

Manuscript Details

Manuscript number	JCIT_2016_127
Title	Seeking Northlake: Place, technology, and public as enabling constraints for urban transdisciplinary research
Article type	Full Length Article

Abstract

This article reviews the urban transdisciplinary research of the Northlake Collective, a multidisciplinary group of graduate students in the University of Washington's Lake Union Laboratory. Through a series of place-based investigations, we explored a small slice of Seattle ultimately seeking to engage the public through an online digital humanities portal. The broader goal of our work and this paper is to address how we, as a team of emerging scholars, understand and investigate 'cities' in the current century as both networked at the global scale and dynamic places for everyday interactions and processes. The paradoxes and complexity inherent to understanding the 'city' and how to address these concerns led us to develop a framework that might enrich grounded urban theory through the 'enabling constraints' of place, technology and public. The productive character of these three concepts, combined with the practical constraints and interrelationships they bring to bear, allowed us to deepen our work and produced the context for our research of Northlake. We propose this tripartite framework for exploring the contemporary city via the structure afforded by transdisciplinary, born-digital collaborations.

Keywords	transdisciplinary urbanism; enabling constraints; place; technology; public; collaboration
Manuscript category	Full Length Article
Manuscript region of origin	North America
Corresponding Author	James Thompson
Corresponding Author's Institution	University of Washington
Order of Authors	Megan Brown, G. Odessa Gonzalez Benson, Roneva Keel, Eleanor Mahoney, Jennifer Porter, James Thompson
Suggested reviewers	Andrew Kirby, Agatino Rizzo

Submission Files Included in this PDF

File Name [File Type]

Cities_Cover Letter 3.pdf [Cover Letter]

Cities_Response to Reviewers 9-29-16.pdf [Response to Reviewers (without Author Details)]

CitiesSubmission_revision_9-29-16.pdf [Manuscript (without Author Details)]

Highlights.docx [Highlights]

Cities_Title Page 2.pdf [Title Page (with Author Details)]

To view all the submission files, including those not included in the PDF, click on the manuscript title on your EVISE Homepage, then click 'Download zip file'.

Introduction

For well over a century, Seattle's Lake Union has been a site of rapid change. It has undergone successive waves of urban development and redevelopment since the mid-1800s, from colonization, deindustrialization, and the construction of Interstate 5, to the development of biotechnology campuses in the south and the University of Washington in the northeast. In recent decades, the Lake and the many neighborhoods that ring its shores have undergone an immense transformation, driven by the region's burgeoning tech industry. Thus, for generations now, Lake Union has been at the geographic and symbolic center of urban growth and local conceptions of place, a hydrological backdrop to the actors and political processes entangled in such transformations. The questions of who controls growth, who makes decisions, and who has a say in this process are pertinent for understanding the future of Lake Union and Seattle.

The task of the Northlake Collective—six graduate students from geography, history, social work, and the built environment involved in the larger Lake Union Lab at the University of Washington—was to conduct an exploratory place-based investigation of a slice of the city adjacent to Lake Union that ultimately might engage the public through a digital humanities portal. The broader goal of the Northlake Collective and the current paper is to address how we, as a team of emerging scholars, understand and investigate 'cities' in the current century as both networked at the global scale and dynamic places for everyday interactions and processes. What emerged from our work is a transdisciplinary framework that proposes to enrich grounded urban theory and counter urban redevelopment marketed for the 'good of all.'

The Northlake Collective began as a way of exploring more complex urban narratives beyond or between disciplinary frameworks and connecting these new narratives with university and community partners. Urbanists from a variety of disciplines have argued that city management and planning in the 21st century are oriented towards a city's place in the global hierarchy, producing a metanarrative of 'the city in crisis' that competes on a global scale for finite capital resources and ideal urban dwellers. This manufactured 'urban-crisis' discourse is used to justify apolitical management by expert urban managers, who might argue that the issues are too pressing and concerns too imminent for a democratic process (Davidson and Iveson 2015b; Elwood and Lawson 2013; Marcuse 2015; Rizzo and Galanakis, 2015). The city in crisis often legitimizes urban renewal for the 'good of all' by elites including mobile urban policies (Davies and Msengana-Ndlela 2015; Jacobs 2012), place branding and waterfront renewal (Airas, et al. 2015), and the competition for managerial firms (Davidson and Iveson 2015b). Decision-making processes in the entrepreneurial/technologically managed city create a disconnect between the image of the city at the global scale and that in local practice (Falahat 2014; Foo, Martin, Wool, and Polsky 2014), thus marginalizing and disenfranchising people of color, the poor, and homeless (Bose 2015). One approach to countering this metanarrative is careful attention to the ways scholars represent and write about cities (Marcuse 2015), employing an engaged and

critical social science perspective (Gleeson, 2014), and turning towards a more local ethnographic approach that takes into account relational processes and development at the city scale (Davidson and Iveson 2015a; Jacobs 2012; Robinson 2008; Secor, 2013), as well as complex intertwined histories (Hayden 1995; Loukaitou-Sideris and Ehrenfeucht 2011; Massey 2005).

The epistemological difficulties with investigating urban processes are ill-served by isolated disciplinary approaches, and so urbanists from a variety of disciplines have called for a thematic and cross-disciplinary approach to cultivate a more holistic view of urban concerns over a singular, hegemonic metanarrative (Anderson, et al. 2013; Davies 2015; Manzo and Perkins 2006; Ramadier 2004; Rizzo and Galanakis 2015). Our paper follows from these critical concerns about contemporary cities, as well as the numerous calls for greater collaboration within urban research, whether between or across disciplines (Petts, et al. 2008; Ramadier 2004; Rizzo and Galanakis 2015). This has meant focusing on a technology (Amorim, et al. 2014) or artistic tool (Rizzo and Galanakis 2015) that crosses and mediates multiple disciplines and allows for a coming-together of multiple actors and stakeholders within a given urban locale to illustrate multiple histories, identify concerns, and develop solutions. Although these technological tools are useful mediating devices, they are not a panacea to the challenges of interdisciplinary collaboration or public engagement. Indeed, they produce their own particular challenges that we will discuss in more detail throughout the article.

As a transdisciplinary research team, our approach was largely exploratory: to engage with a local site by employing the sorts of methods, data sources, and research products possible given the particular makeup and manifestation of our team. Thus, in research and through this paper, we endeavored to put aside existing disciplinary methods and collectively construct a uniquely urban epistemological framework to explore the ongoing challenges of urbanism. We draw from previous scholarship, particularly Rizzo and Galanakis' (2015) notion of Transdisciplinary Urbanism as a methodological framework that allows for the study of "uncertainty, chance and open-endedness, and to transparently renegotiate power structures in urban space" (p. 36) by engaging various urban actors, theories, and practices. The paradoxes and complexity inherent to understanding the 'city' and how to address these concerns led us to develop a framework that might enrich grounded urban theory through three 'enabling constraints': place, technology and public (see Figure 1).

Constraints, in this undertaking, are reconceptualized with a positive and productive capacity, as opposed to a solely prescriptive and confining function (Hayles 2001; Introna 2011; McDonnell 2011). Place, technology, and public, formulated as 'enabling constraints,' set limits to our approach of the complexity of the city, while also opening up space for possibilities in that approach. *Place* provided a certain malleability as a loosely bounded location that was also subjectively experienced, leading us to questions of scale, methods, and our epistemological

rendering of place as geographically constrained. Born-digital, our project saw *technology* or digital scholarship as a tool and end product for the power of visual argumentation that could be harnessed more fully in cross-disciplinary work—although those same productivities also imposed operational and typological limits. Finally, *public* or public scholarship offered accessibility to the city and a common space for collaboration both within and beyond the academy, while also raising the challenge of the moral imperative of public engagement and constituting the ‘public’ itself. These affordances allowed us to deepen our work and produced the context for our research.

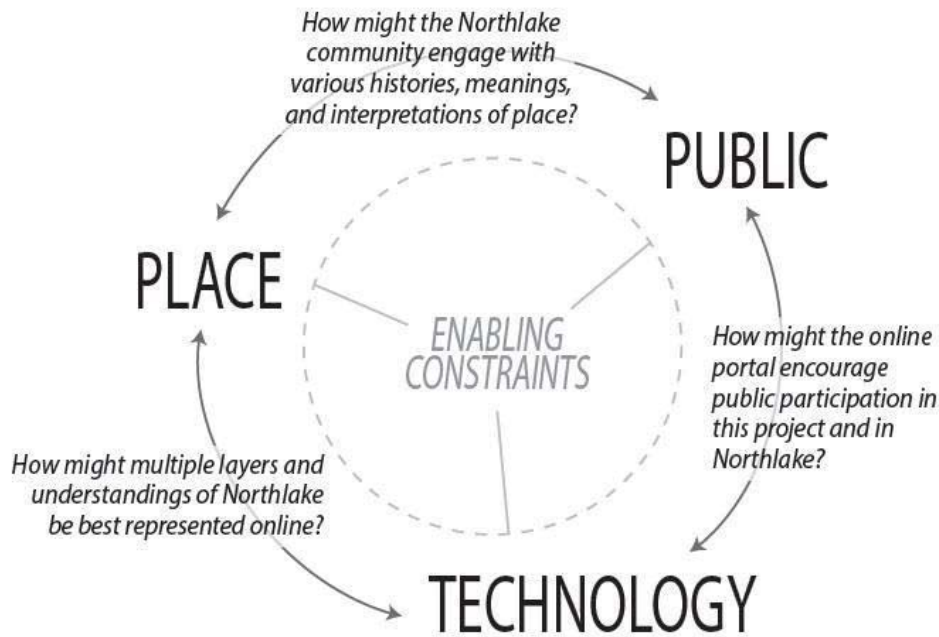


Figure 1: Enabling constraints and interstitial questions

At the intersections of these enabling constraints emerged questions regarding how issues of place, technology, and the public might affect one another (see Figure 1). Reflecting on this particular set of challenges and their interrelatedness allowed us to identify the constituent elements of our collaboration and how these might lead to more meaningful research on cities. These challenges included our privileged position within a prominent, long-established university and our use of digital technologies, both of which undermined attempts at non-expert knowledge production. The limitations of our attempts at transdisciplinary urbanism, as well as our accomplishments, shed light on both the difficulties and the possibilities of novel research structures and approaches. Following a brief narrative of our collaborative process, the remainder of the paper is organized around discussion of each of the three enabling constraints, which combine to structure our epistemological framework for studying urbanism.

We conclude by highlighting several dilemmas of transdisciplinary collaboration attempting to engage place, technology, and the public in order to better represent contemporary cities.

Origins and objectives of Lake Union Laboratory, a transdisciplinary urban research collective

The Lake Union Laboratory (LULab) is a research collective at the University of Washington founded to not only investigate the urban but to do so in a way that consciously incorporates diverse disciplinary perspectives, methodologies, and ways of knowing using digital and public platforms. LULab focused on Lake Union and its surrounding neighborhoods because the Lake has long served as a bellwether for urban growth and change:

Lake Union is at once emblematic of and somewhat divergent from several key trends in contemporary urbanization. In ways that are resonant with similar experiences in countless other cities nationally and globally, the communities surrounding Lake Union have undergone several decades of post-industrial reinvention. At the same time, however, Lake Union offers a remarkable case in which a very particular combination of technological enterprises—not the usual suspects in large-scale urban redevelopment—have converged to channel huge amounts of capital into a large project of creative destruction and renewal in a world-class urban core. Both of these realities are tightly bound to shifts in the structure of the global economy that have been unfolding for decades, and the outcomes for Lake Union could be informative for future urban planning and policy debates more broadly. (Lake Union Lab, 2013)

Consisting of four core faculty members and a total of six graduate student researchers representing the College of the Built Environment, School of Social Work, and Departments of Geography and History, LULab primarily examines social, environmental, economic, and technological dynamics surrounding Lake Union, a freshwater lake located entirely within the city limits. Since 2013, the work of LULab has included a diverse array of undergraduate and graduate pedagogical projects, faculty research, and graduate student research projects.¹ This paper will focus specifically on the contributions of the Northlake Collective, which included a series of research projects centered on the stretch of land along the north shore of Lake Union. As graduate students involved in LULab, we have spent the last three years exploring a small slice of Seattle's rapidly changing urban landscape. Committed to place-based inquiry and public scholarship, we combined historical and socio-spatial ways of knowing in an effort to rethink how we produce and publicize knowledge about the city and urbanism. Our primary

¹ At this time, LULab is predominately located within the University, and has not expanded its focus or reach to include large numbers of non-academic collaborators. However, a related project, Urban@UW, which grew out of the initial LULab project, prioritizes non-academic collaboration as key to the study and practice of urbanism at the University of Washington (see <http://urban.uw.edu/>).

goals throughout this project were to analyze and represent the complexity of urban spaces and engage in cross-campus collaboration to produce a proof-of-concept digital humanities project, while showcasing the value of transdisciplinary inquiry.

After two years of working together, our effort resulted in three major components: 1) an online exhibit documenting a sensory exploration of Northlake, 2) a microhistory of a neighborhood apartment building, and 3) an online digital mapping portal that compiled and displayed several data-driven research projects, ranging from an investigation into Works Progress Administration-era housing designations to a study of mid-20th century Urban Renewal projects. Additional work was done exploring laundries, census data, and ongoing development projects. Our choice of subject matter tilted heavily towards the social sciences and humanities, reflecting the disciplinary fields and research interests of the Collective's members. It is also an indication of our desire to work at multiple scales and temporalities.

The resulting public digital humanities project represents Northlake along the dimensions of time, place, and social life. An in-progress digital interactive map, the capstone of the Northlake Collective, brings together the sensory exploration of place and attempts at defining the 'place' Northlake with disciplinary projects highlighting urban change across four eras (the Progressive Era, the New Deal Era, the Urban Renewal Era, and the Contemporary Era), all crosscut by broad social, political, economic, and ecological themes. The final public-facing product ideally will represent a unique approach to the study of cities in the 21st century, providing a resource for urban communities and stakeholders seeking to counter uncritical development narratives.

Towards enabling constraints in transdisciplinary urban research

Enabling constraints are those elements, material or conceptual, that function within a system or context to delimit the space of possibilities while simultaneously allowing productivity and creativity precisely by that delimitation (Bullock and Buckley 2009; Hayles 2001; Introna 2011; Shogan 2002). Enabling constraints are "necessary condition(s) for complex emergence" (Davis, et al. 2015: 219), and thus particularly relevant for complex systems, such as the city and collaborative research of it. The positive, productive dimension of constraint develops out of complexity theory in evolutionary biology (Hayles 2001: 145) and finds relevance in several fields, including art and architecture, cognition, communication, and philosophical inquiry. In evolutionary biology, constraints play a positive role in the development of organisms by bounding physical environments and creating feedback loops that allow only the most viable systems to emerge (Hayles 2001: 155). In creative fields, designers impose upon themselves enabling constraints—thematic, aesthetic, and material as space, tools, and materiality—to prompt a potential for creativity but also to provide an internal coherence in their media and discipline to their process (Hallam, et al. 2014; McDonnell 2011). Meanwhile, philosophical inquiry considers the conceptual dimension. Enabling constraints, as considered by Butler

(1997) and then Introna (2011), are used to understand agency: actors “operat(e) within a field of enabling constraints (or encodings) at the outset,” (Butler 1997: 16), where constraints are norms- or rules-based, but are also insecure and thus enable revision and transformation. Enabling constraints as a concept has been meaningfully applied in various fields, although only with nascent inroads in current literature.

In our own transdisciplinary inquiry into the urban, enabling constraints form a fulcrum around which revolve *place*, *technology* and *public*, extending both material and conceptual qualities that open up space for possibility and creativity while delimiting capacities. Place emerged early on as a means of opening and bounding to develop our group purpose and project, the sites of our inquiry, and methodologies. The use of technology and digital scholarship, meanwhile, offered a platform to mediate transdisciplinary perspectives and facilitate the public aspect of the work. On the other hand, our iterative, collaborative process of producing a publically accessible interface was restricted somewhat by the obligation to consider representational and technical questions during data collection and production phases. Finally, the notion of public scholarship held promise for advancing academic research beyond the confines of campus, though the enterprise of genuinely engaging public stakeholders remained limited by conceptual challenges and institutional and practical barriers. Our epistemological framework for approaching the 21st century city emerges at the intersection of these three constraints (see Figure 1), even as each constraint guided the project to practical ‘how’ questions.

Place: An enabling constraint through location, meaning, and methodology

Our place-based work evolved into a significant enabling constraint in these three ways: the process of seeking out place in constructing our group purpose and project; the site of our inquiry; and the methods from which we drew to explore, document, and publicize our findings. As we began to document the shifting character of a small slice of urban Seattle, we found that grounding our project in place had both expected and unexpected effects on the nature of our findings. The transdisciplinarity of the work, the availability of specific technologies, and the desire to engage various publics likewise had profound impacts on our understanding of the place under study. Through the structure afforded by LULab, we sought to explore the reciprocal imprint of social, political, and economic processes on Northlake and the ways Northlake itself shaped the processes as they occurred in space. Using the transdisciplinary structure and born-digital aspects of LULab to query the ways that these large processes shaped and were shaped by grounded conditions in Northlake was an intriguing proposition, but our group first had to confront how we would approach the study of place.

LULab faculty, in both undergraduate courses and other research projects, were already examining neighborhoods around the Lake—in particular South Lake Union, a section of the city

experiencing unprecedented growth and speculative investment.² For our project, we chose to focus on Northlake, a less-studied but no less interesting stretch of shoreline located along the lake's north-central boundary. Nestled among more established neighborhoods like Fremont, Wallingford, and the University District, Northlake remains relatively undifferentiated. Long a bastion of light industry, especially shipbuilding, Northlake has undergone several concurrent economic and social shifts in recent years. Both private capital and the public sector have 're-discovered' the area with investments in the form of condominiums and office space, as well as new construction by the University of Washington, which is aggressively seeking to expand its campus footprint into Northlake.

Northlake's relatively low profile immediately interested us, provoking a series of exploratory questions focused on the nature of place-specific identity and meaning. Members of the Collective were intrigued that an area so centrally located in a city as rapidly changing as Seattle remains so little known or investigated. Aside from being the name of a street and a local bar (the Northlake Tavern), the place designation itself is only sparingly used. And, in those rare cases where 'Northlake' is invoked—for example in the signage shown in Figure 2—the name seems to label underutilized or peripheral space. The somewhat elusive character of Northlake proved to be appealing in these formative stages because it allowed each of us to approach the area with few preconceptions. At this stage of the project, we were still in a fully exploratory mode, having not yet decided on a particular medium or tool for the eventual display of our findings.

As we began our initial inquiry into Northlake, it was clear that it, in fact, possessed a rich history, driving Seattle's development and transition at key moments. From its early role as a site of trade and commerce, to later uses as a distribution hub for regional extractive industries, including a large-scale coal gasification plant, to the remediation and adaptation of that plant into a popular city park, Northlake has been the site of important economic, social and environmental shifts emblematic of larger forces shaping Seattle and beyond (Klinge 2007; Morrill 2013; Sanders 2010; Thrush 2007). The University of Washington has become a key player in Seattle's urban development surrounding Lake Union, particularly in the realm of biotechnology and life science research, which helped identify Seattle as a 'curative city' (Sparke 2011). With the University of Washington's Seattle campus expanding from the east to meet growing capacity needs,³ and technology companies like Adobe and Tableau establishing campuses on its western edges, Northlake appears to be on the cusp of additional

² For more about Seattle's recent tech boom, see Balk, G. "Seattle's population boom approaching Gold Rush numbers," *Seattle Times*, September 13, 2015. <http://www.seattletimes.com/seattle-news/data/seattles-population-boom-approaching-gold-rush-numbers/>

³ See University of Washington Master Plan Seattle Campus, Semi-Annual Report, March 2008: <http://www.washington.edu/community/files/2008/03/UW-Semi-Annual-Report-03-08.pdf>

transformations, making it a productive location for place-based transdisciplinary inquiry into the larger patterns and processes of urbanism.



Figure 2: “The elusive character of Northlake,” as depicted by waterfront park signage lacking an obvious signified point of reference

Ultimately, we drew from an understanding of place as simultaneously a Cartesian entity, a marked boundary around a specific locality, and a subjective experience tied to particular localities (Hayden 1995). We explored Northlake through the ‘coming togetherness’ of multiple histories and experiences, mindful of the way a particular locality is created through relational processes with other times and places (Massey 2005). Our approach to Northlake was not as an inert or known entity but rather as the ‘raw material’ through which creative social practices emerge and are reproduced (Bondi 2005; Bourdieu 1990; de Certeau 1984; Cresswell 2002, 2004; Massey 1984, 2005; Soja 1996). Moreover, we were conscious that our work impacted the place itself: through the study of Northlake, we were among those producing knowledge of the city and, perhaps unintentionally, involved in recreating dichotomies between an engaged academic, expert knowledge-making collective and residents of the places under study.

The transdisciplinary production of place-based knowledge is critical in 21st century cities for creating narratives outside of urban redevelopment and city branding (Gibson 2005). Davidson and Iveson (2015a) call for a view on cities that would enable more useful place-based politics that are relevant to urban dwellers but also extend beyond the city. In the effort to reinvigorate

urban politics, Kurt Iveson (1998, 2000) and Andrew Kirby (2013) have argued that the inclusion of difference in urban planning is not found in making a plan that vacates conflict from public spaces, or planners and designers creating what constitutes 'good' urbanism; rather, inclusion in planning means engaging in a dialogue.

A critical question in reinvigorating urban politics and creating more democratic urban planning and development is how to inculcate participation and incorporate the voices of urban residents. As we will discuss in greater depth in the technology and public portions of this paper, what is at stake in placemaking and urban narratives of place is the engagement, in both traditional and web-based forms, of urban actors outside of the academy. New technologies that allow for engagement outside of traditional venues such as public meetings or city council hearings offer one potential venue for dynamic exchange among various publics, but they are also fraught with their own means of exclusion. In our work on Northlake, for example, we selected a platform without sufficiently considering how individuals and groups outside of the academy might respond (or not) to its modes of presentation and feedback mechanisms.

Working under multiple ways of understanding and operationalizing place required that we standardize and equalize our processes at the outset. Rather than artificially constrain our inquiry, we decided to let the place itself drive our data collection and analysis. This decision resulted in the first completed project of our collective, "Northlake: A Sense of Place." Methodologically, we sought to augment our individual disciplinary traditions by working collectively to explore Northlake through our senses. This follows a rich tradition of sensory studies, which attempts to contest the so-called "primacy of the visual" (Macnaghten and Urry 1998) and open up analytical space for the consideration of auditory experiences (Bull 2000), olfactory perspectives (Classen et al. 1995), as well as taste and touch to understandings of the city. For our project, one student, employing the sense of sight, perused the area to photograph 'swatches' or visual/spatial compositions, sifting out textures, colors, patterns, vistas and viewsheds that, in aggregate, could be understood as characteristic of the particularities of the place, as simultaneously industrial and natural. Then, 'listening hard' to Northlake led another student to novel and surprising soundscapes, capturing ambient freeway noise, ducks in the water, and other exemplars of the sonic environment. Appealing to the sense of touch, meanwhile, one student explored the various textures of Northlake, revealing simultaneously the cold concrete and natural softness of place. Finally, in search of taste, one student was drawn to social hubs, as reflecting forms of taste or distinctions that were also matters of socio-cultural positions: a pizza joint with a long history of recipes and gathering; a church that offered community Sunday lunch; and a coffee shop representing an 'up-and-coming' side of Northlake. Following recent studies on urbanism, senses can emerge as salient in shaping the experience of the city, specifically in facilitating academic sensitivity to future urban vulnerabilities and mediating relations between 'self and society' and 'idea and object' (Adams and Guy 2007; Bull et al 2006: 5; Doherty 2012).

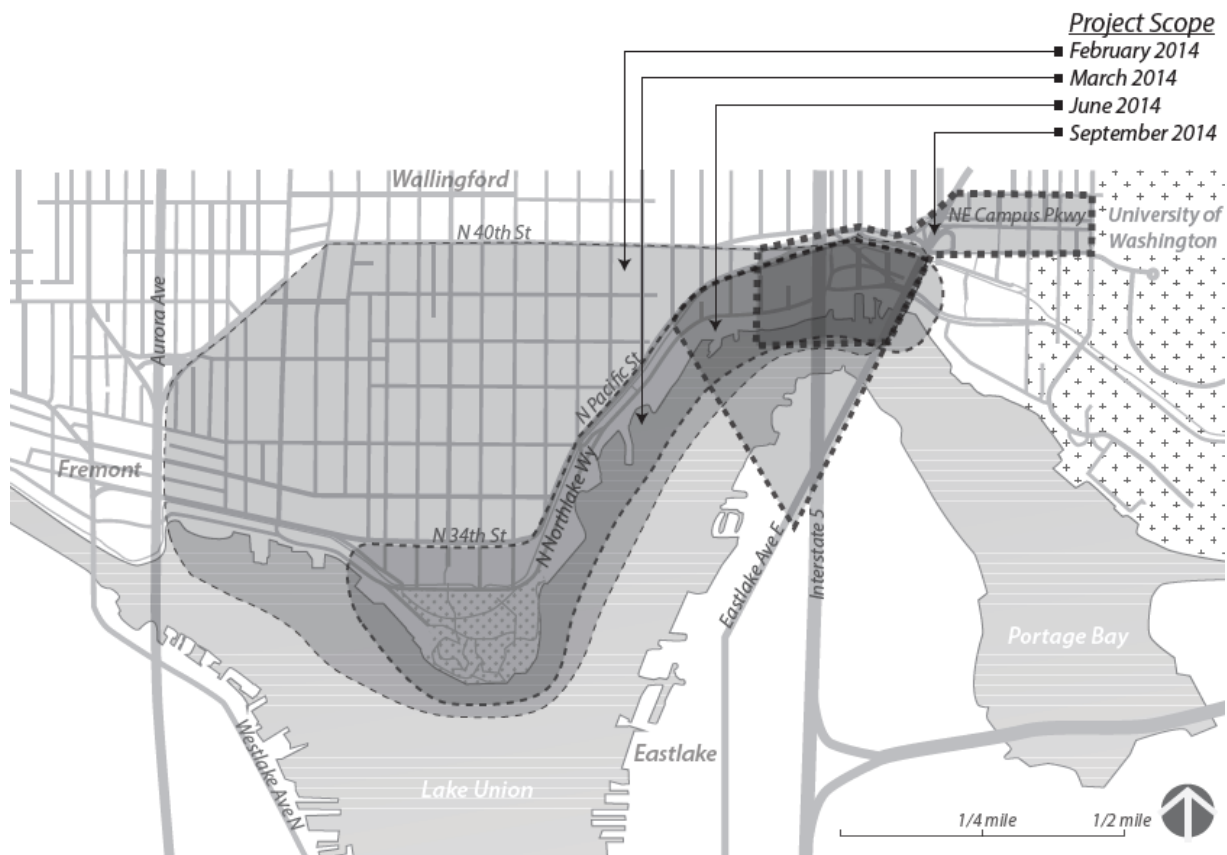


Figure 3: Shifting sites of place-based inquiry over the course of the project timeline

The decision to ground our study on a small area of the city proved foundational to the type of transdisciplinary work we accomplished. It allowed us to partake in productive, early conversations about both the nature of our investigations and our group itself. However, this choice also led to a further engagement with questions surrounding the proper scale of our inquiry, an ongoing dialogue that shaped the contours of the project.

As we continued, the size of the sites within ‘Northlake’ expanded or contracted depending on the methods of engagement we preferred as well as the available primary source materials (see Figure 3). We began with a sizable neighborhood, roughly one square mile, before whittling the area of inquiry down to more easily accommodate our sensory exploration. We were mindful, however, of falling into the ‘local trap’ (Born and Purcell 2006; Purcell 2006) by uncritically accepting a particular scale as inherently more valuable. Therefore, we attempted to transcend a reliance on specific temporal and spatial scales by also considering the global/urban forces impacting Northlake over time. For example, by tracing the stories of residents who lived in one

particular apartment building, we discovered migration patterns linking Northlake to several countries in Scandinavia. Additionally, the occupations of building residents, which were largely in extractive industries, like lumber and mining, echoed Seattle's early twentieth-century history as a node for natural resource markets in the American West. Working with common sites of inquiry at different times in the project allowed for connections to be made across individual contributions, resulting in a coherent exploration of a place that incorporated multiple sensory perspectives and ways of knowing.

Technology: A critical methodology and technique of public engagement

Our second enabling constraint, technology, is both a critical tool and an end product. It serves as a medium for facilitating transdisciplinary research on the city and as a portal to engage the public and academic audiences in rich explorations of place. At stake in this conversation was the extent to which digital tools could facilitate knowledge production and knowledge politics (Elwood 2006). The use of digital humanities technology offered real potential for transdisciplinarity and innovative arguments in a study of place, as well as meaningful and accessible connections with the public. However, the field remains relatively fluid, with few stable methodological or theoretical boundaries (Alvarado 2012). Technology also put limits on the research process and exposed underlying disciplinary assumptions, especially as it related to the our individual backgrounds and training in particular tools and methodologies. In this way, we experienced firsthand the reality that technology is never neutral, whether in its production or its reception.

Our goal in using digital tools was to facilitate the transdisciplinary exploration of 21st century cities without falling back on disciplinary divides. Digital humanities provided a common ground, since no single discipline represented in our research group could claim ownership of digital space, technology, or even visual arguments. By using a common platform, we hoped to prevent disciplinary domination of any one facet of knowledge production. Yet, in the end, the structure of disciplinary fragmentation in the academy proved difficult to circumvent. Because the rich history of Northlake that we were developing spans over 100 years, the final portal needed a series of contemporary basemaps to support the narrative we produced for the early 1900s, 1930s, 1960s, and today. This meant digitizing historical maps in ArcGIS and the associated delegation of digital tasks to members who had used this software in the past. Ultimately, roles and responsibilities with regard to technology were unevenly distributed, falling along disciplinary lines. While we are not arguing that it is antiquated or never useful, a disciplinary division of labor can plague interdisciplinary work that seeks to be genuinely collaborative (Petts et al. 2008), particularly in our experience with an exploratory, technology-driven project on cities. Even within the academy, then, technology can alienate by either compelling or discouraging involvement dependent on one's preexisting expertise. This echoes ongoing debates in digital humanities more generally surrounding how best to engage the

“unskilled” in the initial development and later use of various software platforms, especially when the long-term stability of those platforms remains unknown (Edwards 2012).

Outside of LULab itself, the disciplinary structure of the university has long been considered an impediment to the development and execution of interdisciplinary projects (Petts et al. 2008). Our account parallels the woes of previous scholars about the hard-wiring of research organizations and support, specifically how funding structures, existing time commitments, and departmental allegiances serve as insidious barriers to cross-disciplinarity (Petts et al. 2008). Particular to the use of technology and the digital humanities, practical issues of funding streams and ownership of the physical server created several obstacles. Space to host the Omeka instances and maps, for instance, created real problems for transdisciplinary collaboration. The material space our data and visual arguments needed, as well as the emergent problem of connecting data and instances across servers, proved challenging and time consuming.⁴ These complications emerge from trying to fit a transdisciplinary research group into the material institutional framework of a disciplinary university, or how to fit one ideological project into the material form of another.

The push to produce a public portal as end product provided potential for new and innovative ways of approaching the city. Access to technology that can be used to create legible ‘needs narratives’—thus addressing the unequal distribution of power between residents, community organizations, and urban managers and developers (Elwood 2006; Harwood 2007; Roy 2015)—was a significant driving factor for producing a digital humanities product. Decisions regarding technology drew out issues of representation, as elaborated in the next section on public. Neither solely ends nor means, digital tools in urban collaborative research are intended to question and, potentially, to overcome metanarratives of urban development by dispersing control of that narrative and un-stabing any one narrative’s ‘truth’ or permanence. Technology, for collaborative urban research, becomes more fully enabling when we consider its power for orienting researchers to the needs narratives of urban stakeholders (Elwood 2006).

However, that same portal product as potential was also quite constraining. Rather than allowing research questions to emerge from the data or using data to answer questions, we were repeatedly compelled throughout the research process to consider the form our output

⁴ The Omeka program runs from individual instances installed on a server. While we explored other online options, having a concrete instance on a university-supported server meant we could ensure long-term maintenance of the product. At this time there are at least four instances of Omeka (the central research instance and several teaching instances used for individual undergraduate classes) on four different servers that are all connected to the LULab project and are meant to come together in the public-facing portal. As we endeavor to produce a common portal and set of visual arguments to elucidate a history of place in Northlake and engage with urban residents and stakeholders, we have had to copy and transfer instances to new servers due to memory availability and shifting funding streams.

would take, as well as issues of representation with which it came. The use of images, for example, assumed an outsized importance, as did mapping, as users were more likely to engage the digital platform vis-à-vis these modalities. Yet, both our selection of photographs and our choices of maps proved quite limited. In one instance, we had access to several historical maps dating to the 1930s, though our textual research had revealed intriguing stories dating to the 1920s. Owing to the visual nature of the medium, however, we ultimately decided to return to the archives and re-focus on the Depression-era, as that was the time period covered by so many of our cartographic resources. Significantly, had we more fully engaged the public in this stage of the project, we might have located more diverse sources, including family photographs, oral interviews, and neighborhood publications.

From the outset, the LULab group has had to consider whether the final product/digital portal would be an open access information dump (where stakeholders can access raw data, similar to the city GIS archives) or a curated narrative that links the historical phases of development around Lake Union. The former offers the potential for users to create their own projects and initiatives, while offering input on what data should be gathered and shared, whereas the latter could incorporate writings, feedback, oral histories, and more from residents, workers, and other interested parties. Additionally, the latter could engage the technical knowledge of users, who might have expertise in programming beyond that of the Collective's members. Both options, we hoped, would allow the project to have an impact, however modest, on Seattle's rapidly changing urban landscape. While this influence would likely be centered on awareness and appreciation rather than concrete policy shifts, it nonetheless might capture the attention and imagination of community members. During moments of rapid changes in the urban landscape, it can be argued that even marking and memorializing what came before has political meaning beyond mere sentimentality (Till 2012).

Like any web-based product, each approach also necessitates consideration of long-term site management. As graduate students, our ability to maintain an open access site is limited, though this might also encourage more engaged participation from non-university participants. This still unresolved tension over final product continues to be a challenge as the portal moves forward.

As an exploratory project, focusing our efforts through the Omeka platform was useful. Its origins as a content management tool specifically designed to aid in curation allowed us to collect and organize a range of seemingly disparate items and artifacts. However, our work being place-based and exploratory, we started with no explicit research questions or clear idea of what the final result might be. This ultimately meant that the platform played a more determinative role in our investigations than is likely optimal. Quite simply, we lacked extensive experience in computer programming, and, as a result, the project was constrained by, and oriented towards, the capabilities and limitations of the software.

In the end, while we may have gone off course from a traditional approach to research, were we documenting a transdisciplinary process or actually working towards a defined end product? Each option necessitates different types of organization and accountability, most notably whether the technological platform could or should be decided in advance. For better or worse, in our case, it seems that the need to have a tangible outcome did, at times, sidetrack the transdisciplinary goals of our efforts. Moreover, it limited the space, both actual and figurative, for exploring the possibilities of non-expert engagement, as access to the technology created barriers for a more widespread user base.

In endeavoring to produce knowledge about 21st century cities and reinvigorate urban politics through knowledge production, we were working towards a deliverable that would allow us to connect with various publics and other academic communities. The question that persists is whether digital technologies currently exist that can at once serve as end products accessible to wider audiences and as tools in exploratory research. Moreover, these technologies must also be both accessible and rigorous, specific and crosscutting, serving the needs of researchers and stakeholders outside the academy.

Public Scholarship: Public engagement as an enabling constraint for urban research

From the formation of the Northlake Collective, we and our faculty mentors envisioned projects that would have some sort of public face and audience. The desire to make our work accessible grew out of three primary impulses: to democratize access to knowledge about the city; to influence interpretations and imaginings of the current and future Lake Union landscape; and to demonstrate the possibilities of collaborative, transdisciplinary work for investigating place. An important caveat at the outset: throughout the process of working together, impulses related to public scholarship frequently guided our discussions and decisions, however, the project did not involve formal public participation. That said, the drive to produce public scholarship provided us with conceptual and practical direction by opening up possibilities and imposing certain limitations. In many ways, as we discuss below, we found issues of the public to be the most challenging of our enabling constraints.

The act of doing scholarship in public and in partnership with various publics has garnered increasing attention in recent years, especially in applied urban research (Davies and Msengana-Ndlela 2015; Hoyt 2013), public history (Weyeneth 2014), place-based education (Smith 2002), and web-based platforms (Cohen and Rosenzweig 2005). By engaging the public, "the wall between school and community becomes much more permeable and is crossed with frequency" (Smith 2002: 593). While the need for public engagement in urban research is well established and its application sought after from a range of stakeholders, there remains a need for publications that offer greater detail as to the key procedural and conceptual dimensions of

carrying out such work. In our own transdisciplinary foraging for publicly engaged urban research, the 'public' offered license to go beyond the walls of the ivory tower to the city. However, the freedom and excitement of tinkering in the city was quickly arrested by emergent conceptual questions concerning the following: (1) how 'the public' is constituted in this particular instance (i.e., *who* are we engaging with?), (2) what form(s) of engagement our project could/should take (i.e., *how* are we engaging them?), and (3) the broader potential impact of public engagement, including being accountable to communities beyond the academy (i.e., *why* does this matter?). These issues, which inherently crisscross place and technology, both pushed and pulled us in new and yet unsettled directions.

Just what constitutes a 'public' or 'publics,' as well as what 'scholarship' is or is not, remains hotly debated, as are the rubrics by which such forms of intellectual production should best be valued. Place attachment and identities in urban neighborhoods are critical for understanding how urban actors—individuals, residents, and communities—behave through organization, planning, and development. The production of place and place-based identities through everyday practices and experiences re-historicizes actors, entangling and producing place-based actors (Cresswell 2003; Escobar 2001; Hayden 1995; Trudeau 2006). The debates in our own graduate student collective grappled with such issues of defining 'our' public(s) and deeply informed how we sought out the city and the technology we used for searching. With faces and communities in the forefront, we found ourselves drawn to fresh research questions, unfamiliar approaches, and new digital platforms for public consumption. Having a public—although yet-unidentified—so explicitly part of our research buoyed group discussions and research activities. Yet, ultimately, our academic institution and its reward systems, deadlines, and responsibilities, as well as its bureaucratic mandates and expectations, curtailed implementation. Chief amongst these institutional expectations was the location of LULab solely within the University and our lack of foresight to include non-expert public input in the research team. Although the project was intended to be public-facing, its parameters did not allow for public engagement in the knowledge production process. In this way, our work perhaps regrettably became more of a "show and tell," rather than a true "give and take" with diverse stakeholders. We join other scholars in viewing the institution as constraining—though also sanctioning in other ways—the potential of public engagement in transdisciplinary urban research (see Petts et al. 2008).

Second, considering the form of public engagement the project might take raised questions surrounding the co-production of scholarship and how technological platforms and venues may or may not support co-production with various publics. Emerging as an interstitial question between two enabling constraints, the form of our engagement and our intended audience depended, to a great extent, on the selection of a particular digital humanities platform. We discussed whether the Web would ultimately serve as the sole mechanism for interaction with various publics. At one point, we evaluated but, in the end, discarded the possibilities of

creating a pop-up museum in Northlake or distributing hard-copy, interpretive materials to local public library branches.

In pursuing a digital portal to facilitate public engagement, we were confronted with the question of whether our site would be a highly-curated, but largely one-way, educational platform or a dynamic interface driven by user contributions. In an effort to engage the 'public' enabling constraint of our work and make meaningful connections with urbanites outside of the academy, we deliberated centering our efforts on the co-creation of information with various users. In this way, we would produce dynamic content but could use a largely static mode of delivery, as our use of online tools was largely limited by our training and familiarity with those tools. At the time of publish, any Internet user could find or interact with the project's growing suite of materials. Moving forward, we aim to engage these materials in a way that encourages public engagement and curation.

The broader impact and accountability to communities beyond the academy is of growing concern. The moral imperative of public engagement is tied to urban places (Catungal and McCann 2010; Deutsche 1992; Kohn 2004; Low and Smith 2006; McCann 2002; Mitchell 2003; Ruddick 1996; Rizzo and Galanakis, 2015; Sennett 1994; Tuan 1988). Urban places are the fabric through which urban processes are experienced by, and values communicated to urban dwellers, citizens, and political actors (Cresswell 2002, 2003; Hayden 1995; Soja 1980; Tuan 1988). As such, place attachment, enacted via lived experience and semiotic constructions of place, informs how people engage with urban politics and processes through participation, political agency, and decision-making (Escobar 2001; Till 2008, 2012; Davies and Msengana-Ndlela, 2015). Publicly engaged urban research is doubly bound by its progressive potential to rewrite more complex urban histories that could counter neoliberal development in 21st century cities and by the limitations on community through cooptation and limited access to knowledge (Rizzo and Galanakis, 2015). If our work was to have any impact on Seattle's rapidly changing urban landscape, even if that effect was largely one of awareness and appreciation of change over time, individuals and groups beyond the University had to be cognizant of its existence and, ideally, have a stake in its content.

The promise of publicly engaged urban research presented itself in research design and deliberations, but conceptual challenges and institutional and technological barriers soon came to cloud the face of the public in the Northlake Collective. The exact form that this engagement would take, as well as who the intended audiences might be and how we would be accountable, remained largely indeterminate and unresolved. What remains to be determined is exactly the shape that such a creation might take, as well as how it would best incorporate the many born-digital aspects of our efforts.

Discussion

The transdisciplinary concepts of place, technology, and public scholarship emerged as enabling constraints from within the context of our particular urban research engagement. We propose this tripartition as a framework for exploring the contemporary city via the structure afforded by transdisciplinary, born-digital collaborations. The emergent, indeterminate, and productive character of these concepts, combined with the practical constraints and interrelationships that they bring to bear, suggests that digital research on urban places might mirror the city's own complexities. Rather than view enabling constraints as "a frustrating 'tyranny' to be escaped wherever possible," we came to consider them as productive constraints that should be "leveraged" (Bullock and Buckley, 2009: 141). Welcoming ambiguity is particularly useful for transdisciplinary urbanism (Rizzo and Galanakis 2015); and by embracing and engaging with not just the potentials but also the limits of place, technology, and public, we were able to 'lean into' rather than oppose the paradoxes inherent in investigating the urban.

At the intersection of each pair of these enabling constraints emerged a set of questions (see Figure 1). Within the conceptual framework structured by place, technology, and public, these interstitial questions directed the project toward more practical concerns. Whereas we initially focused on defining how we might engage or confront *each* enabling constraint, we soon found that questions incorporating two or more of these enabling constraints compelled us to consider our project in more tangible and less 'meta' ways. Thus, the practice of generating these interstitial questions was a productive step in moving our project forward. Moreover, it challenged the distinctness of place, technology, and public by highlighting inherent overlaps and relationships between the concepts. For instance, we found that engagement with technology largely determined our research 'deliverables.' The pre-built platforms we used both facilitated and limited our investigations into urbanism, and the group collectively navigated tensions surrounding disciplinary silo-ing and divisions of labor that emerged from our chosen technological engagements. Furthermore, the imperative of public-facing work shaped the questions we asked and the portals we used to publicize our work. However, our construction as a solely academic project located squarely within a university limited other forms of engagement with area residents. Thus, we arrived at perhaps the most significant takeaway from our project: our set of emergent enabling constraints does not function in isolation but, rather, operate as an interrelated, productive unit that, together, raises fundamental methodological questions related to subject, site, representation, dissemination, and audience.

The freedom to engage with transdisciplinary methodologies made possible the emergence of this tripartite framework. By encouraging the development of new methodological expertise amongst the graduate student collective—especially through our project on the sensory exploration of Northlake—we arrived at new ways to collectively and transdisciplinarily experience and produce knowledge about urban places. Further, because no one discipline

'owned' Northlake, and because this set of projects was independent of anyone's graduate research in his or her department, we all felt more open to stepping outside of our comfort zones—and, more importantly, outside disciplinary bounds—to formulate this research. As we collectively constructed our project to understand and confront thorny urban problems, we found that in the absence of disciplinary constraints, the transdisciplinary constraints of place, technology, and public engagement provided the necessary contours for our investigation into urban processes. This theoretical framework synthesizes our intellectual engagement with Northlake, with our research project, and with each other. Our intellectual work prefigures the reflective and experiential aspects of our research processes and our development as transdisciplinary and urban scholars-in-the-making.⁵

Our collaborative efforts interrogated conceptions of place within complex urban systems, while using shifting geographic boundaries to productively constrain our investigation. As befits contemporary investigation into complex urban processes, public engagement and the effort to be publicly relevant and accountable to various stakeholders in the areas under study resulted in productive moments of transdisciplinary collaboration, as well as individual and disciplinary-specific engagements with our research area. Most importantly, transdisciplinary experimentation, guided by the questions emerging from our tripartite framework, yielded data sets from which a narrative of Northlake began to crystallize and new insights into urban processes could be generated.

⁵ These topics are the subject of our forthcoming paper, meant to serve as complement to this theoretical paper, in which we deliberate more fully upon the experiential aspects of our collaborative process and its impact on us as emerging scholars.

References

- Adams, M. and Guy, S. (2007). Editorial: Senses and the city. *Senses and Society*, 2(2), 133–136.
- Airas, A., Hall, P. V., and Stern, P. (2015). Asserting historical “distinctiveness” in industrial waterfront transformation. *Cities*, 44, 86–93.
- Alvarado, R. C. (2012). The digital humanities situation. In Matthew K. Gold (Ed.) *Debates in the Digital Humanities*. Minneapolis, MN: University of Minnesota Press.
- Amorim, L. M. do E., Barros Filho, M. N. M., and Cruz, D. (2014). Urban texture and space configuration: An essay on integrating socio-spatial analytical techniques. *Cities*, 39, 58–67.
- Anderson, P. M. L., Brown-Luthango, M., Cartwright, A., Farouk, I., and Smit, W. (2013). Brokering communities of knowledge and practice: Reflections on the African Centre for Cities’ CityLab programme. *Cities*, 32, 1–10.
- Born, B. and Purcell, M. (2006). Avoiding the local trap: Scale and food systems in planning research. *Journal of Planning Education and Research*. 26(2), 195-207.
- Bose, S. (2015). Universities and the redevelopment politics of the neoliberal city. *Urban Studies*, 52(14), 2616–2632.
- Bourdieu, P. (1990). *The logic of practice*. Palo Alto, CA: Stanford University Press.
- Bull, M. (2000). *Sounding out the city: Personal stereos and the management of everyday life*. New York: Berg.
- Bull, M., Gilroy, P., Howes, D. and Kahn, D. (2006). Introducing sensory studies. *Senses and Society*, 1(1), 5-8.
- Bullock, S. and Buckley, C. (2009). Embracing the ‘tyranny of distance’: space as an enabling constraint. *Technoetic Arts: A Journal of Speculative Research* Volume 7, 2, 141-152.
- Butler, J. (1997). *Excitable speech: A politics of the performative*. New York: Routledge.
- Catungal, J.P. and McCann, E.J. (2010). Governing sexuality and park space: Acts of regulation in Vancouver, BC. *Social and Cultural Geography*, 11(1), 75-94.
- Classen, C., Howes, D. and Synnott, A. (1995). *Aroma: The cultural history of smell*. London and New York: Routledge.
- Cohen, D.J. and Rosenzweig, R. (2005). *Digital history: A guide to gathering, preserving, and presenting the past on the web*. Philadelphia: University of Pennsylvania Press.

- Cresswell, T. (2002). Theorizing place. *Thamyris/Intersecting: Place, Sex and Race*, 9(1), 11–32.
- Cresswell, T. (2003). Landscape and the obliteration of practice. In K. Anderson, M. Domosh, S. Pile, and N. Thrift (Eds.), *Handbook of Cultural Geography* (pp. 269–281). Thousand Oaks, CA: SAGE.
- Cresswell, T. (2004). *Place: A short introduction*. Oxford: Blackwell.
- Davidson, M., and Iveson, K. (2015a). Beyond city limits. *City*, 19(5), 646–664.
- Davidson, M., and Iveson, K. (2015b). Recovering the politics of the city: From the “post-political city” to a “method of equality” for critical urban geography. *Progress in Human Geography*, 39(5), 543–559.
- Davies, J. S. (2015). New perspectives on urban power and public policy. *Cities*, 44, 121–122.
- Davies, J. S., and Msengana-Ndlela, L. G. (2015). Urban power and political agency: Reflections on a study of local economic development in Johannesburg and Leeds. *Cities*, 44, 131–138.
- Davis, B., Sumara, D. and Luce-Kapler, R. (2015). *Engaging minds: Cultures of education and practices of teaching (3rd Edition)*. New York: Routledge.
- de Certeau, M. (1984). *The practice of everyday life* (trans. Steven F. Rendall) Berkeley: University of California Press.
- Deutsche, R. (1992). Art and public space: Questions of democracy. *Social Text*, 33, 34–53.
- Doherty, G.G. (2012). Sensing and anticipating ecological vulnerabilities in urban environments. *Urbenviron: 5º Seminário Internacional de Planejamento e Gestão Ambiental* (Brasilia), 33-41.
- Edwards, C. (2012). The digital humanities and its users." In Matthew K. Gold (Ed.) *Debates in the Digital Humanities*. Minneapolis, MN: University of Minnesota Press.
- Elwood, S. (2006). Beyond cooptation or resistance: Urban spatial politics, community organizations, and GIS-based spatial narratives. *Annals of the Association of American Geographers*, 96(2), 323–341.
- Elwood, S., and Lawson, V. (2013). Whose crisis? Spatial imaginaries of class, poverty, and vulnerability. *Environment and Planning A*, 45(1), 103–108.
- Escobar, A. (2001). Culture sits in places: Reflections on globalism and subaltern strategies of localization. *Political Geography*, 20(2), 139–174.

- Falahat, S. (2014). Context-based conceptions in urban morphology: Hezar-Too, an original urban logic? *Cities*, 36, 50–57.
- Foo, K., Martin, D., Wool, C., and Polsky, C. (2014). Reprint of “The production of urban vacant land: Relational placemaking in Boston, MA neighborhoods.” *Cities*, 40, Part B, 175–182.
- Gibson, T.A. (2005). Selling city living: Urban branding campaigns, class power and the civic good. *International Journal of Cultural Studies*, 8(3), 259-280.
- Gleeson, B. (2014). What role for social science in the ‘urban age’? In Neil Brenner (Ed.) *Implosions/Explosions: Toward a Study of Planetary Urbanism*. Berlin: JOVIS.
- Hallam, J., Leel, H. and Das Gupta, M. (2014). Collaborative cognition: Co-creating children’s artwork in an educational context. *Theory and Psychology*, 24(2), 166–185.
- Harwood, S. (2007). Geographies of opportunity for whom? Neighborhood improvement programs as regulators of neighborhood activism. *Journal of Planning Education and Research*, 26(3), 261–271.
- Hayden, D. (1995). *The power of place: Urban landscapes as public history*. Cambridge, MA: MIT Press.
- Hayles, N.K. (2001). Desiring agency: Limiting metaphors and enabling constraints in Dawkins and Deleuze/Guattari. *SubStance: On the Origin of Fictions: Interdisciplinary Perspectives*, (30, 1/2, 94/95), 144-159.
- Hoyt, L. (Editor) (2013). *Transforming cities and minds through the scholarship of engagement: Economy, equity, and environment*. Nashville, TN: Vanderbilt University Press.
- Introna, L. (2011). The enframing of code: Agency, originality and the plagiarist. *Theory, Culture and Society*, 28(6), 113-141.
- Iveson, K. (1998). Putting the public back into public space. *Urban Policy and Research*, 16(1), 21–33.
- Iveson, K. (2000). Beyond designer diversity: Planners, public space and a critical politics of difference. *Urban Policy and Research*, 18(2), 219–238.
- Jacobs, J. M. (2012). Urban geographies I: Still thinking cities relationally. *Progress in Human Geography*, 36(3), 412–422.
- Kirby, A. (2013). Cities and powerful knowledge: An editorial essay on accepted wisdom and global urban theory [Part I]. *Cities*, 32, Supplement 1, S3–S9.

- Klinge, M. (2007). *Emerald City: An environmental history of Seattle*. New Haven, CT: Yale University Press.
- Kohn, M. (2004). *Brave new neighborhoods: The privatization of public space*. New York, Routledge.
- Loukaitou-Sideris, A., and Ehrenfeucht, R. (2011). *Sidewalks: Conflict and negotiation over public space*. Cambridge, MA: MIT Press.
- Low, S., and Smith, N. (2006). Introduction: The imperative of public space. In Setha Low and Neil Smith (Eds.) *The politics of public space*. London: Routledge.
- Lake Union Lab. (2013). About. Retrieved September 25, 2016 from <http://lulab.be.washington.edu/omeka/lulab>.
- Macnaghten, P. and Urry, J. (1998). *Contested natures*. Thousand Oaks, CA: SAGE.
- Manzo, L. C. and Perkins, D. D. (2006). Finding common ground: The importance of place attachment to community participation and planning. *Journal of Planning Literature*, 20(4), 335–350.
- Marcuse, P. (2015). Depoliticizing urban discourse: How ‘we’ write. *Cities*, 44, 152–156.
- Massey, D. (1984). *Spatial divisions of labor: Social structures and the geography of production*. Basingstoke: Macmillan.
- Massey, D. (2005). *For Space*. Thousand Oaks, CA: SAGE.
- McCann, E. (2002). Space, citizenship and the right to the city: A brief overview. *GeoJournal*, 58, 77–79.
- McDonnell, J. (2011). Impositions of order: A comparison between design and fine art practices. *Design Studies*, 32, 557-572.
- Mitchell, D. (2003). *The right to the city: Social justice and the fight for public space*. New York: Guilford Press.
- Morrill, R. (2013). The Seattle Central District (CD) over eighty years. *Geographical Review*, 103(3), 315-335.
- Petts, J., Susan Owens, S. and Bulkeley, H. (2008). Crossing boundaries: Interdisciplinarity in the context of urban environments. *Geoforum*, 39, 593–601.
- Purcell, M. (2006). Urban democracy and the local trap. *Urban Studies*, 43, 1921-1941.

- Ramadier, T. (2004). Transdisciplinarity and its challenges: The case of urban studies. *Futures*, 36, 423–439.
- Rizzo, A. and Galanakis, M. (2015). Transdisciplinary Urbanism: Three experiences from Europe and Canada. *Cities*, 47, 35–44.
- Robinson, J. (2008). Developing ordinary cities: City visioning processes in Durban and Johannesburg. *Environment and Planning A*, 40(1), 74–87.
- Roy, P. (2015). Collaborative planning – A neoliberal strategy? A study of the Atlanta BeltLine. *Cities*, 43, 59–68.
- Ruddick, S. (1996). Constructing difference in public spaces: race, class, and gender as interlocking systems. *Urban Geography*, 17(2), 132–151.
- Sanders, J.C. (2010). *Seattle and the Roots of Urban Sustainability: Inventing Ecotopia*. Pittsburgh, PA: University of Pittsburgh Press.
- Secor, A. (2013). 2012 Urban Geography plenary lecture - Topological city. *Urban Geography*, 34(4), 430–444.
- Sennett, R. (1994). *Flesh and stone: the body and the city in western civilization*. New York: W.W. Norton & Company.
- Shogan, D. (2002). Characterizing constraints of leisure: A Foucaultian analysis of leisure constraints. *Leisure Studies*, 21(1), 27-38.
- Smith, G.A. (2002). Place-based education: Learning to be where we are. *Phi Delta Kappan*, 83, 584-594.
- Soja, E. (1980). The socio-spatial dialectic. *Annals of the Association of American Geographers*, 70(2),
- Soja, E. (1996). *Thirdspace: Journeys to Los Angeles and Other Real-and-Imagined Places*. Oxford: Blackwell.
- Sparke, M. (2011). Global geographies. In Michael Brown and Richard Morrill (Eds.), *Seattle Geographies*. Seattle, WA: University of Washington Press.
- Thrush, C. (2007). *Native Seattle: Histories from the crossing-over place*. Seattle, WA: University of Washington Press.
- Till, K. E. (2008). Artistic and activist memory-work: Approaching place-based practice. *Memory Studies*, 1(1), 99–113.

Till, K. E. (2012). Wounded cities: memory-work and a place-based ethics of care. *Political Geography*, 31(1), 3–14.

Trudeau, D. (2006). Politics of belonging in the construction of landscapes: Place-making, boundary-drawing and exclusion. *Cultural Geographies*, 13(3), 421–443.

Tuan, Y.-F. (1988). The city as a moral universe. *Geographical Review*, 78(3), 316–324.

Weyeneth, R.R. (2014). What I've learned along the way: A public historian's intellectual odyssey. *The Public Historian*, 36(2), 9-25. DOI: 10.1525/tph.2014.36.2.9

Highlights

- A theoretical framework is proposed for conducting transdisciplinary urban research
- This is comprised of place, technology, and public as 'enabling constraints'
- Interrelationships between these dimensions lead to productive research questions