that Google had a frightening amount of information under its control.”⁷⁴

While the State Attorneys General felt satisfied with their settlement, their interest was in an agreement that went beyond financial terms. The multistate settlement sought to establish culpability as well as negotiate new standards for data handling, including new corporate policy as well as citizen educational outreach. Simultaneously however, a class-action lawsuit has been moving forward, despite the gains at the state level. Given the surreptitious manner in which they collected the data, 22 Plaintiffs have filed suit against the company, alleging violation of the Federal Wiretap Act, the California Business and Professional Code, as well as several individual state wiretap provisions. Wiretap Act provides a private ‘right of action’ against individuals whom encounter information or communication by unlawful means, including wire,

⁷² Levy, *In the Plex*, 343, (emphasis added).

⁷³ Gustin, “Antitrust Deal Cheered by Some.”

⁷⁴ Levy, *In the Plex*, 343.

oral or electronic communications.⁷⁵ The plaintiffs of the case maintain that Google willingly collected private information and are seeking redress. Google has maintained that Wi-Fi signals over an open Internet connection are not protected under the Wiretap Act, as anyone could potentially intercept the signal. Moreover, Google maintains that the signal is radio communication, not electronic and therefore not subject to Wiretap provisions. As a finally means of argument, Google maintains that the definition as established by radio must be updated to incorporate 21st century technology.

The Judge of the 9th District Court in California considered three points in their assessment of the case.

1. what radio communication means under the Wiretap Act
2. whether wireless internet networks are radio communications
3. whether cellular phones are radio communications

In the 35-page unanimous decision, as reported by the New York Times, the court “found little merit in Google’s legal maneuverings” and it appeared that the company “was basically inventing meanings in an effort to declare its actions legal.”⁷⁶ Further offering that Google’s interpretation of ‘radio communication’ was “‘in tension with how Congress—and virtually everyone else—uses the phrase.’”⁷⁷ In this instance, common perceptions held sway in court, as many activities are not ‘considered’ radio communications, regardless of what the technical definition of a broadcast signal might be. While past lawsuits had the Plaintiffs and the legal scholars arguing for an updated interpretation in light of the Internet, Google held fast to standard conceptions to make their case. In this particular instance, Google argued for updated definitions of standard conceptions, in light of new Internet technology. With the most recent ruling still fresh, Google has considered other legal options to get the case dismissed. If it

⁷⁵ Epic, Ben Joffe v. Google Amicus brief, 18 U.S.S 2511 (2)(g)(i).

⁷⁶ Streitfield, “Privacy Case Can Proceed.”

⁷⁷ Ibid.

proceeds as a Class-Action lawsuit, the damages would be significant, if successful. The case would be opened to millions of users in the US. At \$10,000 per person, this represents a significant amount, even by Google standards.

While privacy advocates are thrilled at the ruling, Technology experts are more divided, citing ‘violation of technology neutrality’ and the courts understanding ‘technically inaccurate. “A user with a wireless card and a packet sniffer will intercept unencrypted wireless traffic in the exact same manner that a radio hobbyist would intercept analog communications. Packet sniffing is a common practice in the security field and a basic tool of IT security professionals.”(Castro, via IBTimes. Blog post.) The definition of terms and the interpretation in ‘common parlance’ versus techno-speak remain ambiguous, and appears to be moving towards an actual trial. Like many of the cases Google has been involved in, it will likely be seen as an important case to redefine technological terminology in light of the neutrality claim.

Concluding thoughts

The line of flight functions as a vector, and shifts the social field in its deterritorializing act. As D & G point out, any reterritorialization results in a field that is more deterritorialized than before. The line of flight, as previously mentioned, also has the potential for a darker impulse, one that destabilizes the field to such a degree as to render complete devastation or violent reactions make the plane more rigid. Situating Google’s practices and the disruptions, or what many see as devastation, to the social field of laws and conventions can be considered within this framework. Google’s business is organized along a dominant vector: to index the world’s information. What first began as indexing websites and the information contained has greatly expanded to include all the held information of published works as well as the physical world around us. With each new line of ‘information’ added or axiomatized to their project, the

company appears to pick up speed, the expanded field of what constitutes information seems to encompass ever more definitions, all moving toward the same goal.

‘Seems’ is particularly operative here. As what became clear with their shifting position on advertisements, what constitutes making information available and helpful to the consumer, the expansion of the meaning of information in that sense did not necessarily enrich the diversity of information. Rather, the proliferation of information makes it more difficult to determine noise from content, as our ‘capta’ shadow chases us from site to site, presenting previous locations without knowing our purpose of visiting in the first place. The homogenizing of ‘information’, while giving the appearance of increasing the information available, simultaneously inflates the field as well as remove potential ‘alternatives’ to Google’s services, as no company can successfully compete with Google.

The line of flight of Google’s practices, their ‘moon shots’, “blasts the two segmentary series apart.”⁷⁸ Within the field of a particular tool such as Street View, proponents of privacy and freedom of speech are pulled apart, the micro ‘deterritorializations’ that happened throughout the social field gave evidence to the range of responses in the continuum. No mere ‘black and white’ tool and ‘answer’ to the problems it produced, debates and voices organize along ideological or personal lines. The suicidal line is ‘capable of the worst, of bouncing off the wall, falling into a black hole, taking the path of greatest regression, and in its vagaries reconstructing the most rigid of segments.’ As the Google Book project hit continual walls, many of its early supporters withdrew support as details and prognostication suggested a darker, hidden agenda. Publishers and authors hardened to any middle ground at different points of negotiation, Marissa Mayer of Google brazenly asked, “would you rather we just didn’t do it? Walk away

⁷⁸ ATP page

from the whole issue?”⁷⁹ and of those balking at the project, Brin offered to the world “the people complaining aren’t doing anything for out of print books.”⁸⁰ Both sides were too wary to take the case before the court in the beginning, out of fear that the landmark case would stifle innovation, copyright, and digital production going forward.

For both the Books and Street View project, Google was eager to pursue both agendas, with the express purpose of indexing that information. Little consideration was given to the potential harm that might result. Copyright. Privacy. The capitalist mode of production that currently pays authors a modicum of income to produce these works Google seeks to index. The financial harm to their own company and its shareholders. The financial and technical infrastructure invested in both projects is not ‘insignificant’, but early calculations by Page estimated that it would cost about \$330 million to scan all the books. That was before the production of special scanners and the years of litigation. The Books project almost failed to fully launch. Street View, while mostly considered ‘helpful,’ stands to create a significant financial blow to the company if the Class Action Lawsuit does not fall its way. With other errant intellectual property infringement lawsuits lurking, Google has the potential to fail spectacularly. But as Page has often said, “Even if you fail at your ambitious thing, it’s very hard to fail completely.”⁸¹

Vaidhyanathan offers a cautionary tone throughout his recent book, *The Googlization of Everything (and why we should worry)*. He carefully negotiates the positive contributions Google has made against some of the more troubling events. He continuously points to the level of power the company wields and how well it advances its own agenda. Google is construed as a seemingly unilateral force, extending products and services throughout the world, evoking

⁷⁹ Levy, *In the Plex*, 365.

⁸⁰ Brin, “Library to Last Forever.”

⁸¹ Levy, *In the Plex*, 12.

images of the far extending reaches of the Roman Empire and the cultural imperialism it wrought over the world. Vaidhyathan argues that, “‘Cultural Imperialism’ has become a useless cliché” and faults the academic discourse as failing to keep abreast with the changing socio-cultural and political economic shifts of the world, dodging ‘complications by celebrating ‘creolizations’ at all costs, while ignoring real and serious imbalances in the political economy and culture.”⁸²

Rather, Vaidhyathan argues that an ‘infrastructural imperialism’ has more merit for examining the enormous imbalance of power in the global flows of culture. With Google handling more than 70% of the search traffic, they are a vector, in pursuit of indexing the world’s information; they have a revenue larger than 2/3 of the world’s countries’ GDP; and they have a depth of intellectual and financial resources unmatched by most corporations. It seems safe to say that Infrastructural Imperialism gets closer to the condition than simply a ‘powerful Multinational’.

In their recent text, *Google and the Culture of Search*, Hillis, Petit and Jarrett speak of the inordinate amount of faith that we, as users, place in Google. In their pursuit of indexing the world’s information, the authors, recalling both Borges and H.G. Wells, point to the *seduction* of having a universal source of all information. They evoke ‘messianism’ in relation to Google’s democratic drive towards the ‘world brain’ mentality, highlighting the dangers of willfully following a corporate entity with the zeal of a cult figure. Together, the authors construct a Derridean argument for the psychoanalytic investment of desire in a moral or religious totem. Specifically, they draw a careful line between faith and trust, and the transactional associations individuals have with the company, while proffering the very definition of evil is overstepping ‘proper limits,’ which the company often does, knowingly or not; here, seduction plays an important role that makes users participants in this overstepping. These three elements, faith,

⁸² Vaidhyathan, *Googlization of Everything*, 109.

trust and seduction have highly porous boundaries and are imbricated.⁸³

While both texts are explicit in their concern for the cultural implications of Google's powerful reach and how that might extend to cultural and knowledge production, both texts are resistant to a deeper political analysis of the current condition. Vaidhyathan accounts for the power Google wields, the imperial domain in which all subject-users seem to bow down to the Caesar-Google entity. Hillis, et. al. focuses on the psychoanalytic investment in desire and the need to identify with a moral authority, one that offers seductive tools, and we, as users, are easily seduced. Both of these encapsulations account for some of the activity that has made Google as successful as it has become. But these particular narratives offer only one side of the condition, one a top-down assertion, the other a bottom-up religious adherence. I would argue, however, it is precisely the tension that exists between the powerful tools offers AND the seduction that we, the users, tap into, that have made them so successful. As Schmidt has stated, competition is a click away. Google does not force us to use their tools. The citizens of the Roman Empire could not choose to obey a different order of Empire. But as users, we are savvy internet 'denizens' and know what Google offers us and we understand the risks. We know that they are tracking us, that their new 'cookie' is more powerful, we choose to accept that 'kind' of surveillance (*if* we accept that as surveillance) in exchange for the powerful search and powerful functionality their tools offer us.

Vaidhyathan is attuned to the failings of 'cultural imperialism' and that it does not take into full account the scope in which Google operates. Cultural as an adjectival account offers a better description of the scale at which the world uses Google's tools; the enthusiasm and zeal displayed for the products; and the corporate acceptance of their advertising terms, knowing that Google garners the greatest percentage of search and the powerful relevance of 'search' promises

⁸³ Hillis, Petit, Jarrett, *Culture of Search*, 201-203.

to yield a higher percentage of ‘click through’ traffic. Imperialism, however, gives little role to the user, the users whom have made their company as successful as it is.

Together, the infrastructural imperialism and the messianic quality of their following points to a more productive path, making more ‘efficient’ the explication of Google and the power it enjoys. I would argue that following Deleuze and Guattari, Fascism as a political movement, when considered in relation to the microfascisms of individual participation and group formation, thus offers a stronger analytic, no less politically charged than Vaidhyathan or Hillis, Petit and Jarrett, but more robust. Their desiring production at the individual level in relation to the desiring production at the social level are a mutually co-constitutive process, one that has the potential to create significant movement in the social field, both of which are operative, when considering Google and the particular intersection it are currently situated. As former executive of Keyhole, Mike Jones, offered an oft-invoked claim “every valuable technology has a potential for misuse,” Google is not exempt; and like the oscillation of use that technology engenders, so too of every movement in the social field has the potential to be suicidal.

(In other words)

“There is in fascism a realized nihilism. Unlike the totalitarian State, which does its utmost to seal all possible lines of flight, fascism is constructed on an intense line of flight, which it transforms into a line of pure destruction and abolition.”⁸⁴ Google, in its intensity of drive, pulls from all possible lines of information and reorganizes them into their overall project. “Triggering of a hitherto unknown material process...effectively places the dominant powers outside the usual categories of space and time.”⁸⁵ Every category Google radically alters, it changes the terms of engagement and the business practices that were pursuing it.

“Transformation of the war machine- global ‘world economy’, the peace it has installed, no longer needs a qualified enemy, but in conformity with the requirements of an axiomatic, operates against the unspecified enemy.”⁸⁶ Google is only being helpful, it wants to make the world a better place, and in order to do that, everyone must conform to their world view. When they don’t, Brin and Page stand amazed, Schmidt states people should just not do those things they don’t want you to know about.

The lawsuits show the tension of this particular war machine, where the existing world order clashes against their runaway success, when individual assemblages ‘change’ in relation to the amount of information Google has, each reaches their own limit. “...apparatus of capture and the suicidal assemblage. What is the last glass for the alcoholic?”⁸⁷ What is the last bit of information to index for Google? What will be the element that changes the nature of the assemblage? Or will it be one fantastic burnout?

⁸⁴ *ATP*, 230.

⁸⁵ *Ibid.*, 231.

⁸⁶ *Ibid.*, 467.

⁸⁷ *Ibid.*, 468.

04_Political-economic Dynamics : Contemporary Formulations (Microfascisms)

Google is in a unique position, a place where it is most comfortable, at the frontier or intersection of engagement in technology, business, culture, finance and policy. The company has spawned a unique economy driven by its advertising and search model. Nearly every partnership it enters into is successful, and its interest in buying a company or securing a partnership creates a bidding war. Google's legitimacy or cachet as a search engine has created some unusual situations in which political statements seem preposterous, but are also very real: Google's recognition of Palestine with defined borders has caused unrest with Israeli officials, issuing a call for reversal¹; the placing of "Tibet" in both India and China sidesteps political turf claims and arbitrarily draws the line where it sees fit, depending on the domain address;² while a small town in Europe, previously known as Eu, has changed its name so that it will show up on higher on Google search results.³ More recently, remote villages are eager to aid Google in their Street View project in order to make their community visible to the world.⁴ This moves Google towards the realm of what some scholars are calling 'Google governance',⁵ and the powerful role the company plays at the global level.

Street View has caused countless 'reviews of policy' across the world; Google is continually massaging the language (and sometimes product) to meet the concerns of various governments in order to continue the mapping project. At the local level, many smaller

¹ Franceschi-Bicchieri, "Recognizing Palestine Hurts Peace," "I think that the Google decision from the last few days is very, very problematic," Deputy Israeli Foreign Minister Zeev Elkin, told Israel's Army Radio. "When a company like Google comes along and supports this line, it actually pushes peace further away, pushes away negotiations, and creates among the Palestinian leadership the illusion that in this manner they can achieve the result."

² Sinha, "Google Shows Different Maps."

³ Allen, "French Town of Eu."

⁴ Kalluk, "Trekker Takes on Canada."

⁵ Various accounts of what governance looks like in relation to Google. Cf. the most focused examinations by Vaidhynathan. Cf. Zook and Graham, 2007; Vaidhynathan; Lesczynski; Hillis et al.

communities and local businesses are eager to have Google map their community or business, while yet other communities see it as an invasion of their privacy. This exposes the strong divisions over the potential- positive and negative- of the mapping tool. With Google's infectious call to 'map your world' and join them in the mapping process, citizen cartographers and citizen street view-ers (in addition to the citizen open source coders) can access a portion of Google's power and legitimacy it bestows on the physical world, all by taking part in the production process, using Map Maker to add local information. Or with digital terra incognita, citizens create maps of remote terrain with Google's equipment.⁶

More specifically, the intersection at which Google locates itself is perhaps best exemplified by the Neoliberal double bind. In part, it has been very successful because it provides services more efficiently/more advanced than governments themselves can provide. A classic neoliberal argument. The company seizes this opportunity and develops a suite of tools that are instrumental in educational environments and provides critical resources to the government, like disaster response and mapping platforms that the government once managed. Google has directly benefited from and contributed to this dominant economic model. However, somewhat antagonistically, it is creatively pushing the boundaries of traditional legal categories, challenging notions of stable rules and regulations in light of the new immaterial information economy of the net. Critics of neoliberals see this as an anti-neoliberal gesture, one that does not respect, or de-privileges, the persistence and importance of 'property rights'.⁷ Celebrants of this new environment herald a new economic condition 'wikinomics' which will require

⁶ Kalluk, "Trekker Takes on Canada." Nunavut, Canada. Google has provided them with the technology, and a non-profit organization has willingly organized a mapping of the territory.

⁷ As discussed previously, Open Source advocated for an open intellectual exchange. Raymond explicitly celebrates this aspect, as a dominant model that corporations will have to adopt/ cannot compete with economically.

businesses to adapt to this new mode of production,⁸ while still others see this as a transformation of ‘rent’ and property, and see the information economy requiring a new theory that better demonstrates the capitalist system in an increasing de-materialized system of surplus and accumulation.⁹ Google is challenging socially constructed norms of ‘privacy’, thereby highlighting the lack of privacy that exists, which gets to the heart of- and complicates- the ‘freedom’ of the individual and the underlying tenets of neoliberalism. But staunch critics and privacy advocates decry this evisceration of ‘privacy’ and ‘Civil Liberties’ as but one more ‘victory’ for the pro-business environment that neoliberalism produces.¹⁰

Finally, Google is working hard to make information accessible. The democratization of information. Both sides of the neoliberal divide see great value in this. One side points to shrinking the reach of the government even further, enabling the individual to pursue information without the ‘surveillance’ or interference; the other side sees this as the ultimate freedom from corporate and government control alike. *Who doesn’t want free access to information?* Perhaps everyone; *fascistically* so. Their data collection practices make their search functions even more efficient and gives them greater power to manipulate their algorithms to increase the relevance of their search results. Giving them greater access to our predispositions, interests and desires produces even more efficient results. As a result, it seems to read our mind and know our interests and histories, which allows us to spend that time on other activities which makes the results or ‘smart search’ eerily accurate. A common refrain (and hope, for Google) is that its users find its product/results so helpful, that the ‘trust’ placed in Google seems like a small trade

⁸ Tapscott and Williams, *Wikinomics*.

⁹ Pasquinelli, “Google’s PageRank Algorithm.”

¹⁰ Electronic Frontier Federation is an active non-profit that engages privacy issues on many levels, including education, advocacy and litigation. There is no shortage of privacy concerns or critics, as outlined in previous chapter.

off.¹¹ This process of justifying the censoring or adjusting behavior for an imagined better outcome is precisely what Deleuze and Guattari define as a ‘*Microfascism*’. And it is the zeal in which it is adopted and the fear of being excluded that makes this particular confluence of overlapping characteristics particularly dangerous, for both daily activities as well as a general environment of sanctioned behavior.

This double bind is precisely what many point to as being the tension between “the theory of neoliberalism and the actual pragmatics of neoliberalization.”¹² It is also evident in the ability of a neoliberal environment to simultaneously rally the most unlikely bedfellows under a common cause *and* fracture diverse groups that rally around the same cause. While many individuals believe in freedom, the definition is as varied as the society in which it circulates. As Karl Polanyi cautioned during the early formations of the neoliberal era, “Freedom not as appurtenance of privilege, tainted at the source, but as a prescriptive right extending far beyond the narrow confines of the political sphere into the intimate organization of society itself.”¹³ In other words, ‘freedom’ is freedom to do many things, including ‘freedom to make inordinate gains without commensurable service to one’s community’ as well as freedom of speech and association, and everything in between.¹⁴

While we can come together under the ideal of ‘freedom’, invariably *our* own conception of freedom will impose or impinge upon another, thereby restricting *their* freedom. It thus becomes more difficult to convince everyone to adhere to a goal that has ‘potential oppression of their freedom’ as its object, unless a worthwhile ‘goal’ will make that short term exchange worthwhile. This nuanced understanding of what is at work in adopting a set of beliefs is better

¹¹ Both Marissa Mayer and Eric Schmidt consistently stay on messages in all interviews that address privacy, and emphasize transparency, choice and control as three pillars of their actions, see CNBC, *Inside the Mind of Google*.

¹² Harvey, *Neoliberalism*, 21.

¹³ *Ibid.*, 37.

¹⁴ *Ibid.*, 36.

understood through an analysis of the *characteristics* of the social machines that overcode individual practices, as opposed to the label of ‘ideology’ of neoliberalism or open source applied to its adherents.

One key question that Harvey seeks to understand is ‘*how*’ neoliberalism became so entrenched when it offered the individual so little in return.¹⁵ In other words, the ‘freedom of the market’ has ultimately provided corporate monopolies the power to spread everywhere without constraint, while individual freedom is limited by the offerings of the corporate monopolies and ultimately reducing freedom to a lifestyle choice, rather than empowering the subject. Critical to our argument here regarding Google, this disproportionate corporate power and control over and access media sources “has both the incentive and the power to persuade us that we are all better off under a neoliberal regime of freedoms.”¹⁶ In this case, an Internet dominated by Google. Or perhaps, even more succinctly, Harvey asks, “How is it, then, that the ‘rest of us’ have so easily acquiesced in this state of affairs?”¹⁷ Or, to recall the refrain of Deleuze and Guattari, “*Why do we desire our own repression?*”

What follows is an engagement with some of the dominant debates among neoliberal scholarship as a means to highlight the underlying tendencies of neoliberalism in relation to other oppressive movements. I also expand on the role of the subject and how their investment in the social fields has a direct role in the formation of the contemporary environment, particularly important when examining a company like Google and their reliance upon individual users to solidify their economic and cultural power. I argue that it is the subject’s investment of desire, rather than the rational subject, that offers a better understanding of this unique tension between

¹⁵ While many have commented that Harvey’s neoliberalism is primarily focused on class conflict, the question that he raises about individual support moves well beyond class conflict and remains a critical question, in light of the perceived ill effects of the neoliberal agenda.

¹⁶ Ibid., 38.

¹⁷ Ibid.

Neoliberalism and Open Source. Invoking the conceptual tools of Deleuze and Guattari as analysis, Google's production and influence resembles a cultural fascist regime, in which users fall victim to microfascisms, thereby creating the very conditions that make such a regime possible in the first place.

Oppressive tendencies of neoliberalism

Examining some of the characteristics of neoliberalism within particular socio-political environments is a critical step, given the ongoing debate regarding the nature of neoliberalism. Many of the dominant theorists offer individual points of compatibility, the logic of 'how it works' remains contested. Of particular importance is understanding the tendencies that are at work within a specific context. The intersection of neoliberalism and open source as it pertains to the business practices of Google and of the user practices that range from passive use to active participation is a unique confluence of forces that harness ideas of 'individual freedom', responsibilization, peer production and market freedom.

Harvey's account of the general movement of neoliberalism as a class conflict in which the larger economic structure of neoliberal policies is depicted as 'authoritarian, forceful, and anti-democratic' in relation to the general population.¹⁸ The movement from benign 'individual freedom' to pragmatic 'market freedom' signals its oppressive impulses, moving gradually across the globe. Harvey identifies the transformation of ideals and messages to make the project 'palatable' to various constituents as, "An open project around the restoration of economic power to a small elite would probably not gain much popular support. But a programmatic attempt to advance the cause of individual freedoms could appeal to a mass base and so disguise the drive

¹⁸ Ibid., 38.

to restore class power.”¹⁹ This appeal encouraged the masses to adopt and embrace practices, radically redistributed wealth; in the process, acquiescing social benefits in the name of a lightweight government. Neoliberalism’s agility to capture a range of interests under ‘freedom’ enabled the agenda to change and adapt as it needed.²⁰

Dissatisfied the gradual, structuralist account of the wave of Neoliberalization with a capital N, Aihwa Ong draws on deleuzoguattarian language of ‘Assemblages’ to highlight the nuanced manifestations of neoliberalism as unique to the particular spatio-temporal conditions and limits the hyper-theorization and application of the structural force that is prevalent in much of contemporary writings.²¹ She characterizes neoliberalism as a ‘technology’ that operates more like a ‘migratory set of practices’ and retains the dynamism inherent in the economic forces of the larger global economy, and new relations between governing, the self-governed and administration result. In many contexts, neoliberal practices can infect and affect all aspects of life, but works unevenly in emerging non-western contexts, as the subject is often unaccustomed to ‘individual freedom’ as a long-standing ideal. Ong describes the logic of neoliberalism as restless and promiscuous, which allows it to “become entangled with a given assemblage, crystallizing the political conditions that confound liberal expectations,”²² thereby exposing the tension between the level of structural force and at the individual level.

Jamie Peck sees neoliberalism as a parasitic layer, one that is necessarily hybrid, “neoliberalism not only has, but must, parasitically coexist with (or off) other state forms and social formations.”²³ As a creative process, it continuously produces new networks and

¹⁹ Ibid., 40.

²⁰ Ibid.

²¹ Ong “Neoliberalism as a Mobile Technology.”

²² Ibid., 7.

²³ Peck, *Constructions of Neoliberal Reason*, 33.

connecting ‘islands’ of thought.²⁴ Neoliberalism must be analyzed in its various unique manifestations, rather than merely as a structuralist account of top-down political-economic forces. Peck likens the process of Neoliberalization to a script, one that appears to have been repeatedly rewritten. The ‘lead actors’ and the ‘two-bit players’ give notable performances, which creates a particular environment when factoring in audience reception.²⁵ His extended metaphor, however, still provides a structuralist account, but open to improvisation and how the effects are received. The process of neoliberalization is a “connective tissue” that creates a nexus or crossroads of manifestations, one that is dependent upon the particular geographic terrain, the socio-demographic composition of the actors, as well as regulatory infrastructures in relation to the market forces, which is necessarily dynamic and changing. Neoliberalism produces a particular environment in relation to the socio-political regime, and pace Harvey, “there is nothing exceptional... in the accommodations between neoliberalism and authoritarianism—witness Chile, Singapore, or indeed Stuart Hall’s analysis of ‘authoritarian populism’ in Britain.”²⁶

Peck’s adhering to the ‘hidden market hand’ allows this theory to remain agile within a particular context and grants *some* agentic capacity. This move alleviates the more singular, classist approach of Harvey, but denies the exceptional non-western strain of neoliberalism that Ong advances. All these articulations, like most accounts of neoliberalism, point to the dynamic, agile ability of neoliberalism to co-opt a set of agendas in the name of market freedom, unleashing a creative force and process. How this process is enacted at the individual level is distinctly different. While Peck enables actors to continue to perform the scripts, Ong

²⁴ Ibid., 39.

²⁵ Ibid., xiv.

²⁶ Ibid., 32.

emphasizes the assemblage character in order to locate productive agency for the subjects.

Harvey wonders how neoliberal subjects order acquiesced so much in return for so little.

A recent debate in Social Anthropology touches on this tension specifically. Collier succinctly points out that a structural account of neoliberalism will provide large-scale movements that can be seen as a larger pattern, with variations.²⁷ The line of scholarship that advances governmentality has taken a ‘sloppy turn’ and gives the impression that neoliberalism is anything and everything and particular in every instance, which presents challenges to address it as a larger global movement.²⁸ This argument echoes earlier sentiments by Wendy Larner, whom also identified the disconnect of the structural accounts as missing the tension and struggle at the level of the subject in relation to policies and programs put into place, but faults governmentality scholarship as not taking policy and programs enough into account; or focusing on the official discourse, which effaces the marginalized discourses that ultimately impact policy implementation.²⁹ Larner was motivated by the same question Harvey asks, years later, ‘how is it that neoliberalism was so successful when it marginalized so many people?’

I would argue that this question was initiated much earlier in a conversation between Michel Foucault and Gilles Deleuze on the subject of power.³⁰ For Foucault, power is the primary force that structures discourses and relations within the social field, followed by resistance by the individual subject. For Deleuze, however, desire comes first and power then structures those relations. What is critical, however, is that desire as immanence is produced at the level of the subject, but the subject is co-constituted by the social milieu, resulting in immanence at the level of the social field as well. This movement between the individual and the

²⁷ Collier, “Neoliberalism as Big Leviathan.”

²⁸ Ibid.

²⁹ Larner, “Policy, Ideology, Governmentality.”

³⁰ Foucault, “Intellectuals and Power,”

state or institutional level is mutually imbricated in concrete manifestations, and given a spatio-temporal specificity, we return to the concept ‘assemblage,’ pace Ong.

While Ong engages Deleuzoguattarian language and concepts as a means to provide a working account of neoliberalism, she comes well short of giving an account of the struggles that take place at the level of the subject as being one of desire. My argument here is Deleuze and Guattari offer a powerful set of analytic tools that address broad structural movements while enables a means to assess the production of meaning and actions at the social level as actors (passive and active), and offers a potential way out of the impasse of structure versus agency discussion that persists. The specificity of an assemblage is marked by the spatial and temporal contingencies, as well as the immanent forces in the social field, or what Deleuze calls the virtual.³¹ The virtual is the full set of potentialities that could occur within a given milieu, and ideas of liberalism, private property, fascism, etc., all circulate as potentialities. So while neoliberalism emerged partially as a reaction to curtail the reach of state power (and avoid another totalitarian regime), the very ideas that gave rise to a democratic society and a fascist one continue to circulate. As Wendy Brown argues, the danger is thus a new order may reproduce the same conditions it sought to ameliorate.³² Thus, Harvey’s claim that neoliberalism had the power to persuade us when it offered so little in return, all in the name of ‘freedom,’ one that was also authoritarian and anti-democratic and emerged as a set of ideals as a reaction to Hitler’s rise to power, should give one pause.³³

³¹ Deleuze, *DR*.

³² as cited in Larner, “Policy, Ideology, Governmentality.”

³³ And considering Wendy Brown, in “End of Liberal Democracy,” explores tensions between neo-liberalism and its evisceration of nearly everything with a constant eye on fascism, she states that this form is not like the historical fascism or totalitarian that we know, and the terms are too loaded, 456. But I would argue that her insistence on rationality as the basis of her argument in fact obscure desire and subjects invest it in the social field, regardless of some of the calculative tendencies that she proffers.

Two key points emerge from the above extended recapitulation, of which I will sketch out below: ‘authoritarian’ is both an adjective and technical term, one that deserves a working definition, given its recurring use in a number of neoliberal accounts. The second point is thus a pivot: the underlying tendencies of neoliberalism ‘governing through freedom’ and the concept ‘responsibilization’ exist as both an opportunity and an oppressive reality in varying degrees across the spectrum of subjectivities. I argue, rather, that while freedom as a libertarian project exists at one pole, repression of freedom as a requirement to ‘uphold’ freedom is coterminous with a microfascism: giving up of freedom for an imagined better outcome.

Authoritarianism vs Totalitarianism

Harvey gives no succinct definition of how he defines ‘authoritarian’, other than it stands as an adjectival account, along with ‘forceful’ and ‘anti-democratic’, as it pertains to neoliberalism. Within his larger framing, the neoliberal ‘logic’ was able to affect a mass base and infiltrate all sectors of society under the message of ‘freedom’. This resonates with Stuart Hall’s account of Authoritarian Populism as an ‘exceptional’ capitalist state, retaining formal representative institutions – making it distinct from classical fascism – while also able to acquire/construct ‘active popular consent’ from the masses.³⁴ This type of populism moves beyond the ‘limited populism of traditional authoritarian regimes and moves it closer to a totalitarian regime with fascist origins’.³⁵ Authoritarian populism is able to weaken democratic forms and initiatives.³⁶ Both authoritarian populism and neoliberalism share an interest in weakening democracy and the voice of the masses; both attempt to reach the masses, but it is not

³⁴ Hall, “Great Moving Right Show.”

³⁵ Linz’s diagram showing the scatter-shot dispersal of political systems to illustrate the eliding that can happen between two regimes perceived as distinct, see *Totalitarianism and Authoritarianism*, 175.

³⁶ Hall “Great Moving Right Show.”

in order to hear the ‘voice’ of the people, representative or not, but rather to garner support of individuals rather than members of society.³⁷

Hall engages a working diagrammatic lineage of political scientist scholar Juan Linz, author of an influential statement regarding the defining characteristics of Authoritarian and Totalitarian regimes to identify the key differences between two oppressive regimes that share many similarities on the surface.³⁸ In summary, this sketch organizes the underlying tendencies of the two regimes to highlight their contrast.³⁹ An authoritarian regime has a single monolithic power head, or dictator, and the division of public and private life is often distinct, with potential for a private life. Dictators are typically unpopular, and seek to control and maintain the status quo. Totalitarian regimes are defined as a power head that attempts to control all aspects of life, public and private, effectively blurring boundaries between state, social institutions and daily life. These regimes have charismatic leaders, able to reach the masses in different ways. The primary role of the leader is a functional, one who sees himself charged with the responsibility to ‘*guide and reshape the universe*’. This ‘reshaping’ upends the traditional institutions, beliefs and status quo that the authoritarian leader seeks to maintain.

As a result, under the authoritarian regime, the masses view the leader as the source of oppressive policies attempt retreat to the private sphere. The totalitarian leader offers another possible world; the masses, drawn to the charismatic leader and the potential of a better future, mobilize behind the emerging leader, hopeful to recapture power from a previous state, mythic or concretely real. Authoritarian policies are often developed out of emotional responses, producing

³⁷ Thatcher’s explicit position ‘there is no such thing as society, only individual men and women’ is particularly relevant here. See Harvey, *Neoliberalism*, 23.

³⁸ Linz, *Totalitarianism and Authoritarianism*.

³⁹ Paul Sondrol, whom borrows much from Linz, produced a table in relation to the extended account of the various aspects of both regimes, which serves to highlight the arc of the summary. See Sondrol, “Totalitarian and Authoritarian Dictators,” 600.

a regime mentality with unpredictable shifts in positions and contradictory stances on a variety of issues.⁴⁰ Rule alternates between a ‘reward structure’ and instilling fear to continue to abide by the shifting positions. Totalitarianism is marked by a strong ideology and little deviation in the held beliefs, no matter the cost to the goal. This produces a telos to the overall regime, and a shift away from authoritarian held shifting positions that might alter the course of the end goal.

Authoritarianism has a very limited sense of pluralistic positions, and individuals are expected to abide by the dominant position. In contrast, totalitarianism seeks to gather the masses to identify with the ideological position and mobilize accordingly, regardless of individual reason, producing a broad sense of pluralism. The key task is to first mobilize the masses under a common goal or message, one that is able rally a large number of supporters and allow for a multiplicity of reasons for committing to the cause.

Peck’s assertion of neoliberalism as a parasitic layer is evident when examining the trajectory of a nation-state with a stable democracy, such as the United States. Neoliberalism remains dynamic as the controlling party changes over time. The conservative shift of a republican White House exhibits a movement towards an authoritarian strain that Harvey indicated. *Particular* freedoms were advanced (right to bear arms but not reproductive rights) in which an emotional appeal of ‘right to life’ triumphed the larger individual freedom. Liberal democratic administrations attempt to uphold those individual freedoms, in the support of marriage equality, or maintaining women’s reproductive rights *and* the right to bear arms, albeit with greater governmental control. Harvey’s articulation of ‘authoritarian’ focused on Reagan-Thatcher era of politics and satisfies a particular hybrid manifestation that emerged during a particular socio-politico-economic climate and substantiates Peck’s assertion, but equally gives support to an ‘assemblage’ quality. How ‘neoliberalism’ operates in present conditions is

⁴⁰ Ibid.

remarkably different than its early formulations, highlighting the dramatic difference as a theory and a practice. The general neoliberalism impulse or tendency grants everything under the ideological basis of ‘freedom’. It matters little whether an individual celebrates free love or the freedom to bear arms, so long as it is captured by the larger ‘freedom’ umbrella. And in fact, Peck examines the different strains of neoliberalism’s early formation, commenting that the economists’ *only* unifying principle was, “they all turned their backs on the road to serfdom, but they continued to differ on the question of the path forward.”⁴¹ Rather than merely a layer, *neoliberalism as a tendency* becomes a critical element immanent within a particular condition, enabling the kind of entanglement that Ong proposes. Harvey’s question still remains.

The working description of neoliberalism thus seems contradictory to the articulation of authoritarianism, one that limits the definition of freedom, whereas totalitarianism seeks to grant as much as possible as a means to mobilize the masses. This *expands* freedom through axiomatization (or commercialization of individual freedoms that are co-opted by capitalism and marketed as a ‘life-style’ choices), and *it is the political orientation* that determines the particular expansion of axioms. Axioms of neoliberalism proliferate as capital seeks to capture as much profit as possible in the name of market freedom; it mobilizes the masses in their isolated, alienated positions through a sense of freedom in life-style choices, drawing them together and fracturing them when needed. While the religious right may indeed limit the definition of freedom, capitalism itself seeks to explore and exploit the many definitions of freedom.

Similarly, the neoliberal turn could use its powers of persuasion, co-optation, bribery and threat to maintain the climate of consent necessary to perpetuate its power, occurring in diverse channels. Use of force and coercion can produce fatalistic, even abject, acceptance of the idea

⁴¹ Peck, *Constructions of Neoliberal Reason*, 66.

that there was and is ‘no alternative.’⁴² Theories offered, such as tax cuts for the top income brackets would free capital and enable them to invest in markets, resulting in job creation.⁴³ The persuasive argument of ‘job creation’ can generate acceptance for those in need. In the post-World War I environment, what Hitler offered the disenfranchised masses (encapsulated as economic and nationalistic) was far better than what the masses were currently receiving.⁴⁴ An increasingly censored environment seemed like a small price to pay to restore jobs, economic opportunities and the power of the nation-state to the masses. Together, given the appeal to the masses and the perception of no alternative, there is thus a stronger underlying correlation with the broader movement of Neoliberalism and Fascism, than there is with Authoritarianism and Neoliberalism. The critical element is one of desire, and how that investment is made in the social field.

Returning to Hall’s distinction between his description of authoritarian populism as moving away from a traditional authoritarian regime and closer to a totalitarian regime with fascist origins marks the second point of the technical term. A totalitarian regime has particular characteristics, but a fascist regime *giving rise to* totalitarianism is a unique case, for it is a controlling regime that is powered by the masses. While both fascism and totalitarian are loaded terms historically, as a movement, neither ensures a violent one.⁴⁵ The ideological content may be violent, but it might also be innocuous, like ‘freedom’ or the ‘democratization of information.’⁴⁶ Harvey’s statement regarding neoliberalism becoming entrenched in society as ‘a programmatic attempt to advance the cause of individual freedoms to appeal to the masses... to restore class power’; ‘class power’ means different things to different classes. This highlights the

⁴² Harvey, *Neoliberalism*, 40.

⁴³ *Ibid.*, 54.

⁴⁴ Holland, “Schizoanalysis, Nomadology, Fascism.”

⁴⁵ Griffin, *Nature of Fascism*, 170-171.

⁴⁶ Or, a ‘friendly fascism’, cited in Giroux, *Terror of Neoliberalism*; also, Griffin, *Nature of Fascism*.

impulses or tendencies that offer resemblance to *early* formulations of the fascist regime of Hitler. Hitler's appeal to restore economic power to the Germanic race gained more initial support than a violent appeal to decimate the Jewish race would have. Hitler *could* reach the masses through appeals of nationalism and economic prospects, regardless whether his initial intent was clear at the outset.

Freedom vs repression

Taking Ong's definition of neoliberalism as a "mode of 'governing through freedom' that requires people to be free and self-managing in different spheres of everyday life..."⁴⁷ and the idea 'responsibilization', in which the failure to self-manage is a failure of the individual, rather than a collective failure,⁴⁸ what results is a continued increase of 'governing' at the atomized, individual level. The linkage between individual acts as part of the common goal of 'governing through freedom' and the reduced role of the state becomes clearer and more pervasive. The State thus preoccupies itself with 'interests' that surround individuals, rather than the individuals themselves, giving rise to Governmentality.⁴⁹ This movement from the utopian idea of libertarian 'freedom' and communitarian ideals of 'self-managing' to the onus placed on the subject to be responsible for both their own freedom as well as performing tasks previously executed by the state *might* be conceived as freedom, as long as the subject was able and willing to conduct themselves accordingly. This would mean, however, that an individual gave up no personal freedom in the process of participating in the larger goal.

The increase in activities that fall under the purview of 'responsibilization' moves this individual freedom into an oppressive arrangement, in which the individual subjects must

⁴⁷ Ong "Neoliberalism as a Mobile Technology."

⁴⁸ Brown, "End of Liberal Democracy."

⁴⁹ Foucault, *Birth of Biopolitics*, 45.

participate in the common goal vaguely defined as ‘freedom’ in order to keep it secure. In other words, this is not a clear movement between two poles of freedom and oppression, in which the dialectic performs a synthesis of a third way. Rather, this movement produces a continuum in which both the external factors that produce the conditions and a particular subject position defines a series of potentialities, which might define liberating potential for one person while produce an oppressive obligation to perform for another. At the individual level, the decision-making or rationalizing process of participating at the expense of other freedoms is particularly suspect, for our social group formation and identification is rarely a rational process. Rather, desiring production, and the investment in the social field, has both a legitimate unconscious production as well as an illegitimate ‘synthesis’ that is a result of relying on representation and preconceived notions of behavior.⁵⁰

Contextually, the theoretical exegesis above gives an additional conceptual layer to understand the particular strain of neoliberalism in relation to the Open Source movement, one that is highly compatible as well as its vociferous antithesis. Both have strong libertarian impulses, and the darker tendencies of the open source ‘citizen’ led projects, at large and specifically within Google, as an alternative to capitalism; revealing compatible drives with a fascist totalitarian regime. Within open source, the movement itself presented itself as an alternative to the corporate, capitalist agenda and eschewing intellectual patents, one that was self-managed by volunteered participation. As individual projects grew in scope, bureaucratic heads managed different portions, with individual volunteers taking up even smaller tasks. The individual tasks assigned in relation to the larger project gives the individuals access to the

⁵⁰ Cf, conversation between Foucault and Deleuze, in which Deleuze asserts the need to understand how desire operates, rather than simply understanding the dominant rationality in “Intellectuals and Power,” 205-17, esp 214-15. For the unconscious and illegitimate investment of desire, see *AO*, 275-296, esp. 283-5.

power of the project, giving both individual responsibilities and claims of importance within the bigger project. The onus placed on the contributors of open source is framed as both an honor and a duty, to take part of this alternative system gives them a sense of purpose, while the pressure to continue to participate and advance the common cause is evident and often articulated as such.⁵¹ This kind of responsabilization is evident in neoliberalism, but results in a similar investment in open source, and is also a driving force of fascism and the participation of the masses, in which the collective goal of the movement requires participation and investment by its adherents.⁵²

Fascism has a contentious history, of course. Scholar Roger Griffin takes up its uncertain status has a concept and seeks to argue for a generic definition of its characteristics in order to meet a basic consensus.⁵³ This move seeks to restore the use of value of the concept while still allowing the particular historical fascisms and the specific characteristics that existed, but not rely on these historical forms to serve as an original definition against contemporary forms of fascism might be measured. A repeat fascist regime of World War II is highly unlikely, but contemporary political environments may continue to exhibit the same characteristics.

Griffin defines fascism as a political ideology that is dependent upon the support or enthusiasm of the masses, one that identifies with a common goal. Through that identification, the masses supports and is active in advancing that goal through a variety of ways of participation. A charismatic leader or figure often appears as a stand-in for a larger truth and imperative, or a new social order that emerges at a critical point. Specifically, there is a sense of

⁵¹ In particular, much of the literature heralds the strength of a strong leader to control the individual production, and the danger of ‘forking’ the code has the potential to for coder ‘suicide’, resulting in ostracization from the community. In particular, both Raymond and Lerner express this quite explicitly.

⁵² And it bears worth mentioning, that within open source, the term ‘evangelize’ is bandied about positively, as a celebrant of a particular software platform or tool. (Likely doesn’t fit here, necessarily, but bookmark it)

⁵³ Griffin, *Nature of Fascism*.

revolution or a palingenetic spirit that guides the belief or adoption of the general movement. This forward looking enables a separation from a present condition, one that identifies with a telos or future state in which great effort is put towards achieving that goal. One weakness that the palingenetic thrust establishes is the unsustainable quality of continued revolution or rebirth. Once a social order is overturned, another movement may arise to offer a new vision; the movement itself may be co-opted and subsequently seen as oppressive, however we might define that, or it may exhaust itself attempting to continue to revolutionize the social order.

While open source is often celebrated as a form of ‘radical democracy’, fascism also has a powerful resonance with democracy: the individual participation at the mass level makes democracies and fascist regimes strong and powerful, and it is specifically the commitment and fervor of fascism that gives the *appearance* of a perfect democracy.⁵⁴ It is the individual adherents that make such large projects possible with few financial resources, each individual is given a unique job and receives an opportunity to be a part of the movement.⁵⁵ Open Source heavily relies on volunteered efforts. The volunteers contribute in their free time, and are either gainfully employed by a corporate entity that allows them to delay monetary gratification or suffer the opportunity cost that accompanies free labor: participation in the production of the common goal prevents them from other opportunities that may prove more beneficial for their livelihood. Participation in the movement must be valued and quality effort, for both Fascism and Open Source. Fascist regimes will eject members if they do not present themselves as model adherents; resulting in ostracization from the community.⁵⁶ In Open Source, the individual participant must continue to actively perform to remain visible, measured both by the ‘difficulty’ of code authored as well as quality of work performed. Poor quality work is not incorporated and

⁵⁴ Linz, *Totalitarianism and Authoritarianism*, 70-1.

⁵⁵ Ibid., 70.

⁵⁶ Linz, *Totalitarianism and Authoritarianism*, 82.

efforts are not recognized by the community. Those that inappropriately assert their influence by ‘forking’ run great risk of being ostracized from the Open Source community, and threatening long term career prospects.

Google’s charismatic leaders and their ideological zeal of ‘democratization of information’ and their ‘open source’ spirit also has the ability to rally the masses, even as it lines the coffers of the shareholders of Google and securing ever more data to continue to be more efficient and ‘helpful’ to its users. As a burgeoning young company, many energetic engineers willingly took pay cuts in order to be part of this quest.⁵⁷ Over the last few years, the Summer of Code camp provides an opportunity of young, aspiring coders to participate in difficult coding problems, giving them access and exposure to Google and further cementing the influence and power within the Internet/technology community. Similarly, the current environment of open-source technology and startup companies exhibits a blind faith that unpaid efforts could produce the next wildly successful IPO or a product that creates the next Google bidding war, making the creators and the inner circle instant millionaires. In short, the Camp and ‘Google Ventures,’ enables Google to cultivate an ideal environment in which it can produce the next wave of Googlers. For those that participate, short terms goals are supplanted by long-term hopes of a better economic future.⁵⁸

At the individual level, general users complete the project by actively participating in Google’s technological empire. Despite knowing the data capture mechanisms that make the search ‘relevant’ and the tightly integrated products that track all users practices, users continue

⁵⁷ Marissa Mayer gives a compelling statement on her reasons for choosing to take a pay cut to work with Google, lists their enthusiasm for changing the world through search as being a defining element of the decision, *Inside the Mind of Google* at 9:00.

⁵⁸ Perhaps, most comically exemplified in *The Internship*, directed by Levy, in which Google, Inc. plays itself and hosts a summer intern camp that creates desperate rivalry, in which the potential ‘Googlers’ all vie for coveted, life-changing positions.

to utilize the search, acquiescing their ‘browsing history’ in order to have results that are more accurate, producing a data trail that offers an approximate composition of our digital selves, or what many have called a ‘capta shadow.’⁵⁹ Ultimately, all of these moments of resonance highlight the many potential dangers: the active, temporary selection transformed into an increasingly passive and permanent identification with movements, attitudes, perceptions, etc., creating the opportunity for microfascisms to form. The agile, creative movement (of neoliberalism, of a fascist regime) in which the micro or molecular politics produce a supple segmentarity and functions as a permanent inventiveness or creativity, one made possible by linking up individual desires within which larger alternative movements emerge.

Once we begin to identify with a desire that is no longer our own, our continued participation is a result of the collective desire, creating the conditions under which individuals commit various ‘errors’ that prevent them from disengaging when it becomes harmful to their ability to grow and change. Responsibilization and the entrepreneurial and creative investment of the subject functions like a *microfascism*, with the opposite pole the self-managing freedom of the individual. The conditions for developing into a *macrofascism* like the current trend within the Open Source ethos and the power center of the Google Regime thus emerge as one of many possible outcomes.

Neoliberalism as a theory does not address the complexities that emerge from the direct participation of the user-base, and the political theory of Linz identifies the impulses, but does not give enough attention to socio-cultural and economic impulses in a given society. The articulations of Deleuze and Guattari emerge as a more comprehensive theory that can account for the agility of neoliberalism as both a practice and a theory at the level of social machines, while also giving adequate attention to desiring production at the level of the subject as co-

⁵⁹ Dodge and Kitchen, “Outlines of a world.”

constitutive practices. More specifically, D & G's work on microfascisms and the way in which they install themselves at all levels of society point more directly to Google's effort to organize the world's information perhaps better resembling a Fascist Regime, complicating and extending Google's relationship to neoliberalism and Open Source. Two key characteristics are especially salient: microfascisms and how they operate and the insidious nature of the 'bureaucratic' head, as way to understand Google's ability to attract and mobilize the masses through the proliferation of products and services through its populist message of net democracy.

Why do we desire our own repression?

In *Anti-Oedipus* and *A Thousand Plateaus*, Deleuze and Guattari describe two distinct characteristics of fascism, fixation and speed.⁶⁰ In their articulation of historic fascism, the masses desired fascism because it 'augmented their feelings of power', a displacement of investment of desire; its success due in part to the populist rhetoric of 'productive forces' and the promise of a rebirth of the superior, Germanic race. Individual desires were transformed through identification and 'hope' of a better future that Hitler offered.⁶¹ In *ATP*, Fascism is often portrayed as a suicidal line of flight, a destructive force assembled from various forces of the social field, one that seeks to adhere to the ideological drive, regardless of the consequences.⁶² There is a greater focus on the molecular movement of the masses, as it is the masses that enable the 'installment' of ideology at every level, regardless of the reason 'why'. The molecular quality of fascism is a dangerous one, as it enables a molar identification with ideas at the individual levels, or what John Protevi calls Molecular molarity.⁶³ Both versions take seriously the

⁶⁰ For a concise explanation of the movement, see Holland, "Schizoanalysis, Nomadology, Fascism" esp 75-77.

⁶¹ Ibid., 86-7.

⁶² This is especially clear in the plateau "1933: Micropolitics and Segmentarity," 208-31.

⁶³ Protevi, "Problem of Pure Matter."

transversal communication of destructive social practices: the fascisms within us and the ways in which social forces dominate and exploit us in our daily lives; we desire to be ruled, to identify or belong to social groups and to be provided with ‘choices’ that limit the field. Desire is the crux of the investment in the social field, and importantly, desire is always assembled.⁶⁴ The danger here is thus the individual operates under the belief of clarity, in which individual choices are a result of personal decisions, rather than assembled from the social milieu and its stratification. With particular assemblages, desire is thus enabled to skip from point-to-point of individuals, before it resonates into a coherent movement.

I draw from both of these tendencies as way to understand the transformation that has occurred over the course of Google’s own meteoric rise to power. In the first instance, from the beginning, Google had indexing the world’s information as its sole object, an ideology with an algorithm that made results efficient and accurate. Users desired a search engine that made that experience better, and flocked to the service as a result. Google had the power to make the world’s information accessible, and its users now had that power of information at their fingertips. ‘Democratization of the internet’ was a populist message that was easy to support. In the second instance, as Google search has grown exponentially, it has rapidly added new products to open up additional lines of information ‘to organize’, including print and the physical world. Products were quickly released as beta versions or a veil of secrecy, depending on the competition for market share. Google has given little consideration about the potential ramifications to existing laws regarding intellectual property and privacy. Their upending of these stable institutions, the status quo of privacy and property law, has the potential to *suicidally* remove barriers without an appreciation for the critical role the laws play in the larger capitalist system, all in the name of ‘democratizing information’. Meanwhile, the masses still eagerly use

⁶⁴ D&G, *ATP*, 229.

their tools, with the promise of information, while implicitly or explicitly giving up a kind of ‘freedom’ that exists online, anonymity gives way to data points of individual habits and preferences which Google eagerly tracks, seeking to refine and reinforce existing preferences. On both sides, the justification thus becomes “if you are looking for something you don’t want anyone to know about, you shouldn’t be looking for it” (Google) and “they can gather my data points, but they will never know the ‘why’ of my search.” (general sentiment). It is this intersection of acquiescing and feigned ‘freedom of search’ that microfascism are particularly operative.

Microfascisms

D & G develop the molar and molecular, as social structures and as lines that comprise individuals’ desires and tendencies.⁶⁵ In the former, they describe the molar as ‘rigid segmentarity’, established social structures, norms within a society, and relations between people. States, institutions and class are examples of contemporary molar structures that influence individual practices, or standard ways of operating based on cultural norms; a top-down overcoding of desire. Identification with these structures and norms at the individual level predetermine perceived choices of relationships, careers, political affiliations, etc., and often cause one to remain in a given assemblage or arrangement out of obligation or sense of commitment, producing a level of fear. This fixes society, allowing a perpetuation of the culture, but leaves little room for change or becoming for the individual, as the field of potentialities or a sense of ‘choice’ is constrained by these relationships.

⁶⁵ I draw particularly from the plateaus “1874: Three Novellas, or ‘What Happened’” and “1933: Micropolitics and Segmentarity” for both of these articulations.

The molecular is described as a ‘supple segmentation,’ where fixed structures are no longer considered in the same manner or have the same authority. External forces shift established relations and reveal interests, desires, fears, etc. at the individual level, operating outside of conceptual molar categories. Conceived of as fissures or cracks, acceptance of the practices that go against the dominant social or group formation create movement within the larger social structure, thereby opening up a perceived range of choices. A sense of ‘clarity’ results from this movement away from the molar structures. It is no longer the distinct division of the molar (authoritarian) categories, but tending toward a distribution of molecular movement (totalitarian), one that seeks to blur all the boundaries. *The intrinsic relational aspects of the molar structures are replaced by flows and particles, whereby the larger organizing structure thrives on the multiplicity of segmented lines that comprise the overall milieu.* This distribution enables individuals within a social milieu to connect up outside of the molar categories that categorize and funnel individual practices and behaviors.

Importantly, all societies have both aspects that are continually enforcing and being enforced by the other. The molar attempts to recapture the molecular movements, either axiomatizing or suppressing the individual lines. It is the molecular suppleness that enables movement in a rigid, molar structure that characterizes a ‘shift’ in society. In this instance, we can think of the sea change in acceptance of marriage equality, redefining the molar structure of ‘marriage’ as a result of molecular forces. In many states, the marriage axiomatic seeks to incorporate more ‘couples’ within this definition in order to maintain the ‘majority’. In this sense, the totalitarian tendency is to draw more functions into the fold. The authoritarian tendency seeks to define specific heterogeneous relations through emotional response, rather than an ideological response embracing ‘the union of two people that love each other’.

While we tend to think of fascism as being a centralized state activity, D & G focus on microfascisms that first operate at the molecular level, as the desires of individuals are inextricably tangled up in complex assemblages of molar structures and molecular acts, immanence in the social field that communicates across the masses, identification and adherence to ‘beliefs’ or ideology. Every fascism is defined by what they describe as a ‘micro-black hole’ of subjectivity. The individual fills this hole with investment in the social field (I’m a Mac; I’m a PC). These micro-black holes, or subjectivities, communicate with other black holes. A group of individuals may come together through identifying with a particular desire, like marriage equality, or in relation to Open Source: a desire for an alternative to Microsoft and identification with libertarian impulses. This process of communication and resulting identification solidifies the connections that keep us bound within a particular formation. Giving the appearance that this identification will ‘make things a little bit better’, individual choice is driving the activity, etc., that allow these microfascism to ‘crystallize’ into a macrofascism that is no longer organized by individual investment, but rather a larger movement that is organized by a figure head.

For D&G, it was first through the pervasive proliferation of ‘axioms’ at the molecular level that gave rise to fascism, and ultimately a totalitarian regime.

But fascism is inseparable from a proliferation of molecular focuses in interaction, *which skip from point to point*, before beginning to resonate together in the National Socialist State.... Daniel Guerin is correct to say that if Hitler took power, rather than taking over the German State administration, it was because from the beginning he had at his disposal micro organizations giving him ‘an unequaled, irreplaceable ability to penetrate every

cell of society.’ What makes fascism dangerous is its molecular or micropolitical power, for it is a mass movement: a cancerous body rather than a totalitarian organism.⁶⁶

It is, rather, the functional elements and relations that are critical to the axiomatization, rather than the specific determinations, a difference akin to an ideological drive rather than a belief/mentality that sets the ‘code’ in relation to a specific orientation. Unlike the ‘theory’ of Neoliberal economics that grants a pure proliferation of axioms, capturing more accumulation through market freedom. Fascism offers a ‘fictional’ proliferation of axioms,⁶⁷ one that appears to grant all relations, as long as they adhere to the dominant function, in this case ‘freedom’. The pure theory of freedom in neoliberalism is transformed into a fictional freedom through the pragmatics of market practices and political influences, while the neoliberal subject operates under the fiction of individual freedom that is offered as identification through lifestyle choice, as opposed to an unfettered freedom not predetermined by market forces.

This explication enables us to draw out some key distinctions between the array of tools that Google offers and the variety of users that utilize their tools. On the one hand, it offers a powerful search engine that provides the most ‘relevant’ results, seeming to ‘understand’ what we seek. Google is transparent in its position of understanding that ‘competition is a click away’, while implicitly and explicitly asserting that its results are far more accurate than the competitors. Our choice is thus a fictional one, to recall D & G, if we truly value the time and energy required to sift through all the ‘irrelevant’ results. What we *really* want is a relevant result that reflects the anticipated thing for which we search. We know they rely on our participation in order to further refine their results, which makes their search ever more powerful. The less we explore beyond the 3rd page of the search result, the ‘more relevant’ the results appear, as our

⁶⁶ Ibid., 214.

⁶⁷ Ibid., 463.

curiosity becomes neutered by the instantaneous results. Conversely, we adjust our search query if the first page of results does not produce the anticipated results, as if it were *our keywords* that were out of order. Their ads are considered or portrayed as ‘helpful’, providing information when users ‘need it most’, in an unobtrusive way, compared to the random, annoying popup ads from the earlier era. Given its popularity as a search provider, advertisers feel convinced their marketing dollars will be best spent with Google, given the relevance model and the high search traffic.⁶⁸ This provides Google with greater revenue to devote resources to less monetizable products, while at the same time fuels the traffic and perceived cachet of the Google search product assemblage.

Focusing on their mapping division, Google continues to exceed any possible attempt by a competitor to duplicate the service. The recent Apple Map debacle serves as evidence as to *how accustomed we are* to a certain look, feel and quality of maps and their information, as well as the complexity involved in producing accurate maps. Apple’s roll-out was rushed and its data inaccurate. While Apple has been long been considered infallible with its products and software, their misstep was exacerbated by their removal of Google’s default map app from their new iOS. This caused much discontent among iPhone users, causing Apple to issue a public apology and resulted in dismissing their key project manager that led the project. This opening highlighted the user’s comfort and expectation with Google’s services. Whereas Apple had previously had Google Maps as a default feature, users could now ‘vote’ with their proverbial pocketbook by not upgrading their iOS, or downloading Google’s app as soon as it was available.

Their geo services are highly integrated, further cementing the clear choice of service provider. Searching a business, Google provides a quick link to street view; turn-by-turn

⁶⁸ This has resulted in antitrust filings by competitors, accusing them of making the online advertising business a hostile one for competitors. Recently, the US government has declined to file a lawsuit, while the EU lawsuit is still pending decision, see Gustin, “Antitrust Deal Cheered by Some.”

navigation direction incorporates Street View; when zooming in beyond a certain level, Google Earth automatically drops you into Street View when available. This visual navigation suite continues to draw far more users than other services, due to the comprehensive nature, accuracy and ease of use. Many businesses easily incorporate Google's map into the website production through their API link, greatly blurring the bounding limit of Google's services.

And finally, the sheer complexity of their mapping operation is built, in part, with the enthusiasm of their users. Citing agency and activism, Google's democratic call to all 'citizen cartographers' beckons them to add their local knowledge and 'map their world', one that both evokes a common mission of making visible the 'world's map' as well as staking out knowledge claims of culturally relevant data. "Google Map Maker is an editing tool that enables you, and people around the world, to contribute knowledge and expertise directly to Google Maps. By sharing information about the places you know best, you can ensure that the map accurately reflects the world around you."⁶⁹ There is both an honor and a duty to contribute, emphasizing or privileging local knowledge that is unique to individual users, one that allows the user to be a part of the overall project.

This in turn responsabilizes individuals to do their part to maintain accuracy against their knowledge, to recall the neoliberal subject, but also gives each user a unique task that encourages active participation towards this larger goal, to recall the fascist regime. It embraces the cultural environment of crowd sourcing, the open source ethos, and the lean knowledge production that allows corporate entities to build upon, without spending the resources required, quintessentially neoliberal. As a recent opinion piece states, "In the age of participation, it's crowds, not scholars, who are charting their own world."⁷⁰ An enthusiastic community of mappers with various skills

⁶⁹ Google Lat Long blog, "Map Maker Now Available."

⁷⁰ Anstey, "Empowering Citizen Cartographers."

has coalesced around the mapmaker tool, with organized weekend events and ‘map-a-thons’ focused on building up the base map. As a way to build ‘molecular molarity’, a real-time feature allows other users to see what *other* citizen cartographers are working on at any given moment. Further extending this community, the edits made by citizen cartographers are checked by peers. The system encourages quality work as well as increases the tasks for which each person might be responsible. These tasks are recognized within the community, as well as Google, who awards ‘badges’ to its users as recognition, based on the level of contribution.

The question remains, however, over the ownership of this knowledge production. Google’s recent partnership with World Bank provides this tool to small communities in developing countries to help ‘put them on the map.’ With training, communities use the mapmaker tool to give shape to the otherwise terrain vague of the Google map platform. It empowers them “to solve their own problems and develop their own solutions using maps.”⁷¹ In the process, it aids the community by identifying critical resources and infrastructure for daily needs and emergencies. Google’s website clearly states all information generated through the mapmaker tool is the property of Google. Local communities are unable to take that information they contributed and implement it in other open source mapping software. Rather, their information is accessible to them through Google Maps, making them reliant on that platform.⁷²

While it is disingenuous to suggest that only Google benefits, it does point to a dominant movement toward ever increasing ‘on the ground’ knowledge production that is easily captured by the current neoliberal environment in which the level of responsibility to self-govern, self-invest and self-provide for oneself increases, while Google’s profits continue to increase, based

⁷¹ World Bank, “World Bank and Google Support.”

⁷² This is particularly evident in Canada’s contribution of their material knowledge of one of the provinces in exchange for a license to use Google Earth. The license was only for a year, and now the government must pay to access the information they provided to Google.

on this built-in molecular production of knowledge which now becomes their intellectual property. Despite this acknowledgement of acquiescing ‘ownership’, the rationale for communities thus becomes, ‘at least we are able to give visibility to our community for the world to see,’ and in the process, an implicit hope of connecting them with the global market via tourism, for example, or by raising environmental awareness. Perhaps most importantly, however, is their *presence* on the Google map. Given that Google has become the de facto authority on ‘existence’, *not* appearing on Google’s map questions the legitimacy and relevance of a community; appearing on the map has clear implications in the concrete physical world. That a government official from Israel issued a statement demanding a reconsideration of Google’s recognizing the Palestinian borders on their maps, all in the name maintaining peace and stability, should give one pause to the level of power that Google wields in a non-dimensional space and the consequences to the perception of the physical world.

Meanwhile, ordinary users continue to enthusiastically add their local knowledge of physical elements, from parking lots to retail establishments, drawn to the cultural cache that Google provides within the larger mapping community and their explicit call to be part of the project (figure 1). By comparison, we need only look at another open-source map service, Open Street Map, and see the uneven rendering of roads and structures across the globe, as well as within ordinary urban environments (figure 2). To a large degree, much of Google’s map data is culled from the Street View process, which records countless data points, producing mappable data to build the maps from the ground up, or ‘Ground Truth.’ But the level of detail that exists within Google, as a result of its users, stands far ahead of the truly open-source platform of Open Street Map, though they owe much to Open Street Map’s crowd source success. And perhaps it is here in Open Street Map that we begin to truly see the technological divide in poorer

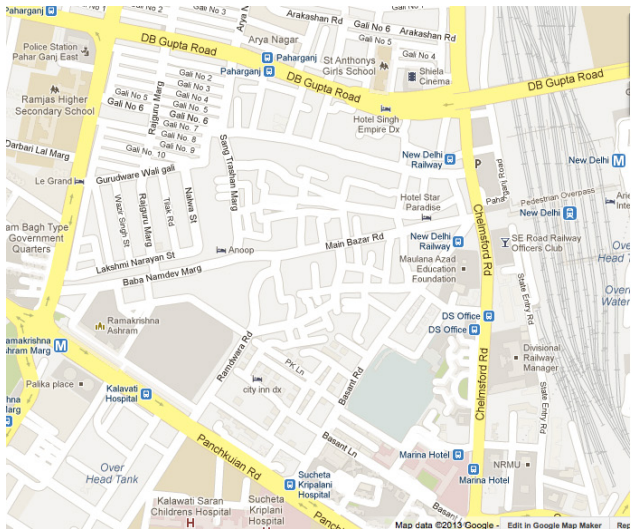


Figure 1

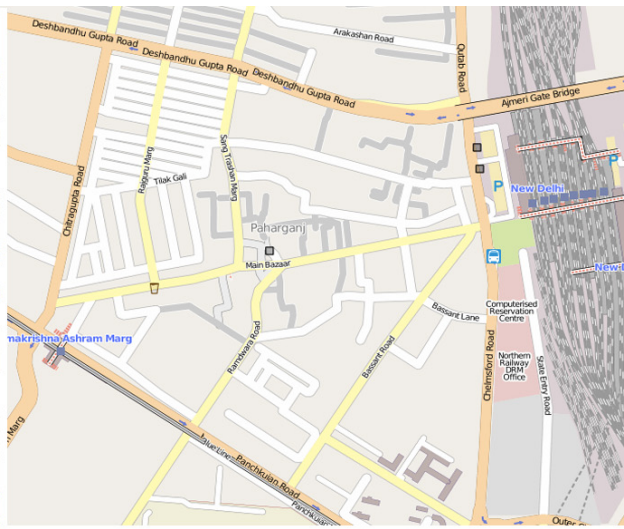


Figure 2

communities, where many portions of urban areas are minimally rendered, whereas Google's map seeks to capture *all* information, made possible by the range of data it owns and the powerful algorithms that automate it. And as a bridge between Google's two dominant product lines, "Where you're searching from has become almost as important as *what* you're searching for."⁷³

And perhaps most strikingly, the most recent release of Google Maps appeals to the neoliberal subject, who responds positively to customization and the ability to express their individuality, as well as the ability to have an intelligent system that responds to one's every desire. Their seductively blog post title, "Meet the new Google Maps: A map for every person and place." The opening salvo highlights these particular impulses, "What if we told you that during your lifetime, Google could create millions of custom maps...each one just for you?"⁷⁴ It becomes no longer enough to have the navigation power at the click of the mouse or on a mobile device, but rather, their new release responds to each new query and click on the map, effectively redrawing and highlighting what matters most to the individual user, "And the more you interact

⁷³ Madrigal, "How Google Builds."

⁷⁴ Google, Lat Long blog, "Meet the New Google Maps."

with the map, the better it gets. When you set your Home and Work locations, star favorite places, write reviews and share with friends, Google Maps will build even more useful maps with recommendations for places you might enjoy.”⁷⁵ As the user maps the direction, Google *helpfully* masks irrelevant information to show “what matters most.”⁷⁶

While customized maps have an obvious appeal, an underlying danger and quickly emerges once consideration is given to ‘relevancy’ results and a map that reconfigures itself based on previous search/preferences. A recent Atlantic Monthly articles succinctly expresses some potential concerns, “The more you use the map, Google says, the more helpful it will become, and in a way Google is acknowledging and embracing the inherent subjectivity of all maps. But doesn't this really mean that you'll find ‘places you never would have thought to search for’ that are remarkably similar to the places you've already been?”⁷⁷ While we may make subjective choices based on past experiences or current persuasion, it becomes less clear when the choices made are truly are our own, or if the ease of ‘relevant’ suggestions eases our decision making process by providing a fictional range of choices.⁷⁸ And given the ‘legitimacy’ granted to places and institutions/establishments based on appearing on the map, the customizable map that is in tune to a user’s desire not only reinforces their interests, but increases the inherently political implication of the ‘sensible’. “We already know that the inequality of information online is rendering some real-world people and places virtually invisible. Will customizable maps further exacerbate this new twist on inequality?”⁷⁹ Users understand that this sophisticated update will provide more information to Google about their searchers and interest; businesses

⁷⁵ Ibid.

⁷⁶ Ibid.

⁷⁷ Badger, “Potential Problem with Personalized.”

⁷⁸ And from personal experience, since the partnership with Zagat, the map results are thus further skewed, with a privileging of Zagat rated establishments. This highlighting manipulates the distribution of the sensible, where a correlation is drawn between the rated and unrated, the unrated are the remainder, and it takes concerted effort to seek out the ‘part that have no part’ of the system.

⁷⁹ Ibid.

will have more incentive to advertise to make themselves visible. Google promises to continue the pursuit of creating the perfect map, and in the meantime, they provide the seductively unique and responsive map for each moment, “What if, instead, you had a map that’s unique to you, always adapting to the task you want to perform right this minute?”⁸⁰

D & G caution that one of the ‘errors’ to avoid in this ‘supple’ plane that Google is creating is adhering to the ‘belief’ that this activity is making things ‘a little bit better.’ Like the autonomy we give up when we strongly identify with a group, a similar exchange takes place within the user. It occurs when we willingly continue to give Google our preferences through search; click on the ads rather than going to the website, giving them ad revenue in the process; donating time and energy to improve a map that is copyright protected, one that appeals to being part of the mapping project of a powerful corporate entity; identifying as a savvy internet user when we ‘Google’ rather than search for something; use their automated search results rather than type it in for ourselves; or we mediate our actual experience of the built world, reducing the number of ‘first’ experiences of an unknown place, a first impression provided by Google, from unknown point in time. And increasingly, mediate our world based on relevant results, producing a new definition of a psychogeography. Thus, it is no longer the neoliberal subject that has the freedom of choice that is ‘a click away’ but in increasing reliance on a suite of tools in which one acquiesces certain freedoms in order to access information that makes things ‘a little bit better’, or, in often expressed terms, “at least it is better than *fill-in-the-blank*...”

The second error, quickly follows suit, whereby the clarity with which we perceive our actions to ‘be our own’ produces what D & G call ‘a thousand little mono-manias, self-evident truths,’ of which become trapped by our own belief in the clarity of our actions. Given the power

⁸⁰ Google, Lat Long blog, “Meet the New Google Maps.”

center that is undeniably Google and results subject to their algorithms, these self-evident truths no longer ‘rumble and buzz’ independently as microfascism, but quickly become transformed into the macrofascism that makes the participation in the cultural power that Google possesses as seductive as it is. Google has the element of human power unmatched by any other mapping company, and the resources that are directed toward a ‘free’ service are not the actions of a beneficent corporation, looking to make information ‘accessible’. Rather, Google serves as the mediator between the physical world and our virtual conception of it, making the physical world, in addition to Internet, accessible and useful. Or, as a recent article plainly suggests, “Of course, they will always need one more piece of geographic information to make all this effort worthwhile: You. Where you are, that is. Your location is the current that makes Google's giant geodata machine run. They've built this whole playground as an elaborate lure for you. As good and smart and useful as it is, good luck resisting taking the bait.”⁸¹

The insidious nature of the ‘bureaucratic’ head

Bureaucracy is typically defined by a hierarchical organization, compartmentalized in function, and decisions made flow through the chain of command. D&G, via Kafka, insist, rather, that within a ‘bureaucracy’, there exists a suppleness between the compartmentalized functions, with a kind of ‘creativity’ that goes against the ‘administrative’ regulations. And in fact, the clear boundaries between the compartmentalized functions blur when at the molecular or individual level, and the distribution of power across a complex organization is rendered diffuse and pervasive, unrecognizable in individual cases, discernible when centralized as an abstract idea.⁸² The voice of authority continues to install itself at this micro level, and individual

⁸¹ Badger, “Potential Problem with Personalized.”

⁸² D & G, *ATP*, 214.

activities are controlled based on an increasingly abstract presence of this authority. Recalling the above Guerin quote, that Hitler had at his disposal ‘micro organizations giving him ‘an unequaled, irreplaceable ability to penetrate ever cell of society’ and the ‘creativity against administrative regulations,’⁸³ we can consider the structure of Google exemplifying this amorphous organization. Throughout the growth of the company, the founders have been steadfast in their desire to maintain tight control over the company’s direction, while also giving their employees a large amount of autonomy and authority in product development. In fact, the company prides itself on a horizontal, rhizomatic structure that works in small teams, distributing decision-making across the company. The 20% time for individual projects keeps employees enthusiastic and competitive, hoping to develop an idea that is worthy of critical resources to see it to fruition.

The products also reflect a similar horizontal structure, with integration across the business lines making the clear boundaries between products increasingly diffuse. For the user, the increasingly diverse range of services are easily accessible under one browser window, either through the Google homepage or through the email application. Given the universal function of search, Google’s core product feeds the searchability of its other offerings. Like its employees, Google gives its users a lot of creative license to use its products in unique ways, exploring the creative potential while highlighting the products’ versatility. With a product like Street View, we see a proliferation of ‘uses’ that go well beyond Google’s ‘molar’ conception and gives the visual plane a molecular suppleness, from navigation to tourism, DIY videos to corporate advertising. Artists and researchers are two key user groups that continually explore and exploit its potential.

⁸³ Ibid.

As previously stated, researchers test its efficacy as an online tool that could facilitate street audits in urban planning, environmental studies in criminology; a digital backdrop for historic photos in digital humanities, and life sciences studying aquatic life and bird habitat. The research questions guiding the early studies are whether the visual platform can provide the same level of accuracy as in-person assessment, thereby operating under the assumption of the veracity of the photograph. Artists have continually engaged the archive, with their activity perhaps best described as a line of flight, or rather, producing a movement or rupture that has a fundamental effect on the overall milieu. The projects emerge from existing artistic discourses within this new technological sphere, drawing on the history of street photography, documentary photography, performance art. Some creative efforts have garnered so much attention that it has fundamentally shifted the debate around a number of concerns, such as ‘what constitutes ‘news’’, the role of the author versus curator, documentation versus exploitation, among others.

Speculative conclusion

Herein lies the third error: the molar or molecular qualities of these various uses do not correspond to a similar scale. That a proliferation of molecular movements within a molar field produces a suppleness, but does not guarantee a better outcome. Rather, it creates a larger field to link up individual desires, thereby producing a greater potential for a proliferation of identifying with the social field. Many people use Street View for a number of reasons. While it restricts a molar ‘reading’ of its function, its widespread adoptions fully installs itself in the social field as being a ‘helpful’ tool.

Google is on record for being both surprised and excited by creative uses of Street View, and sensing an opportunity to further extend the use and application of its technology, Google

has provided funding to some research agendas that seek to examine its molecular potential against traditional (molar) ways of working. They have also seized the creative force of projects that push the potential of the platform in dynamic and innovative ways, such as the highly successful Arcade Fire video collaboration. Additionally, Google openly encourages artistic exploration by easing or removing copyright constraints, while it makes its Maps API readily available for individual producers, and when compelling, collaborates to allow elaborate interventions to take place within the mapping route.

This acceptance of these molecular lines and lines of flight highlights the fourth error, in which these movements, rather than escaping from the larger organization, the lines become subsumed within the larger project, which adds to the cultural cachet, appeal and power that Google already wields, enabling it to pick up speed. While the conservative totalitarian organism is defined by its sealing off all lines of flight, the fascist regime assembles on a suicidal line of flight, one that is driven by its ideological telos; it mobilizes the masses with micro organizations, accessing desires that are assembled from the entire social field. Rather than ‘sealing off all lines,’ Google welcome any positive application (and press) of their technology as a means to spread both new innovative and unimagined ways of using its tools. What escapes is as important as what is captured. In the case of Google, it seems nothing can escape its gravitational pull. The tension of granting everything while capturing everything as ‘information’ produces an environment in which the line between the private and public realms is effectively removed. All the lines are now under their purview, and they have unprecedented control and influence over that bounded terrain.

These tendencies keep this transformation in motion, while the movement from fascism to global capitalism is in a more ‘benign’ direction, this direction is reversible. As the neoliberal

agenda of freedom of the individuals and the freedom of the market has installed itself in all aspects of society and open-source emerged as a 'response' to this particular environment, the tendencies continue to remain the same. This allows for this co-optation of multiple agendas driven by an ideological goal that 'grants' more than anything. We see neoliberal and open-source agendas as advancing the same goals, the only thing that truly differentiates them is the 'belief' that is self-defined. It operates by way of the same tendencies but with different aims. What it 'means' may be different, but how it '*works*' remains the same.

Conclusion : Towards a theory of cultural fascism

‘I actually think most people don’t want Google to answer their questions. They want Google to tell them what they should be doing next....We know roughly who you are, roughly what you care about, roughly who your friends are.’ -- Eric Schmidt, Google

It is the proliferation of the Google ‘spirit’ that has infused nearly every corner of our society. The freedom of information and the power of knowledge draw enthusiastic users and employees who want to empower and to be empowered. Google’s ‘vertical’ integration continuously blurs the boundaries between its individual product lines, as well as extends its reach into other online sites. It is this two-pronged front: mobilizing the masses and a decentralized and non-hierarchical organization that creates the conditions for the formation of a fascist regime, and arguably the *potential* subsequent formation of a totalitarian organism. One never needs to leave the Googaverse, so integrated are all their services; they offer the appearance of choice by insisting that competition ‘is a click away’; and their goals are presented under the guise of ‘democratization’ and the promise of information that their tools provide. As we have seen, democracy and fascism share particular characteristics.

But what does this mean for the present work here? This extended explication sketched out the Street View Assemblage, informed by three critical lines: photography, mapping, and the political-economic dynamic of the overall milieu. Each of these lines are critical to its function, with the photographic line drawing out a diverse set of practices that employ this tool: either to legitimate its use in knowledge production, or as a means to destabilize the creative field. Scientists and artists seize this platform in different ways, and the photograph continues to oscillate between an indexical truth claim and as creative potential. Its status thus remains neutral, but not stable. The mapping line offers the strongest force in the assemblage, as it creates

particular tensions between users who adopt mapping tools, now extended to a larger selection of mapping practices, and the social production of Google that seeks to make all information accessible, even the built world. As knowledge is produced based on making visible territorial claims, territorial claims assert power over a territory and a people; and even more people consult the map as *just* a map, one that continues to gain importance in our daily lives. As more local knowledge is added to the map, it gives diversity to the truths represented; but as users add their knowledge to the map, Google captures this knowledge and claims ownership. Users merely ‘using’ the map take this newly mapped knowledge as objective fact, while the temporal disjunctions and user proclivities muddy its objective nature, rendering it subjective and wholly contingent.

The mapping line is thus a critical shift of the range of uses of GSV and the potential implications of the map as it is adopted across the larger field. The political economic line is thus where we see the greatest overall shift of the plane. As we move from scale of the individual to the larger implications in the social field, the seductive environment and cultural condition of this particular intersection warrants a closer look. As more users adopt Google’s tools, and the web 2.0 environment of participation feeds this adoption, the potential implications exfoliate in all directions. As more users adopt tools for diverse reasons, Google’s ability to reach the masses in myriad ways reveals precisely this tension between Google’s production and its users that power its functionality. While we began with Street View as a mode of inquiry, failing to capture this tension that exists between Google and its users is thus what took us so far afield, all held in tension by the mapping line, in all its imbricated and segmentary manifestations. We thus return to D & G’s conception of a neutral concept. Its latent or immanent force is deployed in a variety of circumstances, each contextually dependent and value laden.

The line of flight of the artistic practice within the Street View assemblage offers clues to its productive potential. Individual practices are altered, socio-cultural definitions enlarged. These exist as discrete practices that have the potential to affect the entire social field, yet this need not be the case. Innovation may generate movement and flexibility, but the widespread adoption, adherence and ‘identification’ with the movement are not given. Rather, the greatest ‘shift’ occurs within the artist, and in turn, the artist’s work stands on its own, or recedes into the virtual of the present. Conversely, Google’s level of social production infects the entire social field; the shifting plane of norms and conventions has the potential to radically alter the field, as its tools are adopted in increasing numbers, as more users ‘identify’ with Google’s philosophy, efficiency, and zeal, the line itself picks up speed through mass movement. The suicidal line of flight thus emerges as larger social shifts irrevocably alter the field.

For both lines, we never know until the moment has just passed, when we reterritorialize the experience within our own understanding. For the positive potential, this variation, the deterritorializing and reterritorializing, introduces movement within our own horizon. Constant variation is thus an and...and...and...and..., as opposed to identification with a movement where the variable is thus either/ or. As individuals enlarge their idea of a photograph, this expands the definition of what constitutes art, but also opens the creative practice to a greater number of people without formal, or royal, training. *It enables the nomadic line of art.* For the suicidal line, however, the reterritorialization can disrupt the entire field, or cause a retraction of advances through conservatism and extreme caution. This particular force is most evident within the legal battles in which the stakes are high. The ‘forward thinking’ liberal interpretation confronts the threat of ‘conservative’ reaction, thereby having the potential to greatly affect the ‘future’ of the Internet: whether it was establishing precedence of fair use, trademark

infringement, and our right to privacy. Here we see the molarization of norms and conventions destabilized and creating movement through the molecular act of legal battles and winning precedent cases. Where this leaves the right and expectation to copyright and valuing intellectual production is one potential consequence.

This adoption also sketches out a particular plane that both enables *and* limits our sense of *possible worlds*. True to the work of Deleuze and Guattari, then, this explication of the various entanglements highlights the virtual aspect of not only GSV, but the production of Google and the ways in which users adopt the tools in standard and innovative ways. Not simply the results of a larger structure that controls and affects our behaviors, it directly taps into our unconscious desires and highlights them, makes them more pronounced, more efficient. Our investment and identification with this larger movement and what it offers us is the key movement that keeps these two modes of ‘production’ in tension. It is here where we can grasp the spectrum of the positive and negative potential of the tool, for even its positive force is quickly axiomatized and incorporated by Google, eager as they are for user innovation.

Information and knowledge is the new territory to control, and wars are being waged on all fronts. Freedom of access and premium access plans; access to cultural production and free flowing ideas; how restricting access might stifle creative thinking and innovation; to the role intellectual copyright is defined and policed; the potential to destroy an economic model that makes those very products valued and valuable, both to the individuals that produce them and to the corporations that make them widely available. The engine that currently keeps this complex information economy circulating is controlled primarily by Google. This further establishes the idea of Google ‘governance’ and has raised questions from a variety scholars, ‘can we trust

Google to continue to do the right thing’?¹ Its direct access and influence on key government policies that determine outcomes of these very important issues takes their status as an ‘individual’ in the corporate sense of the word, and moves them to a far more powerful role that rivals political powers, especially given that their economic footprint is larger than most countries. To wit, a recent news cycle reports on fabrication of a floating territory, “There is a mysterious barge floating in San Francisco Bay with Google’s fingerprints all over it. The question is what Google wants to do with it, and Google won’t say.... A similar barge has been spotted in the harbor at Portland, ME.”² Defending one’s physical territory has become less important than defending one’s intellectual territory, efficiently illustrated by *not only* the ability to patent a finger motion on a screen, but also the *need* to do so. Before someone else does.

In “Schizoanalysis, Nomodology, Fascism,” Eugene Holland convincingly posits that ‘if’ it is possible to have a US fascist regime, it would be more religious and cultural than its militaristic predecessors.³ Like the various manifestations of neoliberalism, fascisms too take on unique strains depending upon the ideological impetus. And indeed, Google is not a political power that is defending its physical territory and its people. In the ‘Information Age’, it is increasingly clear that control over Castell’s ‘space of flows’ is becoming paramount; the man with the most data ‘wins’. While the classical fascist regime that gave rise to the totalitarian rule of Hitler sought to restore political, economic and cultural domination, it was through the conquest of physical territory. Given the increasing spread of neoliberalism through globalization and various economic instruments, the curtailing of the role of government and increasing power

¹ This is explicitly articulated by Vaidhyanathan, *Googlization of Everything*, in which he makes the case for the need to develop a thoughtful and careful plan for indexing information, notably their book scan project, and likens it to the Human Genome project, where scholars from around the world worked to produce a map of the human genome for the public domain in an effort to prevent the privatization and monetization of a fundamental good.

² Miller, “Mysterious Google Barge.”

³ Holland’s primary focus is on the Bush regime and how its neoconservative agenda and fundamentalism that nearly derailed the historically more tolerant, populist country.

of multinational corporations, and knowledge workers with hyper-connectivity, the production of ideas takes place across the boundaries of nation-states on a regular basis and reveals the inherently *arbitrary* nature of the political boundary. The need for a 'fascist minimum' thus becomes increasingly critical, one that enlarges our own conception of what a fascism might look like in the 21st century, given the shift from physical territory to an intellectual one.

And despite the neoliberal order of the present condition, Holland also maintains that it remains a possibility that we might return to an old-fashioned Fascism. It is precisely the molecular movement of the masses and how that desire is invested in the social field that is unpredictable and powerful; explicitly in defiance of the 'rationality discourse' that claims otherwise.⁴ Google has amassed perhaps the most powerful weapon: organizing the world's information and making it accessible. Its ability to control the means of communication and access to information, as well as its investment in energy production gives it the potential to act autonomously, all made possible by a 'Google economy' that generates more than \$100 million a day in revenue. It is an engine that fuels internet/ technology start-ups and online economies, while drawing from numerous sectors through its advertising machine. And as it installs officials in key positions to shape rules and regulations that might impact their business, they continue to stay 'on message', issuing statements that speak of freedom and democratization of information, doing no evil, providing 'helpful' tools, all with a single-minded pursuit to organize the world's information, regardless of the potential suicidal line of flight it may be.⁵

With the increasing amount of 'access' to information, the potential implications of making government agendas available, that which should remain secret for reasons of national

⁴ Brown, "End of Liberal Democracy," explicitly highlights the burden of the rational, calculating subject, and as previously argued, it is the failure to recognize actions that are not rooted in rational thinking that are the most powerful.

⁵ I thus greatly resist the desire to offer the 'war machine' as yet one more helpful concept in which to understand the large scale movements of Google and its ability to draw legions of users into the fold.

security, increase greatly. The lives of officials and citizens are put in jeopardy as a result of the zeal in which organizations like ‘wiki-leaks’ produce information and Google eagerly hosts it. It makes these implications seem like ‘collateral damage’, all with the express goal of freedom of information. “Information wants to be free,” as if information could desire human-oriented outcomes. Thus, Google seems increasingly disingenuous as they appear amazed that some see their ‘helpful’ tools as threatening, or at the audacity of having a ‘different worldview’, to recall Schmidt. And in fact, threatening enough to consider an antitrust case against a business that has given so much at no cost, simply to make the world’s information accessible.

Extending this further, the larger cultural celebration of open source also produces a fascistic tendency in which many participate for many reasons. This ultimately creates the double bind of feeling beholden to the need to participate, as it is highly regarded among prominent developers; and participation *seems* like a small price to pay for visibility, one that allows the developer signaling incentives and a greater potential to make a claim in the capitalist system. In short, it is not enough to play the game on their terms, it is not enough to define the parameters for capitalism; capitalism will co-opt the parameters and axiomatize the effort in order to reproduce.

This participation, believing that one is participating ‘on their own terms’ or to ‘get ahead’ is one danger of a microfascism, in which a supple plane coerces the participation of production, with no promise of ‘property’, beholden to the day-job capitalist salary, identification to a particular ‘value’ system that keeps us aligned, even after it stops being beneficial. This offering up of free labor, does in fact, disrupt the capitalist system. But our willingness to offer free labor ultimately *devalues* labor in the process. Why would a newspaper continue to pay journalists when there are active bloggers that report the news, for free and for

personal satisfaction? If we are that eager for an opportunity of a signaling incentive, what are we willing to give up? At what point do we demand to be compensated, not because we own it, but because knowledge production does not shelter or feed us? The recent citizen led frenzy of web 2.0 thus gives a glimpse of a untenable future, one that is a dangerous acquiescence of self worth *and* legitimate claims on exchange value. While the gift economy may function well online, it is not the foundational economy of the lived world, where the price of property and the price of food operate in a different register.

In the Control Society, Deleuze updates Foucault's panoptic, surveillant society: there is no need to hope or fear, we just need different tools. But what might these 'different tools' be? D & G are clear about the productive potential of the line of flight, while issuing continual reminders of its suicidal potential. There is thus an implicit ethical argument that lies within this 'productive' potential and how we might begin to understand its positive or negative quality, which necessarily makes it value laden and ethical in its function. The deterritorializing edge of the assemblage, the line of flight that changes the 'arrangement' of the assemblage is precisely what enables a society to keep changing, as new ideas and configurations radically alter particular conditions. This radical alteration is never value free. Rather, the context in which the conditions are altered has the potential to increasingly open up new possible worlds. Across the two texts of *Capitalism and Schizophrenia*, D & G offer no true pragmatic orientation, other than we must 'perch' on the edge of the strata, we must experiment, we must schizoanalyze ourselves to assess not only that with which we identify but the nature of an I, the Cartesian subject, and the habits that we adopt. But even with this more 'cautionary' tone, this experimentation could still end badly or cause a retreat, a catatonic *BWO* or a more conservative former self.

The crux of the work here is this: that Google has made a tool that is useful is but one element. They may think they are offering a 'good' to society that has no strings attached. Others may see GSV as a helpful navigation tool. Yet others might see the potential when it is layered on to search functions, with a greater likelihood of resulting in consumer activities. This value is extended to users, *as well as* to the advertisers that seek to increase their market share. Individuals may find it helpful, they may rely on it to give them security; other individuals see it as an invasion of privacy, while still more find it a source of efficient research or creativity. Still more layers of understanding and perceptions exist. What remains critical are the entanglements and tensions that result from the actualization of its potential.

The danger is thus: it is the adoption or actualization of the tool that raises potential concern. While Google can envision their role as an empowered, structuring force or as one of empowerment, the immanence at the level of the subject is distinct from the role Google has and the power it exerts. Mapping an assemblage thus seeks to identify the various lines of desire that are operative and give rise to heavily striating social machines; This mapping, and thus understanding, gives us more control over the possible worlds we imagine for ourselves. While we may believe it is puissance, *pouvoir* must continue to be considered, understood and mitigated. *To remain agile in our adoption is the critical component.*

Bibliography

- (Mercedes) - "Escape the Map," 2011.
http://www.youtube.com/watch?v=Z8rLyYYzEOo&feature=youtube_gdata_player.
- "+Artistic Google." +*Artistic Google*. Accessed June 20, 2014.
<https://plus.google.com/104600718104833273883/about>.
- 2011 APAC Google Geo Users Summit - Keynote Speaker: Ed Parsons, 2011.
http://www.youtube.com/watch?v=IhP3F2k8VjI&feature=youtube_gdata_player.
- "A New American Picture by Doug Rickard." *5B4: Photography and Books*, November 30, 2010. <http://5b4.blogspot.com/2010/11/new-american-picture-by-doug-rickard.html>.
- Abbas, M. *Hong Kong : Culture and the Politics of Disappearance*. Minneapolis: University of Minnesota Press, 1997.
- Adorno, Theodor. *Aesthetic Theory* : Newly Translated, Edited, and with a Translator's Introduction by Robert Hullot-Kentor Theodor W. Adorno. Minneapolis Minn.: University of Minnesota Press, 1997.
- Allen, Andrew. "Address Is Approximate by Tom Jenkins | Stop-Motion Short Film." *Short of the Week*. Accessed June 20, 2014. <http://www.shortoftheweek.com/2011/12/15/address-is-approximate/>.
- Allen, Frederick E. "Name You Need to Know: Sebastian Thrun." *Forbes.com*, May 11, 2011, 22.
- Allen, Gary L. "Spatial Abilities, Cognitive Maps and Wayfinding." In *Wayfinding Behavior: Cognitive Mapping and Other Spatial Processes*, edited by Reginald G Golledge. Baltimore: Johns Hopkins University Press, 1999.
- Allen, Greg. "Michael Wolf Wins World Press Photo Honorable Mention For Google Street View Photos." *Greg.org: The Making of*, February 13, 2011.
http://greg.org/archive/2011/02/13/michael_wolf_wins_world_press_photo_honorable_mention_for_google_street_view_photos.html.
- . "Walking Man - a Self-Portrait Collaboration with Google Street View." *Greg.org: The Making of*, April 10, 2010. http://greg.org/archive/2010/04/10/walking_man_-_a_self-portrait_collaboration_with_google_street_view.html.
- Allen, Peter. "French Town of Eu to Change Name because of Google Searches." *Telegraph.co.uk*, February 25, 2009, sec. worldnews. <http://www.telegraph.co.uk/news/worldnews/europe/france/4804974/French-town-of-Eu-to-change-name-because-of-Google-searches.html>.
- Amin, Ash. *Cities : Reimagining the Urban*. Cambridge: Polity, 2002.
- . "Cultural-Economy and Cities." *Progress in Human Geography* 31, no. 2 (2007): 143.
- . "On Being Political." *Transactions of the Institute of British Geographers* 32, no. 1 (2007): 112.
- . "The Good City." *Urban Studies* 43, no. 5 (May 1, 2006): 1009–23.
- Anguelov D, Dulong C, Filip D, Frueh C, Lafon S, Lyon R, Ogale A, Vincent L, and Weaver J. "Google Street View: Capturing the World at Street Level." *Computer* 43, no. 6 (2010): 32–38.
- Anguelov, Dragomir. "Google Street View: Capturing the World at Street Level." *Computer* 43, no. 6 (2010): 32.
- Anonymous. "Digital Anonymity: The Pedestrian Vanishes." *Popular Mechanics* 187, no. 11 (November 2010): 24.

- Anstey, Caroline. "Empowering Citizen Cartographers." *The New York Times*, January 13, 2012, sec. Opinion. <http://www.nytimes.com/2012/01/14/opinion/empowering-citizen-cartographers.html>.
- Appadurai, Arjun. *Modernity at Large : Cultural Dimensions of Globalization*. Minneapolis Minn.: University of Minnesota Press, 1996.
- Appleyard, Donald. "Notes on Urban Perception." In *Image and Environment; Cognitive Mapping and Spatial Behavior*, edited by Roger M Downs and David Stea. Chicago: Aldine Pub. Co., 1973.
- Arago, Dominique Francois. "Report." In *Classic Essays on Photography*, edited by Alan Trachtenberg. New Haven, Conn.: Leete's Island Books, 1980.
- Arendt, Hannah. *The Human Condition*. [Chicago]: University of Chicago Press, 1958.
- "Artist Paints Landscapes from Google Street View." Accessed June 20, 2014. <http://www.telegraph.co.uk/technology/google/6161661/Artist-paints-landscapes-from-Google-Street-View.html>.
- "Artists Painting Virtual Jersey." *BBC*, July 6, 2011, sec. Jersey. <http://www.bbc.co.uk/news/world-europe-jersey-14047755>.
- Associated Press. "Google Street View Snap Gets Taiwan Man Convicted." *Huffington Post*, July 5, 2012. http://www.huffingtonpost.com/2012/07/05/google-street-view-taiwan-man-peng_n_1650670.html.
- Auletta, Ken. *Googled: The End of the World as We Know It*. New York: Penguin Press, 2009.
- Badger, Emily. "The Potential Problem with Personalized Google Maps? We May Never Know What We're Not Seeing." Accessed October 30, 2013. <http://www.theatlanticcities.com/technology/2013/05/potential-problem-personalized-google-maps-we-may-never-know-what-were-not-seeing/5617/>.
- Badland H.M, Opit S, Kearns R.A, Witten K, and Mavoa S. "Can Virtual Streetscape Audits Reliably Replace Physical Streetscape Audits?" *Urban Health Journal of Urban Health* 87, no. 6 (2010): 1007–16.
- Bailey, Brandon. "Google's Top-Secret Floating Facility: A Waterborne Data Center, or Gadget Showroom?" *MercuryNews.com*. Accessed October 29, 2013. http://www.mercurynews.com/business/ci_24405791/googles-top-secret-floating-facility-water-borne-data.
- Barnett, Clive. "Public and Markets: What's Wrong with Neoliberalism?" In *The SAGE Handbook of Social Geographies*, edited by Susan Smith. Los Angeles; London: SAGE, 2010.
- Barthes, Roland. *Camera Lucida: Reflections on Photography*. New York: Hill and Wang, 1981.
- Battelle, John. *The Search: How Google and Its Rivals Rewrote the Rules of Business and Transformed Our Culture*. New York: Portfolio, 2005.
- Baudelaire, Charles. *Flowers of Evil and Other Works : Les Fleurs Du Mal et Oeuvres Choiesies*. New York: Dover Publications, 1992.
- . "The Modern Public and Photography." In *Classic Essays on Photography*, edited by Alan Trachtenberg. New Haven, Conn.: Leete's Island Books, 1980.
- Bauwens, Michael. "P2P Essay of the Day: Peer Production as Neoliberalism." *P2P Foundation's Blog*. Accessed March 5, 2014. <http://blog.p2pfoundation.net/p2p-essay-of-the-day-peer-production-as-neoliberalism/2012/01/10>.
- Bell, David. *Cyberculture Theorists : Manuel Castells and Donna Haraway*. London; New York: Routledge, 2007.

- Beller, Thomas. "Stalking the Stalkers." *New York Times Magazine*, June 26, 2011, 58.
- Benjamin, Walter. *The Arcades Project*. Cambridge Mass.: Belknap Press, 1999.
- . *The Work of Art in the Age of Its Technological Reproducibility, and Other Writings on Media*. Cambridge Mass.: Belknap Press of Harvard University Press, 2008.
- . *The Writer of Modern Life : Essays on Charles Baudelaire*. Cambridge Mass.: Harvard University Press, 2006.
- Benkler, Yochai. "Coase's Penguin, Or, Linux and 'The Nature of the Firm.'" *The Yale Law Journal* 112, no. 3 (December 1, 2002): 369–446.
- . *The Wealth of Networks: How Social Production Transforms Markets and Freedom*. New Haven [Conn.]: Yale University Press, 2006.
- Berger, John. *Ways of Seeing*. London; Harmondsworth: British Broadcasting Corporation; Penguin, 1972.
- Bergson, Henri. *Matter and Memory*. New York: Zone Books, 1988.
- Beta, Brodie. "Arcade Fire and Google Earth Revolutionize Music Videos." *Geek Beat*. Accessed June 20, 2014. <http://gkbt.co/1pdcD9p>.
- Blackman, Josh. "Omniveillance, Google, Privacy in Public, and the Right to Your Digital Identity: A Tort for Recording and Disseminating an Individual's Image over the Internet." *Santa Clara Law Review*. 49, no. 2 (2009): 313.
- Blitz, Marc Jonathan. "The Right to Map (and Avoid Being Mapped): Reconceiving First Amendment Protection for Information-Gathering in the Age of Google Earth." *Columbia Science and Technology Law Review* 14 (2013 2012): 115.
- Boas, Taylor C, and Jordan Gans-Morse. "Neoliberalism: From New Liberal Philosophy to Anti-Liberal Slogan." *Studies in Comparative International Development* 44, no. 2 (2009): 137–61.
- Bodenhamer, David J, John Corrigan, and Trevor M Harris. *The Spatial Humanities: GIS and the Future of Humanities Scholarship*. Bloomington: Indiana University Press, 2010.
- Bohbot VD, Lerch J., Thorndycraft B., Iaria G., and Zijdenbos AP. "Gray Matter Differences Correlate with Spontaneous Strategies in a Human Virtual Navigation Task." *The Journal of Neuroscience : The Official Journal of the Society for Neuroscience* 27, no. 38 (2007): 10078–83.
- Bonta, Mark. *Deleuze and Geophilosophy: A Guide and Glossary*. Edinburgh: Edinburgh University Press, 2004.
- "Boston - The Map Database." Accessed March 2, 2014. <http://www.themapdatabase.com/category/location/north-america/united-states/massachusetts/boston/>.
- Boyer, M. *Cyber Cities*. New York; Boston: Princeton Architectural Press; Hachette Book Group [Distributor], 1996.
- Brabham, D. C. "Crowdsourcing as a Model for Problem Solving: An Introduction and Cases." *Convergence: The International Journal of Research into New Media Technologies* 14, no. 1 (February 1, 2008): 75–90. doi:10.1177/1354856507084420.
- Bradley, Matthew Timothy. "Seeking a Broader Audience for Your Work? Don't Overlook Google+." *Vitae | The Chronicle of Higher Education*. Accessed February 17, 2014. <https://chroniclevitae.com/news/329-seeking-a-broader-audience-for-your-work-don-t-overlook-google>.
- Breihan, Tom. "Watch: New Interactive Arcade Fire Video for 'We Used to Wait.'" *Pitchfork*. Accessed December 23, 2013. <http://pitchfork.com/news/39905-watch-new-interactive-arcade-fire-video-for-we-used-to-wait/>.

- Brenner, Neil, and Nikolas Theodore, eds. *Spaces of Neoliberalism: Urban Restructuring in North America and Western Europe*. Malden, Mass.; Oxford: Blackwell, 2002.
- Brenner, Neil, Jamie Peck, Nik Theodore, "After Neoliberalization?" *Globalizations* 7, no. 3 (2010): 327–45.
- Bridge, Gary, and Sophie Watson. *The New Blackwell Companion to the City*. Malden, MA: Wiley-Blackwell, 2011.
- Brin, Sergey. "A Library to Last Forever." *The New York Times*, October 9, 2009, sec. Opinion. <http://www.nytimes.com/2009/10/09/opinion/09brin.html>.
- Bröckling, Ulrich, Susanne Krasmann, and Thomas Lemke. *Governmentality Current Issues and Future Challenges*. New York: Routledge, 2011. <http://site.ebrary.com/id/10422018>.
- Brook, Pete. "Google's Mapping Tools Spawn New Breed of Art Projects | Raw File | Wired.com." *Raw File*, August 15, 2011. <http://www.wired.com/rawfile/2011/08/google-street-view/>.
- . "Navigating the Puzzle of Google Street View 'Authorship' | Raw File." *WIRED*, August 19, 2011. <http://www.wired.com/2011/08/google-street-view-and-the-anatomy-of-authorship-in-the-age-of-digital-images/>.
- Brown, Wendy. *Edgework Critical Essays on Knowledge and Politics*. Princeton; Ewing: Princeton University Press, California Princeton Fulfillment Services [Distributor], 2005. <https://ezproxy.sias.sk.ca:443/login?url=http://site.ebrary.com/lib/siaslibraries/Top?id=10284047>.
- . "Neo-Liberalism and the End of Liberal Democracy." *Theory & Event* 7, no. 1 (2003).
- Buber, Martin. *I and Thou*. 2d ed. New York: Scribner, 1958.
- Buck-Morss, Susan. *The Dialectics of Seeing: Walter Benjamin and the Arcades Project*. Cambridge Mass.: MIT Press, 1989.
- Bulajewski, Mike. "The Peer Production Illusion Part I: The Myth of Open Source Software." *A Blog of Philosophical Reflections & Speculations*, December 19, 2011. <http://www.mrteacup.org/post/peer-production-illusion-part-1.html>.
- . "The Peer Production Illusion Part II: The Neoliberal Ideology of P2P." *A Blog of Philosophical Reflections & Speculations*, December 20, 2011. <http://www.mrteacup.org/post/peer-production-illusion-part-2.html>.
- . "The Peer Production Illusion Part III: A Society For & Against The Market." *A Blog of Philosophical Reflections & Speculations*, January 2, 2012. <http://www.mrteacup.org/post/peer-production-illusion-part-3.html>.
- Business ETC. "Revenue Uses Google Earth to Check up on Tax Evaders." *Business ETC*, July 11, 2010. <http://businessetc.thejournal.ie/revenue-uses-google-earth-to-check-up-on-tax-evaders-43794-Nov2010/>.
- Cadwalladr, Carole. "Are the Robots about to Rise? Google's New Director of Engineering Thinks So..." *The Guardian*, February 22, 2014, sec. Technology. <http://www.theguardian.com/technology/2014/feb/22/robots-google-ray-kurzweil-terminator-singularity-artificial-intelligence>.
- Campkin, Ben, and Rebecca Ross. "Negotiating the City through Google Street View." In *Camera Constructs: Photography, Architecture and the Modern City*, edited by Andrew Higgott and Timothy Wray. Burlington, Vt.: Ashgate Pub. Co., 2012.
- Carr, Nicholas. "The Ignorance of Crowds." *Strategy+business*. Accessed March 2, 2014. <http://www.strategy-business.com/article/07204?gko=6c4ad>.

- Cashmore, Peter. "Building Collapses in New York: Google Street View Shows a Crack." *Mashable*. Accessed October 22, 2012. <http://mashable.com/2009/06/21/google-street-view-collapse/>.
- Castells, Manuel. *Mobile Communication and Society a Global Perspective: A Project of the Annenberg Research Network on International Communication*. Cambridge, Mass.: MIT Press, 2007. <http://site.ebrary.com/id/10173576>.
- . *The Castells Reader on Cities and Social Theory*. Malden Mass.: Blackwell, 2002.
- . "The Net and the Self: Working Notes for a Critical Theory of the Informational Society." *Critique of Anthropology* 16, no. 1 (March 1996): 9–38.
- . *The Rise of the Network Society*. 2nd ed., with a new pref. Chichester West Sussex; Malden MA: Wiley-Blackwell, 2010.
- . *The Urban Question : A Marxist Approach*. Cambridge Mass.: MIT Press, 1977.
- Cavna, Michael. "'Riffs Picks of The Week: Viral 'Google Street View' Filmmakers Land Deal; New Owners Land the Real-Life Pixar 'Up' House." *The Washington Post - Blogs*, December 5, 2011. http://www.washingtonpost.com/blogs/comic-riffs/post/riffs-picks-of-the-week-viral-google-street-view-filmmakers-land-deal-new-owners-land-the-real-life-pixar-up-house/2011/12/02/gIQALlqBQO_blog.html.
- Certeau, Michel. *The Practice of Everyday Life*. Berkeley: University of California Press, 1984.
- Cheroux, Clement. "From Here On : Photography Exhibit," September 4, 2011. http://www.rencontres-arles.com/A11/C.aspx?VP3=CMS3&VF=ARL_3_VForm&FRM=Frame:ARL_76&LANGSWI=1&LANG=English#/CMS3&VF=ARL_3_VForm&FRM=Frame:ARL_7&LANGSWI=1&LANG=English.
- Chow, Raymond. "Why-Spy: An Analysis of Privacy and Geolocation in the Wake of the 2010 Google Wi-Spy Controversy." *Rutgers Computer and Technology Law Journal* 39 (2013): 56.
- "Christmas Bird Count." *National Audubon Society*. Accessed June 20, 2014. <http://birds.audubon.org/christmas-bird-count>.
- "Chrome Experiments - Home." Accessed June 20, 2014. <http://www.chromeexperiments.com/>.
- Cinar, Alev, and Thomas Bender. *Urban Imaginaries: Locating the Modern City*. Minneapolis, Minn.: Univ. of Minnesota Press, 2007.
- "Civic Tech – Next City." Accessed June 20, 2014. <http://nextcity.org/topic/civic-tech>.
- Clarke, P, J Ailshire, R Melendez, M Bader, and J Morenoff. "Using Google Earth to Conduct a Neighborhood Audit: Reliability of a Virtual Audit Instrument." *Health and Place* 16, no. 6 (2010): 1224–29.
- CMU. "Press Release: What Makes Paris Look Like Paris?" *Carnegie Mellon University*, August 7, 2012. http://www.cmu.edu/news/stories/archives/2012/august/aug7_citystyles.html.
- CNBC.ca. "Google Maps Takes Street View under the Sea - Technology & Science - CBC News." Accessed September 30, 2012. <http://www.cbc.ca/news/technology/story/2012/09/26/google-street-view-underwater.html>.
- CNBC.com. "Google and Your Privacy - Web Extra." *CNBC.com*. Accessed October 30, 2013. <http://video.cnb.com/gallery/?video=1348335295>.
- . "Google's Privacy - Web Extra." *CNBC.com*. Accessed October 30, 2013. <http://video.cnb.com/gallery/?video=1372176413>.
- . "Inside the Mind of Google." *CNBC.com*, February 9, 2010. <http://video.cnb.com/gallery/?video=1409844721>.

- “Code for America.” *Code for America - Governments*. Accessed June 20, 2014.
<http://codeforamerica.org/governments/>.
- Cohan, Peter. “Four Reasons Google Bought Waze.” *Forbes*. Accessed June 21, 2014.
<http://www.forbes.com/sites/petercohan/2013/06/11/four-reasons-for-google-to-buy-waze/>.
- Colebrook, Claire. *Gilles Deleuze*. London; New York: Routledge, 2002.
- Collier, Stephen J. “Neoliberalism as Big Leviathan, or ... ? A Response to Wacquant and Hilgers.” *Social Anthropology* 20, no. 2 (2012): 186–95. doi:10.1111/j.1469-8676.2012.00195.x.
- “comScore Releases September 2013 U.S. Search Engine Rankings.” *comScore, Inc.* Accessed May 17, 2014. http://www.comscore.com/Insights/Press_Releases/2013/10/comScore_Releases_September_2013_US_Search_Engine_Rankings.
- Condliffe, Jamie. “This Instagram-Street View Mash-Up Is a Stalker’s Wet Dream.” *Gizmodo*. Accessed February 24, 2014. <http://gizmodo.com/5972425/this-instagram+street-view-mash+up-is-a-stalkers-wet-dream>.
- Conley, Tom. *Cartographic Cinema*. Minneapolis: University of Minnesota Press, 2007.
- . *The Self-Made Map : Cartographic Writing in Early Modern France*. Minneapolis, Minn.: University of Minnesota Press, 1996.
- Conrads, Ulrich. *Programs and Manifestoes on 20th-Century Architecture*. Cambridge (Mass.): MIT Press, 1999.
- Corner, James. “The Agency of Mapping: Speculation, Critique and Invention.” In *The Map Reader*, edited by Martin Dodge, Rob Kitchin, and Chris Perkins, 89–101. John Wiley & Sons, Ltd, 2011. <http://onlinelibrary.wiley.com.offcampus.lib.washington.edu/doi/10.1002/9780470979587.ch12/summary>.
- Cosgrove, Denis E. *Geography and Vision: Seeing, Imagining and Representing the World*. London; New York; New York: I.B. Tauris ; In the United States of America and Canada distributed by Palgrave Macmillan, 2008.
- . *Mappings*. London: Reaktion Books, 1999.
- Crampton, J. W. “Cartography: Maps 2.0.” *Progress in Human Geography*, 2008.
<http://phg.sagepub.com/content/early/2008/09/04/0309132508094074.full.pdf>.
- . *Mapping: A Critical Introduction to Cartography and GIS*. Vol. 11. Wiley-Blackwell, 2011.
- Crary, Jonathan. *Suspensions of Perception : Attention, Spectacle, and Modern Culture*. Cambridge Mass.: MIT Press, 1999.
- . *Techniques of the Observer : On Vision and Modernity in the Nineteenth Century*. Cambridge Mass.: MIT Press, 1990.
- Crawford, Walt. *Cites & Insights Crawford at Large*. [Mountain View, Calif.]: Walt Crawford, 2001. <http://citesandinsights.info>.
- Cresswell, Tim. *Geographies of Mobilities : Practices, Spaces, Subjects*. Farnham Surrey; Burlington, VT: Ashgate, 2011.
- Crum, Chris. “Google Gives Local Users More Power in Map Editing.” *WebProNews*. Accessed June 21, 2014. <http://www.webpronews.com/map-maker-experts-2011-09>.
- Crutcher, Michael and Matthew Zook, “Placemarks and Waterlines: Racialized Cyberscapes in Post-Katrina Google Earth.” *Geoforum* 40, no. 4 (2009): 523–34.
- Cullinane, Susannah. “Murder on Google Street View?” *CNN*. Accessed June 20, 2014.
<http://www.cnn.com/2014/06/03/world/europe/uk-scotland-google-view/index.html>.

- Cusma, Kathryn. "Brooklyn Nabe of Prospect Heights Has 'Richest' Look." *New York Post*, August 17, 2013. <http://nypost.com/2013/08/17/brooklyn-nabe-of-prospect-heights-has-richest-look/>.
- Daguerre, Jacques Louis Mande. "Daguerrotype." In *Classic Essays on Photography*, edited by Alan Trachtenberg. New Haven, Conn.: Leete's Island Books, 1980.
- daily mail reporter. "Google Forced to Block out Hundreds." Accessed November 11, 2011. <http://www.dailymail.co.uk/news/article-1163456/Google-forced-black-hundreds-Street-View-photos-privacy-protests--site-gets-record-number-visits.html>.
- De Landa, Manuel. *A Thousand Years of Nonlinear History*. New York: Zone Books, 1997.
- . *Intensive Science and Virtual Philosophy*. London; New York: Continuum, 2002.
- De Vries, Hent. "Anti-Babel: The 'Mystical Postulate' in Benjamin, de Certeau and Derrida." *MLN* 107, no. 3 (1992): 441.
- Dear, M. *Rethinking Los Angeles*. Thousand Oaks Calif.: Sage Publications, 1996.
- Debord, Guy. *Complete Cinematic Works : Scripts, Stills, Documents*. Oakland CA: AK Press, 2003.
- . *The Society of the Spectacle*. New York: Zone Books, 2008.
- Deleuze, Gilles. *Bergsonism*. New York: Zone Books, 1988.
- . *Cinema*. Minneapolis: University of Minnesota, 1986.
- . *Cinema 2: The Time Image*. Minneapolis: University of Minnesota Press, 1989.
- . *Difference and Repetition*. New York: Columbia University Press, 1994.
- . *Empiricism and Subjectivity : An Essay on Hume's Theory of Human Nature*. New York: Columbia University Press, 1991.
- . *Expressionism in Philosophy : Spinoza*. New York; Cambridge, Mass.: Zone Books ; Distributed by MIT Press, 1990.
- . *Foucault*. Translated by Seán Hand. Minneapolis: University of Minnesota Press, 1988.
- . *Francis Bacon. The Logic of Sensation*. Minneapolis: University of Minnesota Press, 2005.
- . *Kant's Critical Philosophy: The Doctrine of the Faculties*. Minneapolis: University of Minnesota Press, 1984.
- . *Nietzsche and Philosophy*. New York: Columbia University Press, 1983.
- . "Postscript on the Societies of Control." In *Negotiations, 1972-1990*. New York: Columbia University Press, 1995.
- . *Proust and Signs*. New York: G. Braziller, 1972.
- . *Pure Immanence : Essays on a Life*. Edited by Anne Boyman. New York; Cambridge, Mass.: Zone Books ; Distributed by the MIT Press, 2001.
- . *Spinoza, Practical Philosophy*. San Francisco: City Lights Books, 1988.
- . *The Logic of Sense*. New York: Columbia University Press, 1990.
- Deleuze, Gilles, and Félix Guattari. *A Thousand Plateaus : Capitalism and Schizophrenia*. Minneapolis: University of Minnesota Press, 1987.
- . *Anti-Oedipus: Capitalism and Schizophrenia*. Minneapolis, Minn.: University of Minnesota Press, 2008.
- . *What Is Philosophy?* New York: Columbia University Press, 1994.
- Denaro, Anthony. "Beautiful Streets in the News." *OpenPlans*. Accessed June 26, 2014. <http://blog.openplans.org/2012/03/beautiful-streets-in-the-news/>.
- Derrida, Jacques. *Archive Fever : A Freudian Impression*. Chicago: University of Chicago Press, 1996.

- . *Copy, Archive, Signature : A Conversation on Photography*. Stanford Calif.: Stanford University Press, 2010.
- Dico, J. "Virtually a Holiday: Bypass Heathrow Hell: Take a Holiday with Google Street View." *Prospect -London- Prospect Publishing Limited-*, no. 161 (2009): 20.
- Dikovitskaya, Margarita. *Visual Culture : The Study of the Visual after the Cultural Turn*. Cambridge Mass.: MIT Press, 2005.
- Dodge, M., C. Perkins, and R. Kitchin. "Mapping Modes, Methods and Moments: A Manifesto for Map Studies," 2009. <http://eprints.nuim.ie/2931/>.
- Dodge, Martin, and Rob Kitchin. "Crowdsourced Cartography: Mapping Experience and Knowledge." *Environment and Planning A* 45, no. 1 (2013): 19–36. doi:10.1068/a44484.
- Dodge, Martin, Rob Kitchin, and C. R Perkins. *Rethinking Maps: New Frontiers in Cartographic Theory*. London; New York: Routledge, 2009.
- Doersch, Carl, Saurabh Singh, Abhinav Gupta, Josef Sivic, and Alexei A. Efros. "What Makes Paris Look Like Paris?" *ACM Trans. Graph.* 31, no. 4 (July 2012): 101:1–101:9. doi:10.1145/2185520.2185597.
- . "What Makes Paris Look Like Paris?" presented at the SIGGRAPH, Los Angeles, August 5, 2012. <http://graphics.cs.cmu.edu/projects/whatMakesParis/>.
- Döpfner, Mathias. "An open letter to Eric Schmidt Why we fear Google." *FAZ.NET*, April 17, 2014, sec. Feuilleton. http://www.faz.net/aktuell/feuilleton/debatten/mathias-doepfner-s-open-letter-to-eric-schmidt-12900860.html?printPagedArticle=true#pageIndex_2.
- Doug Rickard, 2011. <http://vimeo.com/30357393>.
- Drucker, Jesse. "The Tax Haven That's Saving Google Billions." *BusinessWeek: Online Magazine*, October 21, 2010. http://www.businessweek.com/magazine/content/10_44/b4201043146825_page_2.htm.
- Eastlake, Lady Elizabeth. "Photography." In *Classic Essays on Photography*, edited by Alan Trachtenberg. New Haven, Conn.: Leete's Island Books, 1980.
- Edelman, Bernard. *Ownership of Image: Elements for a Marxist Theory of Law*. London: Routledge & Kegan Paul, 1979.
- Eggers, William D. "Crowdsourcing Social Problems." *Reason.com*. Accessed February 26, 2014. <http://reason.com/archives/2013/12/25/crowdsourcing-social-problems>.
- Eisenman, Peter. "The End of the Classical: The End of the Beginning, the End of the End." In *Eisenman inside out: Selected Writings, 1963-1988*. New Haven, CT: Yale University Press, 2004.
- Elkins, James. *Photography Theory*. New York; London: Routledge, 2007.
- Elwood, Sarah, Leszczynski, Agnieszka. "New Spatial Media, New Knowledge Politics." *TRAN Transactions of the Institute of British Geographers* 38, no. 4 (2013): 544–59.
- Elwood, S. "Volunteered Geographic Information: Future Research Directions Motivated by Critical, Participatory, and Feminist GIS." *GeoJournal* 72, no. 3 (2008): 173–83.
- Elwood, S., M. F. Goodchild, and D. Z. Sui. "Researching Volunteered Geographic Information: Spatial Data, Geographic Research, and New Social Practice." *Annals of the Association of American Geographers* 102, no. 3 (2012): 571–90.
- Elwood, Sarah. "Citizen Cartographies and the Shifting Politics of Expertise." In *Conference Proceedings*. Santiago, Chile, 2009.
- . "Geographic Information Science: Emerging Research on the Societal Implications of the Geospatial Web." *Progress in Human Geography* 34, no. 3 (June 1, 2010): 349–57.

- Emerling, Jae. *Photography History and Theory*. Abingdon, Oxon; New York, NY: Routledge, 2012.
- Eng, Paul. "Will 'Adver-Gaming' Take Off?" Accessed October 22, 2012. <http://abcnews.go.com/Technology/story?id=97834&page=1>.
- Evans, Brad. *Deleuze & Fascism Security: War: Aesthetics*. Taylor & Francis, 2013. <http://lib.myilibrary.com?id=494968>.
- "Every Building on the Sunset Strip" in *Pacific Standard Time* at the Getty. Accessed June 25, 2014. <http://blogs.getty.edu/pacificstandardtime/explore-the-era/worksofart/every-building-on-the-sunset-strip/>.
- Fainstein, Susan S. "New Directions in Planning Theory." *Journal of Planning Literature* 15, no. 1 (2000).
- Farman, Jason. "Mapping the Digital Empire: Google Earth and the Process of Postmodern Cartography." *New Media & Society* 12, no. 6 (2010): 869–88.
- . "Mapping the Digital Empire: Google Earth and the Process of Postmodern Cartography." In *The Map Reader: Theories of Mapping Practice and Cartographic Representation*, edited by Martin Dodge, Rob Kitchin, and C. R Perkins. Chichester, West Sussex; Hoboken, NJ: Wiley, 2011. <http://dx.doi.org/10.1002/9780470979587>.
- Farnsworth, Amy. "Artist Finds Inspiration in Google Maps." *Christian Science Monitor*, August 18, 2009. <http://www.csmonitor.com/Innovation/Horizons/2009/0818/artist-finds-inspiration-in-google-maps>.
- . "Artist Finds Inspiration in Google Maps." *Christian Science Monitor*, August 18, 2009. [http://www.csmonitor.com/Innovation/Horizons/2009/0818/artist-finds-inspiration-in-google-maps/\(page\)/2](http://www.csmonitor.com/Innovation/Horizons/2009/0818/artist-finds-inspiration-in-google-maps/(page)/2).
- Farzad, Roben. "Google at \$400 Billion: A New No. 2 in Market Cap." *BusinessWeek: Technology*, February 12, 2014. <http://www.businessweek.com/articles/2014-02-12/google-at-400-billion-a-new-no-dot-2-in-market-cap>.
- Feffer, John. "How All of Us Are Helping Build a Participatory Totalitarianism." *AlterNet*, June 5, 2014. <http://www.alternet.org/world/how-all-us-are-helping-build-participatory-totalitarianism>.
- "File:Boulevard Du Temple by Daguerre.jpg." *Wikipedia, the Free Encyclopedia*, June 24, 2014. http://en.wikipedia.org/w/index.php?title=File:Boulevard_du_Temple_by_Daguerre.jpg&oldid=393624147.
- Finnegan, Terrence. *Shooting the Front : Allied Aerial Reconnaissance and Photographic Interpretation on the Western Front--World War I*. Washington D.C.: Center for Strategic Intelligence Research National Defense Intelligence College; U.S. G.P.O., 2006.
- Fisher, Adam. "Google's Road Map to Global Domination." *The New York Times*, December 11, 2013, sec. Magazine. <http://www.nytimes.com/2013/12/15/magazine/googles-plan-for-global-domination-dont-ask-why-ask-where.html>.
- Flaxman, Gregory. *The Brain Is the Screen : Deleuze and the Philosophy of Cinema*. Minneapolis: University of Minnesota Press, 2000.
- Flusser, Vilém. *The Freedom of the Migrant : Objections to Nationalism*. Urbana: University of Illinois Press, 2003.
- . *Towards a Philosophy of Photography*. London: Reaktion, 2000.
- Flyvbjerg, Bent. *Making Social Science Matter : Why Social Inquiry Fails and How It Can Succeed Again*. Oxford UK; New York: Cambridge University Press, 2001.

- Foerde, Karin, Barbara J. Knowlton, and Russell A. Poldrack. "Modulation of Competing Memory Systems by Distraction." *Proceedings of the National Academy of Sciences* 103, no. 31 (August 1, 2006): 11778–83. doi:10.1073/pnas.0602659103.
- Foster, Hal, ed. *The Anti-Aesthetic : Essays on Postmodern Culture*. 1st ed. Port Townsend Wash.: Bay Press, 1983.
- . *Vision and Visuality*. Seattle: Bay Press, 1988.
- Foucault, Michel. *Discipline and Punish : The Birth of the Prison*. 1st American ed. New York: Pantheon Books, 1977.
- . "Other Spaces: The Principles of Heterotopia." *Lotus International*, no. 48/49, (1985): 9–17.
- . *The Order of Things : An Archaeology of the Human Sciences*. 1st American ed. New York: Pantheon Books, 1971.
- Foucault, Michel and Michel Senellart. *The birth of biopolitics: lectures at the Collège de France, 1978-79*. Basingstoke [England]; New York: Palgrave Macmillan, 2008.
- Foucault, Michel. *Language, counter-memory, practice: selected essays and interviews*. Translated by Donald F Bouchard. Ithaca, N.Y.: Cornell University Press, 1977.
- Franceschi-Bicchierai, Lorenzo. "Israel Says Google Recognizing Palestine Hurts Peace Hopes." *Mashable*, May 6, 2013. <http://mashable.com/2013/05/06/google-palestine-israel/>.
- French, Robert L. "Automobile Navigation in the Past, Present and Future." Baltimore, Maryland, 1987. <http://mapcontext.com/autocarto/proceedings/auto-carto-8/pdf/automobile-navigation-in-the-past-present-and-future.pdf>.
- "From Here On Manifesto." *Les Rescontres-Arles Photographie*, September 4, 2011. http://www.rencontres-arles.com/C.aspx?VP3=CMS3&VF=ARL_3_VForm&FRM=Frame:ARL_76&LANGSWI=1&LANG=English#/CMS3&VF=ARL_3_VForm&FRM=Frame:ARL_7&LANGSWI=1&LANG=English.
- Frome, A., G. Cheung, A. Abdulkader, M. Zennaro, Bo Wu, A. Bissacco, H. Adam, H. Neven, and L. Vincent. "Large-Scale Privacy Protection in Google Street View." In *2009 IEEE 12th International Conference on Computer Vision*, 2373 –2380, 2009. doi:10.1109/ICCV.2009.5459413.
- Gadamer, Hans-Georg. *Philosophical Hermeneutics*. Berkeley: University of California Press, 1976.
- Gallagher, Shaun, and Dan Zahevi. *The Phenomenological Mind : An Introduction to Philosophy of Mind and Cognitive Science*. London; New York: Routledge, 2008.
- Geissler, Roger C. "Private Eyes Watching You: Google Street View and the Right to an Inviolable Personality." *Hastings Law Journal* 63 (2012 2011): 897.
- Gelder, Hilde van, and Helen Westgeest. *Photography Theory in Historical Perspective: Case Studies from Contemporary Art*. Chichester, West Sussex; Malden, MA: Wiley-Blackwell, 2011.
- Geller, Tom. "Imaging the World: The State of Online Mapping." In *The Map Reader*, edited by rtin Dodge, Rob Kitchin, and Chris Perkins, 185–91. John Wiley & Sons, Ltd, 2011. <http://onlinelibrary.wiley.com.offcampus.lib.washington.edu/doi/10.1002/9780470979587.ch26/summary>.
- "General Land Office," March 22, 2013. http://www.blm.gov/wo/st/en/info/history/general_land_office0.html.

- Geraci, John. "The Future of Our Cities: Open, Crowdsourced, and Participatory - O'Reilly Radar." Accessed February 26, 2014. <http://radar.oreilly.com/2009/04/the-future-of-our-cities-open.html>.
- Gergel, Joseph. "From Here On: Neo Appropriation Strategies in Contemporary Photography." *Interventions Journal*. Accessed June 20, 2014. <http://interventionsjournal.net/2012/01/26/from-here-on-neo-appropriation-strategies-in-contemporary-photography/>.
- Gesenhues, Amy. "Google Now Ranks No. 2 Behind Apple As The 2nd Most Valuable Company In America." *Search Engine Land*. Accessed February 23, 2014. <http://searchengineland.com/google-closes-apple-moves-ahead-exxon-become-2nd-valuable-us-company-183798>.
- Gilbert, Melissa R, and Michele Masucci. *Information and Communication Technology Geographies Strategies for Bridging the Digital Divide*. [Kelowna, B.C.]: Praxis (e)Press, 2011.
- Giroux, Henry A. *The Terror of Neoliberalism*. Boulder; Aurora, Ont.: Paradigm ; Garamond Press, 2004.
- Goldberg, Vicki. *Photography in Print: Writings from 1816 to the Present*. New York: Simon and Schuster, 1981.
- Golledge, Reginald G. "Human Cognitive Maps and Wayfinding." In *Wayfinding Behavior: Cognitive Mapping and Other Spatial Processes*, edited by Reginald G Golledge. Baltimore: Johns Hopkins University Press, 1999.
- . "Preface." In *Wayfinding Behavior: Cognitive Mapping and Other Spatial Processes*, edited by Reginald G Golledge. Baltimore: Johns Hopkins University Press, 1999.
- Goodchild, Michael F. "Citizens as Sensors: The World of Volunteered Geography." In *The Map Reader Theories of Mapping Practice and Cartographic Representation*, edited by Martin Dodge, Rob Kitchin, and C. R Perkins. Chichester, West Sussex; Hoboken, NJ: Wiley, 2011. <http://dx.doi.org/10.1002/9780470979587>.
- Goodwin, Denny. "Google's Mobile World & Vision for 2012." *Search Engine Watch*. Accessed June 24, 2014. <http://searchenginewatch.com/article/2155494/Googles-Mobile-World-Vision-for-2012>.
- "Google Annual Search Statistics | Statistic Brain." Accessed February 23, 2014. <http://www.statisticbrain.com/google-searches/>.
- Google Shoot View Gameplay, 2011. http://www.youtube.com/watch?v=DIOverL_HFJo&feature=youtube_gdata_player.
- "Google Gives Local Users More Power in Map Editing." *www.crowdsourcing.org*. Accessed June 21, 2014. <http://www.crowdsourcing.org/document/google-gives-local-users-more-power-in-map-editing-/6580>.
- "Google Lat Long: Eight Steps Closer to Mapping the World with Google Map Maker." Accessed June 24, 2014. <http://google-latlong.blogspot.com/2012/06/eight-steps-closer-to-mapping-world.html>.
- "Google Open Source Blog." Accessed June 24, 2014. <http://google-opensource.blogspot.com/>.
- "Google Street View Artists." *Modern Painters.*, no. Sep. (2010): 17.
- Google, Inc. "Official Google India Blog: Mapathon 2013: Join Google In Creating Better Maps for India." Accessed March 30, 2014. [http://googleindia.blogspot.in/2013/02/mapathon-2013-join-google-in-creating.html?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed:+GoogleIndiaBlog+\(Google+India+Blog\)](http://googleindia.blogspot.in/2013/02/mapathon-2013-join-google-in-creating.html?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed:+GoogleIndiaBlog+(Google+India+Blog)).

- . “About - Google Ventures.” *Google Ventures*. Accessed March 4, 2014. www.gv.com.
- . “About - Street View - Google Maps.” Accessed March 4, 2014. <https://www.google.com/maps/about/behind-the-scenes/streetview/>.
- . “An Inside Look at Google Map Maker.” *YouTube*. Accessed March 30, 2014. <http://www.youtube.com/watch?v=-HDmysaJUbA>.
- . “Crisis Response - Google.org.” *Google.Org*. Accessed March 4, 2014. <http://www.google.org/crisisresponse/>.
- . “FAQ - Google Crisis Response.” *Google Crisis Response*. Accessed June 22, 2014. <http://www.google.org/crisisresponse/faq.html>.
- . *Google I/O 2013: Re-Imagining the Map*, 2013. http://www.youtube.com/watch?v=zqatj4Nzl3E&feature=youtube_gdata_player.
- . “Google Lat Long: Google Earth Downloaded More than One Billion Times.” Accessed February 23, 2014. <http://google-latlong.blogspot.com/2011/10/google-earth-downloaded-more-than-one.html>.
- . “Google Lat Long: Publishing More Detailed Maps of North Korea.” Accessed March 2, 2014. <http://google-latlong.blogspot.com/2013/01/publishing-more-detailed-maps-of-north.html>.
- . “Google Map Maker Now Available in Bulgaria, Italy, San Marino and the Vatican.” *Google Lat Long*, August 20, 2013. <http://google-latlong.blogspot.com/2013/08/google-map-maker-now-available-in.html>.
- . *Google Maps: The Many Dimensions of a Modern Map*, 2012. http://www.youtube.com/watch?v=U8CMtRS6IUw&feature=youtube_gdata_player.
- . *The Next Dimension of Google Maps*, 2012. http://www.youtube.com/watch?v=HMBJ2Hu0NLw&feature=youtube_gdata_player.
- . *Google Maps Street View - Launch Video*, 2007. http://www.youtube.com/watch?v=91wuBqlny50&feature=youtube_gdata_player.
- . “Google.org.” *Google.Org*. Accessed March 4, 2014. <http://www.google.org>.
- . “Google’s Citizen Cartographers Map out the World.” *Google News*. Accessed March 2, 2014. <http://www.google.com/hostednews/afp/article/ALeqM5jm2Sxedg4EgS8PaKV2LRXCwA1w5A?docId=CNG.1f5eec768e56c129114f793fe106ddb8.6f1&hl=en>.
- . “Happy Nunavut Day! Snowy Iqaluit Comes to Street View.” Accessed October 26, 2013. <http://googlecanada.blogspot.com/2013/07/happy-nunavut-day-snowy-iqaluit-comes.html>.
- . *Hello World.*, 2012. http://www.youtube.com/watch?v=UrS9AVPUMFQ&feature=youtube_gdata_player.
- . “History - Google.” *Google*. Accessed June 21, 2014. <http://www.google.com/intl/en/about/company/history/>.
- . “Meet the New Google Maps: A Map for Every Person and Place.” *Google Lat Long*, May 15, 2013. <http://google-latlong.blogspot.com/2013/05/meet-new-google-maps-map-for-every.html>.
- . “Open Patent Non-Assertion Pledge.” *Google*. Accessed June 21, 2014. <http://www.google.com/patents/opnpledge/pledge/>.
- . “Open Source Programs Office.” *Google Developer*. Accessed June 21, 2014. <https://developers.google.com/open-source/?csw=1>.

- . “Result Of Mapathon 2013.” *Google Map Maker*, n.d.
[https://productforums.google.com/forum/#!topic/map-maker/RCKawX0ySeo\[1-25-false\]](https://productforums.google.com/forum/#!topic/map-maker/RCKawX0ySeo[1-25-false]).
- “Google, Royal LePage Team up for New Website.” *CTVNews*. Accessed June 24, 2014.
<http://www.ctvnews.ca/business/google-royal-lepage-team-up-for-new-website-1.1240005>.
- Gould, Stephen Jay. *Wonderful Life: The Burgess Shale and the Nature of History*. New York: W.W. Norton, 1989.
- Graham, M. “Neogeography and the Palimpsests of Place: Web 2.0 and the Construction of a Virtual Earth.” *Tijdschrift Voor Economische En Sociale Geografie* 101, no. 4 (2010): 422–36.
- . “Time Machines and Virtual Portals The Spatialities of the Digital Divide.” *Progress in Development Studies* 11, no. 3 (2011): 211–27.
- . “Warped Geographies of Development: The Internet and Theories of Economic Development.” *Geography Compass* 2, no. 3 (2008): 771–89.
- Graham, Stephen. “Spaces of Surveillant Simulation: New Technologies, Digital Representations, and Material...” *Environment & Planning D: Society & Space* 16, no. 4 (1998).
- . *The Cybercities Reader*. London; New York: Routledge, 2004.
- Graham, Stephen D.N. “Software-Sorted Geographies.” *Progress in Human Geography* 29, no. 5 (2005): 562–80.
- Graham, Stephen, and Simon Marvin. *Telecommunications and the City : Electronic Spaces, Urban Places*. London; New York: Routledge, 1996.
- Graham, Stephen, and David Wood. “Digitizing Surveillance: Categorization, Space, Inequality.” *Critical Social Policy* 23, no. 2 (2003): 227–48.
- Greenblatt, Leah. “Arcade Fire Take You Home—seriously, to the House You Actually Grew up In—in Their Fantastic New Interactive Video ‘We Used to Wait.’” *EW.com*. Accessed June 20, 2014. <http://music-mix.ew.com/2010/08/30/arcade-fire-we-used-to-wait-video-google-maps/>.
- Griffin, Roger. *The Nature of Fascism*. London; New York: Routledge, 1993.
- Grubb, Ben. “Shot down: Street View Shoot ’Em up Pulled by Google.” *The Sydney Morning Herald*. Accessed February 23, 2014. <http://www.smh.com.au/digital-life/games/shot-down-street-view-shoot-em-up-pulled-by-google-20111213-1osh8.html>.
- Guffey, Bill. “Croatia ~ October 2012.” *The Virtual Paintout*. Accessed October 21, 2012. <http://virtualpaintout.blogspot.com/>.
- . “The Beginnings of an Idea.” *The Virtual Paintout*, n.d.
<http://virtualpaintout.blogspot.com/p/about-project.html>.
- Gumbrecht, Jamie. “The Newcomer: Google Street View: Giving Newcomers (and Stalkers) a Fresh Look.” *Atlanta Journal - Constitution*, June 19, 2008, n/a.
- Gustin, Sam. “Google’s Federal Antitrust Deal Cheered by Some, Jeered by Others.” *Time*. Accessed October 30, 2013. <http://business.time.com/2013/01/04/googles-federal-antitrust-deal-cheered-by-some-jeered-by-others/>.
- Hacking, Juliet. *Photography: The Whole Story*. Munich; New York: Prestel Publishing, 2012.
- Haklay, Mordechai. “Neogeography and the Delusion of Democratisation.” *Environment and Planning A* 45, no. 1 (2013): 55–69. doi:10.1068/a45184.
- Haklay, Muki, Alex Singleton, and Chris Parker. “Web Mapping 2.0: The Neogeography of the GeoWeb.” *GEC3 Geography Compass* 2, no. 6 (2008): 2011–39.

- Halford, Susan, and Mike Savage. "Reconceptualizing Digital Social Inequality." *Information, Communication & Society* 13, no. 7 (2010): 937–55.
- Hall, Stuart. "The Great Moving Right Show." *Marxism Today*, no. January (1979).
- . "The Toad in the Garden." In *Marxism and the Interpretation of Culture*, edited by Cary Nelson and Lawrence Grossberg. Urbana: University of Illinois Press, 1988.
- Hamann T.H. "Neoliberalism, Governmentality, and Ethics." *Foucault Studies*, no. 6 (2009): 37–59.
- Hand, Martin. *Ubiquitous Photography*. Cambridge, UK; Malden, MA: Polity Press, 2012.
- Hangout on Air with the Map Maker Team*, 2013. http://www.youtube.com/watch?v=rZSK1MXmOf0&feature=youtube_gdata_player.
- Hansell, Saul. "Technology; Google and Yahoo Settle Dispute Over Search Patent." *New York Times*. Accessed December 26, 2013. <http://www.nytimes.com/2004/08/10/business/technology-google-and-yahoo-settle-dispute-over-search-patent.html>.
- Hansen, Mark. *New Philosophy for New Media*. Cambridge Mass.: MIT Press, 2004.
- Haraway, Donna. "A Cyborg Manifesto." *Cultural Studies Reader*, 1999.
- . *The Haraway Reader*. New York: Routledge, 2003.
- Hardey, Michael. "The City in the Age of Web 2.0 a New Synergistic Relationship between Place and People." *Information, Communication & Society* 10, no. 6 (2007).
- Harvey, David. *A Brief History of Neoliberalism*. Oxford; New York: Oxford University Press, 2005.
- . *The Urban Experience*. Baltimore: Johns Hopkins University Press, 1989.
- Hebbert, Frank. "Eyes on the Street, Comments on the Web." *OpenPlans*. Accessed June 26, 2014. <http://blog.openplans.org/2012/08/eyes-on-the-street/>.
- Heidegger, Martin. "Art and Space." *Man and World* 6, no. 1 (February 1973): 3–8.
- . *Being and Time*. New York: Harper Perennial/Modern Thought, 2008.
- . *Discourse on Thinking. A Translation of Gelassenheit*. New York: Harper & Row, 1966.
- . *The Question Concerning Technology, and Other Essays*. 1st ed. New York: Harper & Row, 1977.
- Helft, Miguel. "Google Zooms In Too Close for Some." *The New York Times*, June 1, 2007, sec. Technology. <http://www.nytimes.com/2007/06/01/technology/01private.html>.
- "Henry Peach Robinson." *Wikipedia, the Free Encyclopedia*, June 15, 2014. http://en.wikipedia.org/w/index.php?title=Henry_Peach_Robinson&oldid=597502050.
- Heussner, Ki Mae. "Artist Paints the World With Google Street View." *ABC News*, August 11, 2009. <http://abcnews.go.com/Technology/story?id=8295043&page=1>.
- . "Artist Paints the World With Google Street View." *ABC News*, August 11, 2009. <http://abcnews.go.com/Technology/story?id=8295043&page=1>.
- Highmore, Ben. *Michel de Certeau Analysing Culture*. London; New York : Continuum,, 2006.
- Hilgers, Mathieu. "The Three Anthropological Approaches to Neoliberalism." *International Social Science Journal* 61, no. 202 (2010): 351–64. doi:10.1111/j.1468-2451.2011.01776.x.
- Hillis, Ken, Michael Petit, and Kylie Jarrett. *Google and the Culture of Search*, 2013.
- Hinchliffe, S. "Technology, Power, and Space-the Means and Ends of Geographies of Technology." *Environment and Planning. D, Society & Space* 14, no. 6 (1996): 659.
- Hindman, Matthew Scott. *The Myth of Digital Democracy*. Princeton: Princeton University Press, 2010. <http://www.myilibrary.com?id=296467>.

- Hine, Christine. *Virtual Ethnography*. London; Thousand Oaks, Calif.: SAGE, 2000.
<http://site.ebrary.com/id/10256980>.
- Hippel, Eric von. *Democratizing Innovation*. Cambridge, Mass.: MIT Press, 2005.
- "History of Photography." *Wikipedia, the Free Encyclopedia*, June 25, 2014.
http://en.wikipedia.org/w/index.php?title=History_of_photography&oldid=614378737.
- "History Pin- Get Involved." *History Pin*, n.d. <http://www.historypin.com/community/>.
- Holland, Eugene W. "Schizoanalysis, Nomadology, Fascism." In *Deleuze and Politics*, edited by Ian Buchanan and Nicholas Thoburn. Deleuze Connections. Edinburgh: Edinburgh University Press, 2008.
- Holmes, Oliver Wendell. "The Stereoscope and the Stereograph." In *Classic Essays on Photography*, edited by Alan Trachtenberg. New Haven, Conn.: Leete's Island Books, 1980.
- Horaczek, Stan. "How Many Photos Are Uploaded to the Internet Every Minute?" *PopPhoto*. Accessed June 19, 2014. <http://www.popphoto.com/news/2013/05/how-many-photos-are-uploaded-to-internet-every-minute>.
- Horkheimer, Max. *Dialectic of Enlightenment*. New York: Herder and Herder, 1972.
- Howard, Jennifer. "Google Begins to Scale Back Its Scanning of Books from University Libraries." *The Chronicle of Higher Education*, March 9, 2012.
<http://chronicle.com/article/Google-Begins-to-Scale-Back/131109/>.
- Hubbard. "The Conversation: Exploring 'The Wilderness Downtown.'" *ABC News*, September 3, 2010. <http://abcnews.go.com/WN/arcade-fire-music-video-wilderness-downtown-pulls-google/story?id=11554139>.
- Huffingtonpost.com. "Google Will Soon Know You Better Than Your Spouse Does, Top Exec Says." *The Huffington Post*. Accessed February 23, 2014.
http://www.huffingtonpost.com/2014/02/23/ray-kurzweil_n_4842972.html.
- Hughes, Justin. "The Photographer's Copyright - Photograph as Art, Photograph as Database. (VII. The Ubiquitously Photographed World through IX. Appendix, with Footnotes, P. 419-428)." *Harvard Journal of Law & Technology* 25, no. 2 (2012).
- Iaria G, Petrides M, Dagher A, Pike B, Bohbot VD. "Cognitive Strategies Dependent on the Hippocampus and Caudate Nucleus in Human Navigation: Variability and Change with Practice." *The Journal of Neuroscience : The Official Journal of the Society for Neuroscience* 23, no. 13 (2003): 5945-52.
- Ihde, Don. *Chasing Technoscience : Matrix for Materiality*. Bloomington: Indiana University Press, 2003.
- Ishikawa, Toru, Fujiwara, Hiromichi, Imai, Osamu, Okabe, Atsuyuki. "Wayfinding with a GPS-Based Mobile Navigation System: A Comparison with Maps and Direct Experience." *YJEVP Journal of Environmental Psychology* 28, no. 1 (2008): 74-82.
- Jackson, Nicholas. "Artist Travels the United States, Finds Inspiration Using Google." *The Atlantic*, February 4, 2011. <http://www.theatlantic.com/technology/archive/2011/02/artist-travels-the-united-states-finds-inspiration-using-google/70788/>.
- Jameson, Fredric. *Postmodernism, Or, The Cultural Logic of Late Capitalism*. Durham: Duke University Press, 1991.
- Jay, Martin. *Downcast Eyes : The Denigration of Vision in Twentieth-Century French Thought*. Berkeley: University of California Press, 1993.
- Jenkins, Tom. *Address Is Approximate*, 2011. <http://vimeo.com/32397612>.

- Jobson, Christopher. "Watch: A High-Speed Journey Across a Miniature Earth," May 30, 2012. <http://www.thisiscolossal.com/tags/stereographic-projection/>.
- Johnson, Brad. "Google Street View Allows Users to Step Back in Time." *Guardian Liberty Voice*. Accessed April 25, 2014. <http://guardianlv.com/2014/04/google-street-view-allows-users-to-step-back-in-time/>.
- Johnson, John. "Google Patents 'Street View' Walking Sticks." *Newser*. Accessed March 4, 2014. <http://www.newser.com/story/169749/google-patents-street-view-walking-sticks.html>.
- Jones, Chuck. "Google Stock Split: In Larry And Sergey We Trust." *Forbes*. Accessed May 17, 2014. <http://www.forbes.com/sites/chuckjones/2014/04/02/google-stock-split-in-larry-and-sergey-we-trust/>.
- "Journey Across Five Continents At 1000 Mph In Chemin Vert | The Creators Project." *The Creators Project*. Accessed August 18, 2012. <http://thecreatorsproject.com/blog/journey-across-five-continents-at-1000-mph-in-ichemin-verti>.
- Kafle, Narayan Prasad. "Hermeneutic phenomenological research method simplified." *Bodhi: Interdisciplinary J Bodhi: An Interdisciplinary Journal* 5, no. 1 (2013): 181.
- Kakkar, Manan, and 2013-- 19:24 Gmt. "Google Angers Indian Policy Makers over 'Mapathon.'" *ZDNet*. Accessed March 30, 2014. <http://www.zdnet.com/google-angers-indian-policy-makers-over-mapathon-7000013617/>.
- Kalluk, Chris. "Trekker Takes on Canada's Arctic Winter." *Official Google Canada Blog*, March 20, 2013. <http://googlecanada.blogspot.ca/2013/03/trekker-takes-on-canadas-arctic-winter.html>.
- Kamat, Deepak. "The Worst Contest Ever Held by Google - Mapathon 2013 India | The Deepak Kamat Blog." *The Worst Contest Ever Held by Google - Mapathon 2013 India | The Deepak Kamat Blog*, October 10, 2013. <http://deepakweblog.blogspot.com/2013/10/google-mapathon-result-no-news.html>.
- Katz, Ian. "Web Freedom Faces Greatest Threat Ever, Warns Google's Sergey Brin." *The Guardian*, April 15, 2012, sec. Technology. <http://www.theguardian.com/technology/2012/apr/15/web-freedom-threat-google-brin>.
- Kelley, Jamuna D. "A Computer with a View: Progress, Privacy, and Google." *Brooklyn Law Review*. 74, no. 1 (2008): 187–230.
- Kelly, Heather. "Authors' Case against Google Books Dismissed." *CNN*. Accessed December 26, 2013. <http://www.cnn.com/2013/11/14/tech/web/google-books-verdict/index.html>.
- Kelly, Michael. *Encyclopedia of Aesthetics*. New York: Oxford University Press, 1998.
- Kennedy, John F. "John F. Kennedy Moon Speech - Rice Stadium." September 12, 1962. *NASA.gov*, <http://er.jsc.nasa.gov/seh/ricetalk.htm>.
- "King County Historical Bibliography: Part 14 WPA." *HistoryLink: The Free Online Encyclopedia of Washington State History*, n.d. http://www.historylink.org/index.cfm?DisplayPage=output.cfm&file_id=7156.
- Kingsbury, P, J.P Jones. Spatial politics and cultural significance of high-resolution satellite imagery. "Walter Benjamin's Dionysian Adventures on Google Earth." *Geoforum* 40, no. 4 (2009): 502–13.
- Kinsley S. "Representing 'Things to Come': Feeling the Visions of Future Technologies." *Environ. Plann. A Environment and Planning A* 42, no. 11 (2010): 2771–90.
- Kirsch, S. "The Incredible Shrinking World? Technology and the Production of Space." *Environment and Planning. D, Society & Space*. 13, no. 5 (1995): 529.

- Kitchin, Rob. "The Practices of Mapping." *Cartographica* 43, no. 3 (2008).
- Kitchin, Rob, and Martin Dodge. *Code/space : Software and Everyday Life*. Cambridge, Mass.: MIT Press, 2011.
- . "Rethinking Maps." *Progress in Human Geography* 31, no. 3 (June 2007): 331–44. doi:10.1177/0309132507077082.
- Kleinman, Alexis. "Google Recognizes Palestine." *Huffington Post*, May 2, 2012. http://www.huffingtonpost.com/2013/05/02/google-palestine_n_3203363.html.
- Klochko, Deborah, Andy Grundberg, and Calif.) Museum of Photographic Arts (San Diego. *Streetwise : Masters of 60s Photography*. San Francisco: Modernbook Editions, 2010.
- Knabb, Ken. *Situationist International Anthology*. Berkeley Calif.: Bureau of Public Secrets, 1981.
- Kompf, Michael. "Information and Communications Technology (ICT) and the Seduction of Knowledge, Teaching, and Learning: What Lies Ahead for Education." *Curriculum Inquiry* 35, no. 2 (July 1, 2005): 213–33.
- Krause, Linda. *Global Cities : Cinema, Architecture, and Urbanism in a Digital Age*. New Brunswick N.J.: Rutgers University Press, 2003.
- Krause, Ralf, and Marc Rolli. "Micropolitical Associations." In *Deleuze and Politics*, edited by Ian Buchanan and Nicholas Thoburn. Deleuze Connections. Edinburgh: Edinburgh University Press, 2008.
- Krygier, John, Denis Wood, and C. R Perkins. "Ce N'est Pas Le Monde." In *Rethinking Maps: New Frontiers in Cartographic Theory*. London; New York: Routledge, 2009.
- Kuhn, Luise. "Aram Bartholl at [DAM] Berlin| Artconnect Berlin." *Blog | Artconnect Berlin*. Accessed June 20, 2014. <http://blog.artconnectberlin.com/2012/02/26/aram-bartholl-at-dam-berlin/>.
- Kunstler, James Howard. "KunstlerCast #104: Virtual Tour of Baltimore – Part 1." The KunstlerCast. Accessed June 20, 2014. http://kunstlercast.com/shows/kunstlercast_104_virtual_tour_baltimore_part_1.html.
- . "KunstlerCast #105: Virtual Tour of Baltimore – Part 2." The Kunstler Cast. Accessed June 20, 2014. http://kunstlercast.com/shows/kunstlercast_105_virtual_tour_baltimore_part_2.html.
- . "KunstlerCast #56: Virtual Walking Tour of Paris." The KunstlerCast. Accessed June 20, 2014. http://kunstlercast.com/shows/kunstlercast_56_virtual_tour_paris.html.
- . "KunstlerCast #65: Virtual Tour of Detroit." The KunstlerCast. Accessed June 20, 2014. http://kunstlercast.com/shows/kunstlercast_65_virtual_tour_detroit.html.
- Kurt Squire. "Mobile media learning: multiplicities of place." *On the Horizon* 17, no. 1 (2009): 70–80.
- Lacan, Jacques. *The Four Fundamental Concepts of Psycho-Analysis*. 1st American ed. New York: Norton, 1978.
- Lancashire, David. "Code, Culture and Cash: The Fading Altruism of Open Source Development." *First Monday* 6, no. 12 (December 3, 2001). doi:10.5210/fm.v6i12.904.
- Lanier, Jaron. *You Are Not a Gadget: A Manifesto*. New York: Alfred A. Knopf, 2010.
- Larner, Wendy. "Neo-Liberalism: Policy, Ideology, Governmentality." *Studies In Political Economy -Ontario- Carleton University-*, no. 63 (2000): 5–26.
- . "Neo-Liberalizing Spaces and Subjectivities: Reinventing New Zealand Universities." *Organization* 12, no. 6 (2005): 843–62.

- Latour, Bruno. "Drawing Things Together." In *The Map Reader Theories of Mapping Practice and Cartographic Representation*, edited by Martin Dodge, Rob Kitchin, and C. R Perkins. Chichester, West Sussex; Hoboken, NJ: Wiley, 2011.
<http://dx.doi.org/10.1002/9780470979587>.
- . *Reassembling the Social: An Introduction to Actor-Network-Theory*. Oxford; New York: Oxford University Press, 2007.
- . *Science in Action: How to Follow Scientists and Engineers through Society*. Cambridge, Mass.: Harvard University Press, 1987.
- Lavin, Sylvia. "Review: Scenes from the Suburbs; The Wilderness Downtown." *Journal of the Society of Architectural Historians* 70, no. 3 (2011): 398–400.
- Lavoie, Andrew. "The Online Zoom Lens: Why Internet Street-Level Mapping Technologies Demand Reconsideration of the Modern-Day Tort Notion of 'Public Privacy'." *Georgia Law Review* 43, no. 2 (2009): 575–616.
- Lawson, Stephen. "Yahoo Licenses Technology to Google." *PCWorld*, August 10, 2004.
<http://www.pcworld.com/article/117305/article.html>.
- Lazaroff, Tovah. "Elkin Asks Google to Rethink 'Palestine' Tagline." *www.JPost.com*. Accessed October 31, 2013. <http://www.jpost.com/National-News/Elkin-asks-Google-to-rethink-Palestine-tagline-312166>.
- Lazzarato, Maurizio. "Neoliberalism in Action." *Theory, Culture and Society* 26, no. 6 (2009): 109–33.
- Lee, Micky. "A Political Economic Critique of Google Maps and Google Earth." *Information, Communication & Society* 13, no. 6 (2010): 909–28.
- Lefebvre, Henri. *Henri Lefebvre : Key Writings*. New York: Continuum, 2003.
- . *The Production of Space*. Oxford OX UK ;;Cambridge Mass. USA: Blackwell, 1991.
- . *The Urban Revolution*. Minneapolis: University of Minnesota Press, 2003.
- Lerner, Josh, and Jean Tirole. "Some Simple Economics of Open Source." *The Journal of Industrial Economics* 50, no. 2 (2002): 197–234.
- Lessig, Lawrence. *Code and Other Laws of Cyberspace*. New York: Basic Books, 1999.
- . *The Future of Ideas: The Fate of the Commons in a Connected World*. New York: Random House, 2001.
- . *Code*. New York: Basic Books, 2006.
- Leszczynski, Agnieszka. "Situating the Geoweb in Political Economy." *Progress in Human Geography* 36, no. 1 (2012): 72–89.
- Levesque, Michelle. "Fundamental Issues with Open Source Software Development (originally Published in Volume 9, Number 4, April 2004)." *First Monday* 0, no. 0 (October 3, 2005). doi:10.5210/fm.v0i0.1484.
- Lévinas, Emmanuel. *Totality and Infinity: an Essay on Exteriority*. Pittsburgh: Duquesne University Press, 1969.
- Levy, Shawn. *The Internship*. Comedy, 2013.
- Levy, Steven. *In the Plex: How Google Thinks, Works, and Shapes Our Lives*. New York: Simon & Schuster, 2011.
- Limer, Eric. "All the Stuff That Will Happen on the Internet in the Next 60 Seconds." *Gizmodo*. Accessed June 19, 2014. <http://gizmodo.com/all-the-stuff-that-will-happen-on-the-internet-in-the-n-509886669>.
- Linz, Juan J. *Totalitarian and Authoritarian Regimes*. Boulder, CO: Lynne Rienner Publishers, 2000.

- Lister, Martin. *New Media a Critical Introduction*. 2nd ed. Milton Park Abingdon Oxon ; New York N.Y.: Routledge, 2009.
- “LiveLeak.com - Cars Race Using Google Street View.” Accessed June 24, 2014. http://www.liveleak.com/view?i=89d_1292269581.
- Loader, Brian D, and Dan Mercea. “Networking Democracy?” *Information, Communication & Society* 14, no. 6 (2011): 757–69.
- Lutton, Matt. “Some Thoughts on Google Street View and World Press Photo.” *Dvafoto*, February 12, 2011. <http://www.dvafoto.com/2011/02/some-thoughts-on-google-street-view-and-world-press-photo/>.
- Lynch, Kevin. *The Image of the City*. Cambridge, Mass.: Technology Press, 1960.
- Madrigal, Alexis. “How Google Builds Its Maps—and What It Means for the Future of Everything.” *The Atlantic*, September 6, 2012. <http://www.theatlantic.com/technology/archive/2012/09/how-google-builds-its-maps-and-what-it-means-for-the-future-of-everything/261913/>.
- Maguire, Eleanor A., David G. Gadian, Ingrid S. Johnsrude, Catriona D. Good, John Ashburner, Richard S. J. Frackowiak, and Christopher D. Frith. “Navigation-Related Structural Change in the Hippocampi of Taxi Drivers.” *Proceedings of the National Academy of Sciences of the United States of America* 97, no. 8 (April 11, 2000): 4398–4403.
- Maguire, Eleanor A., Katherine Woollett, and Hugo J. Spiers. “London Taxi Drivers and Bus Drivers: A Structural MRI and Neuropsychological Analysis.” *Hippocampus* 16, no. 12 (2006): 1091–1101. doi:10.1002/hipo.20233.
- Mallonee, Laura. “What Happens When Everyone Makes Maps?” Accessed January 24, 2014. <http://www.theatlanticcities.com/design/2013/07/what-happens-when-everyone-makes-maps/6225/>.
- Maltais, Michelle. “Google Art Project Expands to Include the Getty Museum, LACMA.” *Los Angeles Times*, April 4, 2012. <http://articles.latimes.com/2012/apr/04/business/la-fi-tn-google-art-project-getty-lacma-20120403>.
- Manjoo, Farhad. “Grocery Deliveries in Sharing Economy.” *The New York Times*, May 21, 2014. <http://www.nytimes.com/2014/05/22/technology/personaltech/online-grocery-start-up-takes-page-from-sharing-services.html>.
- Manne, Geoffrey, and William Rinehart. “The Market Realities That Undermined the FTC’s Antitrust Case Against Google.” *Harvard Journal of Law & Technology*, Occasional Paper Series, July 2013. <http://jolt.law.harvard.edu/antitrust/articles/ManneRinehart.pdf>.
- Manovich, Lev. *Software Takes Command*. New York: Bloomsbury, 2013.
- . *The Language of New Media*. 1st MIT Press pbk. ed. Cambridge Mass.: MIT Press, 2002.
- Manser, Ann. “Digital Humanities.” *UDaily*. Accessed February 24, 2014. <http://www.udel.edu/udaily/2014/oct/digital-humanities-102113.html>.
- Map Together with Google Map Maker*, 2011. http://www.youtube.com/watch?v=qyXTvj-Mm9k&feature=youtube_gdata_player.
- Marcel, Gabriel. *The Mystery of Being*. London: Harvill Press, 1900.
- Mason, Wyatt. “Scanners Gone Wild.” *New York Times Magazine*, December 5, 2010, 15.
- Massey, Doreen. *World City*. Cambridge, UK; Malden MA: Polity, 2007.
- Massumi, Brian. *A Shock to Thought : Expressions after Deleuze and Guattari*. London; New York: Routledge, 2002.

- Maturana, Humberto R, and Francisco J Varela. *Autopoiesis and Cognition: The Realization of the Living*. Dordrecht [etc.]: D. Reidel, 1972.
- Matyszczyk, Chris. "Google Street View Shoots Same Woman 43 Times." *CNET*. Accessed June 6, 2014. <http://www.cnet.com/news/google-street-view-shoots-same-woman-43-times/>.
- McClendon, Brian. "The Never-Ending Quest for the Perfect Map." *Official Google Blog*. Accessed June 21, 2014. <http://googleblog.blogspot.com/2012/06/never-ending-quest-for-perfect-map.html>.
- McGowen, Jana. "Your Boring Life, Now Available Online: Analyzing Google Street View and the Right to Privacy." *Texas Wesleyan Law Review* 16, no. 3 (2010): 477–94.
- McLuhan, Marshall, and Lewis H Lapham. *Understanding Media: The Extensions of Man*. Cambridge, Mass.: MIT Press, 1994.
- Merleau-Ponty, Maurice. *Phenomenology of Perception*. New York: Humanities Press, 1962.
- . *The Merleau-Ponty Aesthetics Reader : Philosophy and Painting*. Evanston, Ill.: Northwestern University Press, 1993.
- Messenger, Stephen. "Google Begins Mapping For Street View in the Amazon." *TreeHugger*, August 18, 2011. <http://www.treehugger.com/clean-technology/google-begins-mapping-for-street-view-in-the-amazon.html>.
- Michael Wolf *Speaks of His Google Street View Work*, 2011. <http://vimeo.com/20667709>.
- Micusik, B., and J. Kosecka. "Piecewise Planar City 3D Modeling from Street View Panoramic Sequences." In *IEEE Conference on Computer Vision and Pattern Recognition, 2009. CVPR 2009*, 2906–2912, 2009. doi:10.1109/CVPR.2009.5206535.
- Miller, Claire Cain. "In the San Francisco Bay, a Mysterious Google Barge." *Bits Blog*. Accessed October 30, 2013. <http://bits.blogs.nytimes.com/2013/10/29/in-the-san-francisco-bay-a-mysterious-google-barge/>.
- Miller, Claire Cain, and Julie Bosman. "Siding With Google, Judge Says Book Search Does Not Infringe Copyright." *The New York Times*, November 14, 2013, sec. Business Day / Media & Advertising. <http://www.nytimes.com/2013/11/15/business/media/judge-sides-with-google-on-book-scanning-suit.html>.
- MIT. "How Google Cracked House Number Identification in Street View." *MIT Technology Review*, January 6, 2014. <http://www.technologyreview.com/view/523326/how-google-cracked-house-number-identification-in-street-view/>.
- Mitchell, W. *Picture Theory : Essays on Verbal and Visual Representation*. Chicago: University of Chicago Press, 1994.
- . *What Do Pictures Want? : The Lives and Loves of Images*. Chicago: University of Chicago Press, 2005.
- Mohl, Robert. "Cognitive Space in the Interactive Movie Map: An Investigation of Spatial Learning in Virtual Environments," 1981.
- "MoMA | The Collection | Eugène Atget (French, 1857–1927)." *MoMA.org*. Accessed March 4, 2014. http://www.moma.org/collection/artist.php?artist_id=229.
- Morozov, Evgeny. *The Net Delusion: The Dark Side of Internet Freedom*. New York, NY: PublicAffairs, 2011.
- Moyer, Edward. "'Google Palestine' Label Stirs Both Sides of Israeli-Palestinian Conflict." *CNET*. Accessed October 27, 2013. http://news.cnet.com/8301-1023_3-57582898-93/google-palestine-label-stirs-both-sides-of-israeli-palestinian-conflict/.

- . “Street View Gets Groovified with Stereographic Animations.” *CNET*, June 1, 2012. http://news.cnet.com/8301-17938_105-57445111-1/street-view-gets-groovified-with-stereographic-animations/.
- Mugerauer, Robert. In *Rethinking Nature: Essays in Environmental Philosophy*, edited by Bruce V Foltz and Robert Frodeman. Bloomington, IN: Indiana University Press, 2004.
- Mulvey, Laura. *Visual Pleasure and Narrative Cinema*. Oxford: Oxford University Press, 1975.
- Munir, Kamal. “The Social Construction of Events: A Study of Institutional Change in the Photographic Field.” *Organization Studies* 26, no. 1 (2005): 93–112.
- Munir, Kamal, and Nelson Phillips. “The Birth of the ‘Kodak Moment’: Institutional Entrepreneurship and the Adoption of New Technologies.” *Organization Studies* 26, no. 11 (2005): 1665–87.
- Münzer S, Zimmer HD, Baus J. “Navigation Assistance: A Trade-off between Wayfinding Support and Configural Learning Support.” *Journal of Experimental Psychology. Applied* 18, no. 1 (2012): 18–37.
- Münzer, Stefan, Hubert D. Zimmer, Maximilian Schwalm, Jörg Baus, and Ilhan Aslan. “Computer-Assisted Navigation and the Acquisition of Route and Survey Knowledge.” *Journal of Environmental Psychology* 26, no. 4 (December 2006): 300–308. doi:10.1016/j.jenvp.2006.08.001.
- Newhall, Beaumont. *The History of Photography: From 1839 to the Present*. New York; Boston: Museum of Modern Art; Distributed by New York Graphic Society Books, 1982.
- Neyfakh, Leon. “Do Our Brains Pay a Price for GPS? - The Boston Globe.” *BostonGlobe.com*, August 18, 2013. <https://www.bostonglobe.com/ideas/2013/08/17/our-brains-pay-price-for-gps/d2Tnvo4hiWjuybid5UhQVO/story.html>.
- Niepcce, Joseph Nicephore. “Memoire on the Heliograph.” In *Classic Essays on Photography*, edited by Alan Trachtenberg. New Haven, Conn.: Leete’s Island Books, 1980.
- Nietzsche, Friedrich. *Untimely Meditations*. Cambridge [Cambridgeshire] ; New York: Cambridge University Press, 1983.
- Nightly News: Examining Google’s Privacy Policy*. Accessed October 27, 2013. <http://www.nbcnews.com/video/nightly-news/46596921>.
- Nitrd.gov. “President’s Information Technology Advisory Committee Panel on Open Source Software for High End Computing Developing Open Source Software to Advance High End Computing,” October 2000. <http://www.nitrd.gov/Pubs/pitac/pres-oss-11sep00.pdf>.
- O’Reilly, Tim. “What Is Web 2.0.” *O’Reilly*. Accessed June 21, 2014. <http://oreilly.com/pub/a/web2/archive/what-is-web-20.html?page=1>.
- Odgers, Candice L, Avshalom Caspi, Christopher J Bates, Robert J Sampson, and Terrie E Moffitt. “Systematic Social Observation of Children’s Neighborhoods Using Google Street View: A Reliable and Cost-Effective Method.” *Journal of Child Psychology and Psychiatry* 53, no. 10 (2012): 1009–17.
- Olanoff, Drew. “With The Help of Citizen Cartographers, Google Launches More Detailed Map Of North Korea.” *TechCrunch*. Accessed March 2, 2014. <http://techcrunch.com/2013/01/28/with-the-help-of-citizen-cartographers-google-launches-more-detailed-map-of-north-korea/>.
- Olea PP, and Mateo-Tomás P. “Assessing Species Habitat Using Google Street View: A Case Study of Cliff-Nesting Vultures.” *PloS One* 8, no. 1 (2013).

- Olsen, Stefanie. "Google, Yahoo Bury the Legal Hatchet - CNET News." *CNET*. Accessed December 26, 2013. http://news.cnet.com/Google,-Yahoo-bury-the-legal-hatchet/2100-1024_3-5302421.html.
- Ong, Aihwa. "Neoliberalism as a Mobile Technology." *TRAN Transactions of the Institute of British Geographers* 32, no. 1 (2007): 3–8.
- Ong, Aihwa, and Stephen J Collier. "Global Assemblages, Anthropological Problems." In *Global Assemblages: Technology, Politics, and Ethics as Anthropological Problems*, edited by Aihwa Ong and Stephen J. Collier. Malden, MA: Blackwell Pub., 2005.
- Oremus, Will. "Computer Learns to Distinguish Paris From London (But Can't Tell U.S. Cities Apart)." *Slate*, August 8, 2012. http://www.slate.com/blogs/future_tense/2012/08/08/carnegie_mellon_google_street_view_study_what_makes_paris_look_like_paris_.html.
- Oulasvirta, Antti. "The Fragmentation of Attention in Mobile Interaction, and What to Do with It." *Interactions*, no. november + december, 2005 (n.d.).
- Pacanowsky, Michael E., Nick O'Donnell Trujillo, and Nick O'Donnell-Trujillo. "Organizational Communication as Cultural Performance." *Communication Monographs* 50, no. 2 (June 1983): 126–47. doi:Article.
- Parikka, Jussi. *What Is Media Archaeology?* Cambridge, UK; Malden, MA: Polity Press, 2012.
- Pasquinelli, Matteo. "Google's PageRank Algorithm: A Diagram of Cognitive Capitalism and the Rentier of the Common Intellect." In *Deep Search: The Politics of Search beyond Google*, edited by Konrad Becker and Felix Stalder. Innsbruck; Piscataway, N.J.: Studien Verlag ; Distributed in North America and South America ... by Transaction Publishers, 2009.
- Pearson, Nolan. "Insider Selling: Sergey Brin Sells 83,334 Shares of Google Stock (GOOG)." *WKRB News*. Accessed December 28, 2013. <http://www.wkrb13.com/markets/235455/insider-selling-sergey-brin-sells-83334-shares-of-google-stock-goog/>.
- Pearson, Sophia and Bob Van Voris. "Google Wins Dismissal of Suit Over Digital Books Project." *Bloomberg*. Accessed December 26, 2013. <http://www.bloomberg.com/news/2013-11-14/google-wins-summary-judgment-in-digital-books-copyright-case.html>.
- Peck, Jamie. *Constructions of Neoliberal Reason*. Oxford; New York: Oxford University Press, 2010.
- . "Postneoliberalism and Its Malcontents." *Antipode* 41 (2010): 94–116.
- Peck, Jamie, and Adam Tickell. "Apparitions of Neoliberalism: Revisiting 'Jungle Law Breaks Out.'" *Area* 44, no. 2 (2012): 245–49. doi:10.1111/j.1475-4762.2012.01091.x.
- . "Jungle Law Breaks out: Neoliberalism and Global-Local Disorder." *Area* 26, no. 4 (December 1, 1994): 317–26.
- Pedal to Find Your Dream Home with Google Maps*, 2011.
http://www.youtube.com/watch?v=0DE14kqiy-0&feature=youtube_gdata_player.
- "Peer Production as Neoliberalism," n.d.
http://p2pfoundation.net/Peer_Production_as_Neoliberalism.
- Peppetta, Mvelase. "A 'touch' Reveals the Artistic Side of Google Street View | Memeburn." Accessed June 19, 2014. <http://memeburn.com/2011/11/a-%e2%80%99touch%-e2%80%99-reveals-the-artistic-side-of-google-street-view/>.
- Perkins, C, M Dodge, and Themed Issue: The "view from nowhere"? Spatial politics and cultural significance of high-resolution satellite imagery. "Satellite Imagery and the Spectacle of Secret Spaces." *Geoforum* 40, no. 4 (2009): 546–60.

- Pinning the Queen's History*, 2012. http://www.youtube.com/watch?v=ACIF7V-xb7Q&feature=youtube_gdata_player.
- "Pinning the Queen's History." *History Pin*, n.d. <http://www.historypin.com/project/5-DiamondJubilee/>.
- "'Places of Isolation': Artist Explores Street View's Loneliest Lanes." *Spiegel Online*, November 24, 2011. <http://www.spiegel.de/international/zeitgeist/places-of-isolation-artist-explores-street-view-s-loneliest-lanes-a-799587.html>.
- Platt, Susan. "Documentary Photography Meets Google Street View and Twitter." *ART and POLITICS NOW - Susan Noyes Platt, PhD - Susan Noyes Platt, PhD - Art Historian & Critic*. Accessed June 20, 2014. <http://www.artandpoliticsnow.com/2012/06/documentary-photography-meets-google-street-view-and-twitter/>.
- Poe, Edgar Allan. "The Daguerrotype." In *Classic Essays on Photography*, edited by Alan Trachtenberg. New Haven, Conn.: Leete's Island Books, 1980.
- Pogue, David. "Yes, There's a New iPhone. But That's Not the Big News." *Pogue's Posts Blog*. Accessed June 21, 2014. <http://pogue.blogs.nytimes.com/2013/09/17/yes-theres-a-new-iphone-but-thats-not-the-big-news/>.
- Poulsen, Kevin. "EFF Privacy Advocate Sighted in Google Street View | Threat Level | Wired.com." *Threat Level*. Accessed March 3, 2014. http://www.wired.com/threatlevel/2007/06/eff_privacy_adv/.
- Priest, Stephen. *Merleau-Ponty*. London ; New York: Routledge, 1998.
- Prosser, William L. "Privacy." *California Law Review* 48, no. 3 (August 1960): 383.
- Protevi, John. "A Problem of Pure Matter : Fascist Nihilism in A Thousand Plateaus." In *Nihilism Now!: Monsters of Energy*, edited by Keith Ansell-Pearson and Diane Morgan. New York: St. Martin's Press, 2000.
- . *Political Affect: Connecting the Social and the Somatic*. Minneapolis, MN: University of Minnesota Press, 2009.
- Purtova, Nadezhda, and Arnold Roosendaal. "Whether a Photograph Taken for Google's Street View Can Be Used as Evidence in a Criminal Process: A Case Note." *Digital Evidence and Electronic Signature Law Review* 6 (2009): 187.
- Rafman, Jon. "IMG MGMT: The Nine Eyes of Google Street View." *Art F City*. Accessed June 19, 2014. <http://artfcity.com/2009/08/12/img-mgmt-the-nine-eyes-of-google-street-view/>.
- Rakower, Lauren H. "Blurred Line: Zooming in on Google Street View and the Global Right to Privacy." *Brooklyn Journal of International Law* 37 (2012 2011): 317.
- Rancière, Jacques. *The Emancipated Spectator*. London: Verso, 2009.
- . *The Future of the Image*. English ed. London; New York: Verso, 2007.
- . *The Politics of Aesthetics : The Distribution of the Sensible*. London: Continuum, 2004.
- Ratliff, Evan. "Google Maps Is Changing the Way We See the World." *WIRED*. Accessed January 24, 2014. http://www.wired.com/techbiz/it/magazine/15-07/ff_maps?currentPage=all.
- Raymond, Eric. "Homesteading the Noosphere." *First Monday* 3, no. 10 (October 5, 1998). doi:10.5210/fm.v2i4.519.
- . "The Cathedral and the Bazaar." *Knowledge, Technology & Policy* 12, no. 3 (1999): 23–49.
- Reagle, Joseph Michael. *Good Faith Collaboration the Culture of Wikipedia*. Cambridge, Mass.: MIT Press, 2010. <http://site.ebrary.com/id/10433726>.

- Richmond, Shane. "How Google Crossed the Creepy Line." *Telegraph.co.uk*. Accessed May 9, 2011. <http://www.telegraph.co.uk/technology/google/8086191/How-Google-crossed-the-creepy-line.html>.
- Ritzer, George. "Prosumption – George Ritzer." Accessed June 21, 2014. <http://georgeritzer.wordpress.com/category/prosumption/>.
- Ritzer, George, and Nathan Jurgenson. "Production, Consumption, Prosumption." *Journal of Consumer Culture* 10, no. 1 (2010): 13–36.
- "Robbert Flick." *LENSCRATCH*. Accessed June 25, 2014. <http://lenscratch.com/2010/05/robbert-flick/>.
- Robin Hewlett, *Artist/Organizer - 3Arts Artist Awards 2010*, 2010. http://www.youtube.com/watch?v=duAdENVyyOg&feature=youtube_gdata_player.
- Robinson, Henry Peach. "Idealism, Realism, Expressionism." In *Classic Essays on Photography*, edited by Alan Trachtenberg. New Haven, Conn.: Leete's Island Books, 1980.
- Rodowick, David. *Afterimages of Gilles Deleuze's Film Philosophy*. Minneapolis: University of Minnesota Press, 2010.
- . *Gilles Deleuze's Time Machine*. Durham NC: Duke University Press, 1997.
- . *Reading the Figural, Or, Philosophy after the New Media*. Durham: Duke University Press, 2001.
- Rose, Nikolas. "Government, Authority and Expertise in Advanced Liberalism." *Economy and Society* 22, no. 3 (1993): 283–99. doi:10.1080/03085149300000019.
- Rose-Redwood, Reuben. "With Numbers in Place: Security, Territory, and the Production of Calculable Space." *Annals of the Association of American Geographers* 102, no. 2 (2012): 295–319.
- Runcie, Charlotte. "Who Was the Woman Who 'Invented' the London A-Z?" *Telegraph.co.uk*, 14:11, sec. theatre. <http://www.telegraph.co.uk/culture/theatre/10660172/Who-was-the-woman-who-invented-the-London-A-Z.html>.
- Rundle, Andrew G., Michael D.M. Bader, Catherine A. Richards, Kathryn M. Neckerman, and Julien O. Teitler. "Using Google Street View to Audit Neighborhood Environments." *American Journal of Preventive Medicine* 40, no. 1 (January 2011): 94–100. doi:10.1016/j.amepre.2010.09.034.
- Sadler, Simon. *The Situationist City*. Cambridge Mass.: MIT Press, 1998.
- Saito, Keiko, and Robin Spence. "Mapping Urban Building Stocks for Vulnerability Assessment – Preliminary Results." *International Journal of Digital Earth* 4 (November 2, 2011): 117–30. doi:10.1080/17538947.2010.513114.
- Salesses, Philip, Schechtner, and Cesar Hidalgo. "The Collaborative Image of The City: Mapping the Inequality of Urban Perception." *PLoS ONE* 8, no. 7 (2013).
- Sampson, Robert J, and Stephen W Raudenbush. "Systematic Social Observation of Public Spaces: A New Look at Disorder in Urban Neighborhoods." *The American Journal of Sociology* 105, no. 3 (1999): 603–51.
- Sartre, Jean-Paul. *Being and Nothingness: an Essay on Phenomenological Ontology*. New York: Philosophical Library, 1956.
- Savage, Cary. *Captured by Google Street View as Ideological Digital Apparatus*, 2008.
- Savage, Michael. *Urban Sociology, Capitalism, and Modernity*. New York: Continuum, 1993.
- Scarritt, Arthur. "Essentializing Authoritarianism: Implementing Neoliberalism in Highland Peru." *The Applied Anthropologist* 30, no. 1–2 (2010): 27–33.

- Schmidt, Eric, and Jared Cohen. *The New Digital Age: Reshaping the Future of People, Nations and Business*, 2013.
- Schnee, Jerome. *The Economic Impacts of the U.S. Space Program*. Rutgers University. Accessed June 20, 2014. <http://er.jsc.nasa.gov/seh/economics.html>.
- Schonfeld, Erick. "Google Chrome Shows Off What HTML5 Can Do With Arcade Fire Video." *TechCrunch*. Accessed June 20, 2014. <http://techcrunch.com/2010/08/30/google-chrome-html5-arcade-fire/>.
- Schroeder, Stan. "YouTube: 100 Hours of Video Are Uploaded to the Site Every Minute." *Mashable*, May 20, 2013. <http://mashable.com/2013/05/20/youtube-100-hours/>.
- Scott, Allen. *Social Economy of the Metropolis : Cognitive-Cultural Capitalism and the Global Resurgence of Cities*. Oxford; New York: Oxford University Press, 2008.
- "Search Me Transcript." *Onthemedial*. Accessed October 27, 2013. http://www.onthemedial.org/story/131132-search-me/transcript/?utm_source=sharedUrl&utm_media=metatag&utm_campaign=sharedUrl.
- Segall, Jordan E. "Google Street View: Walking the Line of Privacy-Intrusion upon Seclusion and Publicity Given to Private Facts in the Digital Age." *tlp Pittsburgh Journal of Technology Law and Policy* 10 (2010).
- Sekula, Allan. "The Traffic in Photographs." *Art Journal* 41, no. 1 (1981): 15–25.
- Senbel, Maged, and Sarah Church. "Design Empowerment: The Limits of Accessible Visualization Media in Neighborhood Densification." *Journal of Planning Education and Research* 31, no. 4 (2011): 423–37.
- Sennett, Richard. *Classic Essays on the Culture of Cities*. New York: Appleton-Century-Crofts, 1969.
- . *The Conscience of the Eye : The Design and Social Life of Cities*. 1st ed. New York: Knopf; Distributed by Random House, 1990.
- . *The Fall of Public Man*. 1st ed. New York: Knopf, 1977.
- Shiel, Mark. *Cinema and the City : Film and Urban Societies in a Global Context*. Oxford; Malden, Mass.: Blackwell, 2001.
- Shirky, Clay. *Cognitive Surplus: How Technology Makes Consumers into Collaborators*. New York: Penguin Books, 2011.
- Shram, Jamie. "Google Street View Helps Capture Drug-Ring Suspects." *New York Post*. Accessed October 22, 2012. http://www.nypost.com/p/news/local/brooklyn/druggies_snared_in_google_web_QZgVELDZvvnvGy6BMZlu9K.
- Sinha, Ashish. "Google Shows Different Maps to Indians and Chinese [Arunachal Pradesh Controversy]." *NextBigWhat.com*. Accessed October 27, 2013. <http://www.nextbigwhat.com/google-arunachal-pradesh-controversy-different-map-versions-297/>.
- Siu, Eric. "24 Eye-Popping SEO Statistics." *Search Engine Journal*. Accessed May 17, 2014. <http://www.searchenginejournal.com/24-eye-popping-seo-statistics/42665/>.
- Smith, Aaron, Kay Leahman Schlozman, Sidney Verba, and Brady, Henry. *The Internet and Civic Engagement*. Internet and American Life. Pew Internet, September 2009. <http://www.pewinternet.org/files/old-media/Files/Reports/2009/The%20Internet%20and%20Civic%20Engagement.pdf>.

- Smith, Aaron, Kay Lehman Schlozman, Sidney Verba, and Henry Brady. "The Internet and Civic Engagement." *Pew Research Center's Internet & American Life Project*. Accessed June 20, 2014. <http://www.pewinternet.org/2009/09/01/the-internet-and-civic-engagement/>.
- Smith, Catharine. "Google Street View Snaps Photo Of Naked Florida Woman (PHOTOS)." *Huffington Post*. Accessed February 23, 2014. http://www.huffingtonpost.com/2011/09/12/google-street-view-naked-florida-woman_n_958363.html.
- Smith, Cooper. "Facebook Users Are Uploading 350 Million New Photos Each Day." *Business Insider*. Accessed February 27, 2014. <http://www.businessinsider.com/facebook-350-million-photos-each-day-2013-9>.
- Smith, Michael. *Transnational Urbanism : Locating Globalization*. Malden, Mass.: Blackwell Publishers, 2001.
- Smyth, Diana, and Oliver Laurent. "Michael Wolf Welcomes World Press Photo Controversy." *British Journal of Photography*, March 5, 2011. <http://www.bjp-online.com/british-journal-of-photography/report/2031603/michael-wolf-welcomes-world-press-photo-controversy>.
- Sondrol, Paul C. "Totalitarian and Authoritarian Dictators: A Comparison of Fidel Castro and Alfredo Stroessner." *Journal of Latin American Studies* 23, no. 3 (October 1, 1991): 599–620.
- Sontag, Susan. *On Photography*. New York: Farrar, Straus and Giroux, 1977.
- Sparke, Matthew. "Political Geography: Political Geographies of Globalization." *Progress in Human Geography* 30, no. 3 (2006).
- Spinoza, Benedictus de, E. M. Curley, and Benedictus de Spinoza. *A Spinoza reader: the Ethics and other works*. Princeton, N.J.: Princeton University Press, 1994.
- Spreeuwenberg, Kimberley, and Thomas Poell. "Android and the Political Economy of the Mobile Internet: A Renewal of Open Source Critique." *First Monday* 17, no. 7 (June 22, 2012). <http://firstmonday.org/ojs/index.php/fm/article/view/4050>.
- Staff, and agencies. "Google Books Wins Case against Authors over Putting Works Online." *The Guardian*, November 14, 2013, sec. Books. <http://www.theguardian.com/books/2013/nov/14/google-books-wins-case-authors-online>.
- Stafford, Marla R, and Ronald J Faber. *Advertising, Promotion, and New Media*. Armonk, NY.: M.E. Sharpe, 2005.
- Stalder, Felix. "The End of Privacy as a Triumph of Neoliberalism." *Telepolis*, May 12, 1999. <http://felix.openflows.com/html/endofprivacy.html>.
- Stanford, and Ca 94305.723-2300. "Historical AAA Maps of California Find Their Way to Stanford Library," March 17, 2009. <http://news.stanford.edu/news/2009/march18/aaa-maps-donation-031809.html>.
- Starr, Benjamin. "Beauty Captured By Google Street View." *Visual News*. Accessed June 19, 2014. <http://www.visualnews.com/2011/11/22/beauty-captured-by-google-street-view/>.
- Stearns, Josh. "What the Arcade Fire's Wilderness Downtown Experiment Can Teach Journalism." *Groundswell*. Accessed June 20, 2014. <http://stearns.wordpress.com/2010/09/03/what-the-arcade-fires-wilderness-downtown-experiment-can-teach-journalism/>.
- Steeves, James. *Imagining Bodies : Merleau-Ponty's Philosophy of Imagination*. Pittsburgh Pa.: Duquesne University Press, 2004.

- “Stereographic Projection | Colossal.” Accessed October 22, 2012.
<http://www.thisiscolossal.com/tags/stereographic-projection/>.
- Strachan, Lindsey A. “Re-Mapping Privacy Law: How the Google Maps Scandal Requires Tort Law Reform.” *Richmond Journal of Law and Technology* 17 (2011 2010): 1.
- Street With A View - a Look inside*, 2008.
http://www.youtube.com/watch?v=UnHWokZrVd4&feature=youtube_gdata_player.
- Streeter, Thomas. *The Net Effect: Romanticism, Capitalism, and the Internet*. New York: New York University Press, 2011.
- Streitfeld, David. “Court Says Privacy Case Can Proceed vs. Google.” *The New York Times*, September 10, 2013, sec. Technology. <http://www.nytimes.com/2013/09/11/technology/court-says-privacy-case-can-proceed-vs-google.html>.
- Stross, Randall E. *Planet Google: One Company's Audacious Plan to Organize Everything We Know*. New York: Free Press, 2008.
- Sturken, Marita. *Practices of Looking: An Introduction to Visual Culture*. 2nd ed. New York: Oxford University Press, 2009.
- Sui, Daniel Z. “Visuality, Aurality, and Shifting Metaphors of Geographical Thought in the Late Twentieth Century.” *Annals of the Association of American Geographers* 90, no. 2 (2000): 322–43.
- Sui, Daniel Z, Sarah Elwood, and Michael F Goodchild. *Crowdsourcing Geographic Knowledge Volunteered Geographic Information (VGI) in Theory and Practice*. Dordrecht; New York: Springer, 2013. <http://dx.doi.org/10.1007/978-94-007-4587-2>.
- Snyder, John P. “Emergence of Map Projections, from Flattening the Earth: Two Thousand Years of Map Projections.” In *The Map Reader*, edited by Martin Dodge, Rob Kitchin, and Chris Perkins, 164–69. John Wiley & Sons, Ltd, 2011.
<http://onlinelibrary.wiley.com.offcampus.lib.washington.edu/doi/10.1002/9780470979587.ch23/summary>.
- Take Action: Add Your Voice to Keep the Internet #freeandopen*, 2012.
http://www.youtube.com/watch?v=z-lwA9GJ1e0&feature=youtube_gdata_player.
- Talbot, William Henry Fox. “A Brief Historical Sketch of the Invention of Art.” In *Classic Essays on Photography*, edited by Alan Trachtenberg. New Haven, Conn.: Leete's Island Books, 1980.
- Tansel, Cemal Burak. “The Gezi Park Occupation: Confronting Authoritarian Neoliberalism.” *openDemocracy*. Accessed October 27, 2013. <http://www.opendemocracy.net/cemal-burak-tansel/gezi-park-occupation-confronting-authoritarian-neoliberalism>.
- Tapscott, Don, and Anthony D Williams. *Wikinomics: How Mass Collaboration Changes Everything*. New York: Portfolio, 2006.
- Tapscott, Don, and Anthony D. Williams. “Innovation in the Age of Mass Collaboration.” *BusinessWeek: Innovation_and_design*, February 1, 2007.
<http://www.businessweek.com/stories/2007-02-01/innovation-in-the-age-of-mass-collaborationbusinessweek-business-news-stock-market-and-financial-advice>.
- Taylor, B.T, P Fernando, A.E Bauman, A Williamson, J.C Craig, and S Redman. “Measuring the Quality of Public Open Space Using Google Earth.” *American Journal of Preventive Medicine* 40, no. 2 (2011): 105–12.

- Tellman, Ute. "The Economic beyond Governmentality: The Limits of Conduct." In *Governmentality Current Issues and Future Challenges*, edited by Ulrich Bröckling, Susanne Krasmann, and Thomas Lemke. New York: Routledge, 2011. <http://site.ebrary.com/id/10422018>.
- Terranova, Tiziana. "Free Labor Producing Culture for the Digital Economy." *Social Text* 18, no. 2 (2000).
- "The BA Ad Right up Your Street: Flight Video Allows Users to Personalise Background to Show Planes Taxiing Past Their Homes." *Mail Online*. Accessed June 24, 2014. <http://www.dailymail.co.uk/news/article-2163806/BA-ad-right-street-Flight-video-allows-users-personalise-background-planes-taxiing-past-residential-houses.html>.
- "The Enchanting World of Cinemascope Aaron Hobson." *ABC News Blogs*. Accessed June 19, 2014. <http://abcnews.go.com/blogs/technology/2011/11/the-enchanting-world-of-cinemascope-aaron-hobson/>.
- "The End of Privacy." *The Economist*, April 29, 1999. <http://www.economist.com/node/202103>.
- The Making of "Street With A View,"* 2008. http://www.youtube.com/watch?v=sIDGyRO6w2o&feature=youtube_gdata_player.
- "The Pencil of Nature." *Wikipedia, the Free Encyclopedia*, June 3, 2014. http://en.wikipedia.org/w/index.php?title=The_Pencil_of_Nature&oldid=540902073.
- The Wilderness Downtown by Arcade Fire - We Used To Wait*, 2010. http://www.youtube.com/watch?v=mrnn_ccnVPI&feature=youtube_gdata_player.
- Theory, The. *Address Is Approximate*, 2011. <http://vimeo.com/32397612>.
- Thrift, N. *Non-Representational Theory : Space, Politics, Affect*. Milton Park, Abingdon, Oxon; New York, NY: Routledge, 2008.
- Thrift, Nigel. "New Urban Eras and Old Technological Fears: Reconfiguring the Goodwill of Electronic Things." *Urban Studies (Routledge)* 33, no. 8 (October 1996): 1463–94. doi:Article.
- Torii, A., M. Havlena, and T. Pajdla. "From Google Street View to 3D City Models." In *2009 IEEE 12th International Conference on Computer Vision Workshops (ICCV Workshops)*, 2188–2195, 2009. doi:10.1109/ICCVW.2009.5457551.
- Trachtenberg, Alan, ed. *Classic Essays on Photography*. New Haven, Conn.: Leete's Island Books, 1980.
- Tripathy, Devidutta. "Google 'Mapathon,' Meant To 'Create Better Maps For India,' Draws Scrutiny For Police." *Huffington Post*, April 5, 2013. http://www.huffingtonpost.com/2013/04/06/google-mapathon-india_n_3018899.html.
- Turkle, Sherry. *Alone Together : Why We Expect More from Technology and Less from Each Other*. New York: Basic Books, 2011.
- . *Life on the Screen : Identity in the Age of the Internet*. New York: Simon & Schuster, 1995.
- Tyrrell, Katherine. "Google Street View and The Virtual Paintout." *The Art of the Landscape*, January 13, 2010. <http://art-landscape.blogspot.com/2010/01/google-street-view-and-virtual-paintout.html>.
- U.S. Dep't of Justice & Fed. Trade Comm'n. *Antitrust Enforcement and Intellectual Property Rights: Promoting Innovation and Competition*, April 2007. www.usdoj.gov/atr/public/hearings/ip/222655.pdf.

- Usborne, Simon. "The Man Who's Making Google Maps Smarter." *The Independent*. Accessed June 18, 2014. <http://www.independent.co.uk/life-style/gadgets-and-tech/features/the-man-whos-making-google-maps-smarter-9544478.html>.
- Vaidhyanathan, Siva. *The Googlization of Everything: (and Why We Should Worry)*. Berkeley: University of California Press, 2011.
- Vidler, Anthony. "Photourbanism: Planning the City from above and below." In *The New Blackwell Companion to the City*, edited by Gary Bridge and Sophie Watson. Malden, MA: Wiley-Blackwell, 2011.
- "Village of Euclid v. Ambler Realty Co | Casebriefs." Accessed June 20, 2014. <http://www.casebriefs.com/blog/law/property/property-law-keyed-to-cribbet/introduction-to-the-traditional-land-use-controls/village-of-euclid-v-ambler-realty-co/>.
- "Vincent Van Google: Artist Uses Street View Website to Travel the World Virtually." *Mail Online*. Accessed June 20, 2014. <http://www.dailymail.co.uk/news/article-1212494/Vincent-Van-Google-Artist-uses-Street-View-website-travel-world-virtually.html>.
- Virilio, Paul. *The Aesthetics of Disappearance*. Los Angeles CA: Semiotext, 2009.
- Vise, David A, and Mark Malseed. *The Google Story*. New York: Delacorte Press, 2005.
- Wacquant, Loïc. "Three Steps to a Historical Anthropology of Actually Existing Neoliberalism." *Social Anthropology* 20, no. 1 (2012): 66–79. doi:10.1111/j.1469-8676.2011.00189.x.
- Walker, Rob. "Ruscha Vs. Street View." *Design Observer*, August 11, 2011. <http://observatory.designobserver.com/feature/ruscha-vs-street-view/29318/>.
- Warf, Barney. "Segueways into Cyberspace: Multiple Geographies of the Digital Divide." *Journal of Planning Literature* 16, no. 1 (2001): 80–163.
- Warf, Barney, Sui, Daniel. "From GIS to Neogeography: Ontological Implications and Theories of Truth." *Annals of GIS* 16, no. 4 (2010): 197–209.
- Weber, Donald. "'Picture Head', a Response from Donald Weber." *Dvafoto*. Accessed October 24, 2013. <http://www.dvafoto.com/2011/02/picture-head-a-response-from-donald-weber/>.
- Weber, Marc. "Computer History Museum | @CHM : Going Places: A History of Google Maps with Street View." Accessed March 4, 2014. <http://www.computerhistory.org/atcm/going-places-a-history-of-google-maps-with-street-view/>.
- Weber, Steve. *The Success of Open Source*. Cambridge, MA: Harvard University Press, 2004.
- Weinsheimer, Joel. *Gadamer's Hermeneutics : A Reading of Truth and Method*. New Haven: Yale University Press, 1985.
- Wellborn, Mark. "Best New Tech for DC Real Estate Scene: Google Street View." *UrbanTurf*. Accessed June 24, 2014. http://dc.urbanturf.com/articles/blog/best_new_tech_for_dc_real_estate_scene_google_street_view/1603.
- Westerbeck, Colin, and Joel Meyerowitz. *Bystander: A History of Street Photography : With a New Afterword on Street Photography since the 1970s*. Boston: Little, Brown & Co, 2001.
- "Wii Street U Uses Google Maps to Create 'An Immersive Experience' (Video) - Slashdot." Accessed November 10, 2013. <http://slashdot.org/story/13/05/30/1731252/wii-street-u-uses-google-maps-to-create-an-immersive-experience-video>.
- Wilkins, Gretchen. *Distributed Urbanism : Cities after Google Earth*. Milton Park, Abingdon, Oxon; New York: Routledge, 2010.

- “Will Advergaming Be the next Big Thing?” *Brand Strategy* 2008, no. 227 (2008).
- Willis, Katharine S., Christoph Hölscher, Gregor Wilbertz, and Chao Li. “A Comparison of Spatial Knowledge Acquisition with Maps and Mobile Maps.” *Computers, Environment and Urban Systems* 33, no. 2 (March 2009): 100–110.
doi:10.1016/j.compenvurbsys.2009.01.004.
- Wilson J.S, and Kelly C.M. “Measuring the Quality of Public Open Space Using Google Earth: A Commentary.” *Am. J. Prev. Med. American Journal of Preventive Medicine* 40, no. 2 (2011): 276–77.
- Wilson, J.S, C.M Kelly, M Schootman, E.A Baker, A Banerjee, M Clennin, and D.K Miller. “Assessing the Built Environment Using Omnidirectional Imagery.” *American Journal of Preventive Medicine* 42, no. 2 (2012): 193–99.
- Wilson, Matthew W. “‘Training the Eye’: Formation of the Geocoding Subject.” *Social & Cultural Geography* 12, no. 4 (2011): 357–76.
- Womack, Brian. “Google Briefly Tops Exxon as 2nd-Most Valuable U.S. Firm.” *Bloomberg*, February 7, 2014. <http://www.bloomberg.com/news/2014-02-07/google-passes-exxon-to-become-second-most-valuable-u-s-company.html>.
- “Woman Who Married Warehouse Now Engaged to Neighborhood.” *Seattle’s Big Blog*. Accessed October 22, 2012. <http://blog.seattlepi.com/thebigblog/2012/07/02/woman-who-married-warehouse-now-engaged-to-neighborhood/>.
- Wood, Denis, and John Fels. *The Natures of Maps: Cartographic Constructions of the Natural World*. Chicago: University of Chicago Press, 2008.
- Wood, Denis, John Fels, and John Krygier. *Rethinking the Power of Maps*. New York: Guilford Press, 2010.
- Wood, Denis, John Fels, and Thomas Leiper. *The Power of Maps*. Kane Collection (Library of Congress. Hebraic Section). New York: Guilford Press, 1992.
- Woods, Dan. “The Commercial Bear Hug Of Open Source.” *Forbes*. Accessed March 1, 2014. http://www.forbes.com/2008/08/17/cio-open-source-tech-cio-cx_dw_0818open.html.
- World Bank. “World Bank and Google Announce Map Maker Collaboration,” n.d. <http://web.worldbank.org/Wbsite/External/Countries/Eastasiapacificext/0,,contentMDK:23088022~menuPK:2246553~pagePK:2865106~piPK:2865128~theSitePK:226301,00.html>.
- . “World Bank and Google Support Development in South Sudan with Diaspora-Driven ‘Mapathon,’” April 28, 2011. <http://www.worldbank.org/en/news/press-release/2011/04/28/world-bank-and-google-support-development-in-south-sudan-with-diaspora-driven-mapathon>.
- www.epic.org, Electronic Privacy Information Center-. “Electronic Privacy Information Center.” Accessed December 27, 2013. <http://epic.org/privacy/streetview/>.
- . “Electronic Privacy Information Center.” Accessed December 27, 2013. <http://epic.org/amicus/google-street-view/>.
- Wylie, John. “Depths and Folds: On Landscape and the Gazing Subject.” *Environment and Planning D: Society and Space* 24, no. 4 (2006): 519–35. doi:10.1068/d380t.
- Yamada-Rice, Dylan. “A Comparative Study of Visuals in the Urban Landscapes of Tokyo and London.” *Visual Communication* 10, no. 2 (May 1, 2011): 175–175–186.

- . “New Media, Evolving Multimodal Literacy Practices and the Potential Impact of Increased Use of the Visual Mode in the Urban Environment on Young Children’s Learning.” *Literacy* 45, no. 1 (April 2011): 32–43. doi:10.1111/j.1741-4369.2011.00578.x.
- Zara, Christopher. “Privacy Vs. Tech: Opinions Divided Over Google’s Street View Legal Defeat.” *International Business Times*, September 12, 2013. <http://www.ibtimes.com/google-street-view-lawsuit-privacy-tech-advocates-divided-over-court-wiretap-ruling-1405128>.
- Zook, M. A., and M. Graham. “The Creative Reconstruction of the Internet: Google and the Privatization of Cyberspace and DigiPlace.” *Geoforum* 38, no. 6 (2007): 1322–43.
- Zook, Matthew A., and Mark Graham. “Mapping DigiPlace: Geocoded Internet Data and the Representation of Place.” *Environment & Planning B: Planning & Design* 34, no. 3 (2007).
- Zukin, Sharon. *The Cultures of Cities*. Cambridge MA: Blackwell, 1995.