

DIGITAL INFRASTRUCTURE AND PHYSICAL
DISPLACEMENT: THE USE OF INTEGRATED
TECHNOLOGY IN PORTLAND, OREGON

by

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A THESIS

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In June 2018, the Portland City Council adopted Resolution 37371. This resolution aims to transition Portland, Oregon, into a Smart City via the continued creation of integrated urban technology infrastructure. This text investigates Resolution 37371's obscured relationship to large tech conglomerations such as Google. It explores the political incentives that drive corporations to hide their influence over the urban built environment, and the digital facades that are created in order to do so. This thesis utilized a constructivist methodology that combined art, theory, physical analysis, digital investigation, and personal experience to draw conclusions. Ultimately through researching integrated technology in residential Southeast Portland, this thesis has built a framework for placing the rise of Smart City development projects within the larger context of contemporary urban planning models in the United States. In doing so we can understand the material differences yet social similarities between physical and digital urban development projects. The framework created relies on the work of contemporary theorists such as Shoshana Zuboff, Shannon Mattern, Maroš Krivý, We Are Plan C, Jennifer Clark, Orit Halpern, and Sharon Zukin.

Additionally, *Digital Infrastructure and Physical Displacement: The Implementation of Cybernetic Urbanism in Portland, Oregon*, looks to art as a means of critiquing technocracy through appropriated visual systems of urban development. It examines 3D imaging as both a site of the militant developers' gaze, as well as of resistance and catharsis specific to urban citizens. The precedent for this is set in part by contemporary artists Hito Steyerl, Vince Staples / CALAMATIC, and Guy Debord.

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List of Accompanying Materials

1. “Click Here for a Free Virtual Tour of YOUR Neighborhood”, Marcella Rosen. <https://simmer.io/@MRosen/click-here-for-a-free-virtual-tour-of-your-neighborhood> .
2. Hito Steyerl, *How Not to be Seen: A Fucking Didactic Educational .MOV File*, (2013). <https://www.artforum.com/video/hito-steyerl-how-not-to-be-seen-a-fucking-didactic-educational-mov-file-2013-51651> .
3. “FUN!”, YouTube Video, 2:18, “Vince Staples”, November 1, 2018. <https://www.youtube.com/watch?v=vz9-pXuvFEU>. Or a website you created and are providing a link to

Chapter 1: The Smart City as Art Research

Introduction

It has now been almost two years since Resolution 37371 was unanimously passed by the Portland City Council. It has been almost five years since I first moved out of Portland to attend school at the University of Oregon. Nothing has accelerated my perspective on gentrification like being away. I always heard people say that word, but I assumed they were talking about somewhere else. A different quadrant, a different district, a different neighborhood. I noticed very little shifting around me, that is until I visited home.

This is not Thesis as Archive, but it is also not Thesis as Prediction. It is not Thesis as Fact, but it could be Thesis as Truth, if you are willing to wholeheartedly accept my definition of truth. I'm not going to spell it out for you but suffice to say that it is a kind of truth that welcomes Annie Dillard but is generally suspicious of graphs.

I will not admit that it may slightly be Thesis as Nostalgia. That would be uncouth. I will admit that it is, in part, Thesis as Working Backwards. Resolution 37371 was the end and the start. The beginning of this research but also its temporal conclusion. The starting point emotionally but also a moment from which I am constantly reversing. This is Thesis as Hometown, even if that makes it Thesis as Smart City.

Mapping Southeast Portland

My art piece, “Click Here for a Free Virtual Tour of YOUR Neighborhood”, seeks to employ 3D imaging while creating a digital space that explores the life cycle of a neighborhood. For this project I took inspiration from infrastructural elements of Sellwood, the Southeast Portland neighborhood where I grew up. The piece operates as a virtual reality experimental map of the neighborhood. A viewer of the piece can move freely throughout the map; there is no programmed interaction between the viewer and the environment. Every object can be moved through or around, but nothing can be picked up or activated.



Figure 1: “Click Here for a Free Virtual Tour of YOUR Neighborhood”, Marcella Rosen, 2020.

“Click Here for a Free Virtual Tour of YOUR Neighborhood”, is not intended to offer an accurate documentation of changes that have occurred. This lack of geographical accuracy within the piece is quickly made obvious to the viewer by the hot

pink landscape and floating trains. The structures included in the space, such as the park, the train station, and the 7-Eleven, are a mix of old and new neighborhood architecture. By mixing elements from different periods of Sellwood, I seek to convey two things: first, that the piece is not an attempt to memorialize my childhood neighborhood or archive any particular infrastructure. Second, it is not inherently a critique of new infrastructure such as the train station, but rather looks at the sacrifices that are made in order for that kind of community rejuvenation to occur.

As a viewer moves through the space, they see text accompanying many of the structures. The text is written in second person but has details about the buildings that extend outside of information that is given to the viewer, or the ‘you.’ Much like the mixing of the neighborhood’s developmental timelines, the use of text within the 3D environment operates in multiple ways within this piece. The details within the text imply the physical existence of the structure outside of their screen. A viewer can begin to understand that while “Click Here for a Free Virtual Tour” is not a scientifically accurate 3D render, it is offering a version of the truth. Secondly, the use of second person voice shifts the viewer from voyeur to citizen, from the guided to the guide. “Click Here for a Free Virtual Tour”, asserts that as the viewer moves around the space they are not learning new tidbits but rather triggering their own memories via familiar artifacts. Every structure has a written component, although some of the text bodies are placed inside, making them initially invisible to the viewer.

Over the period of 50 minutes all the structures disappear, leaving only text behind. Nothing is deleted until after 5 minutes in, and not everything is gone until after 45 minutes. There is no guarantee that a viewer will be looking at a structure when it

disappears, or notice its absence if they return to its previous location. This means that someone could enter the space multiple times, and not notice that anything has changed. Alternatively the viewer might be looking at the very first structure that deletes, leave their browser window open for an hour while they cook dinner, and come back to find the final result waiting for them. They might miss their chance however, because after an hour and ten minutes the world resets. The duration of this piece is meant to extend beyond the amount of time a person would typically spend on a browser art piece, thus reproducing the different citizen experiences that are had from bearing witness to the slow development of a neighborhood.

For a while, I struggled with what form I felt would be appropriate for this project to take. To use 3D imaging seemed like a concession to the technocratic beliefs that I stand in opposition of. There have been many art pieces to take on oppressive technology critically and successfully, several of which will be discussed shortly. Although it remains to be seen if mine is one of them, it doesn't change the fact that you can't send an email without paying homage to military tech funding and it doesn't negate the validity in at least continuing to try.¹

Hito Steyerl's seminal video piece, *How Not to be Seen: A Fucking Didactic Educational .MOV file*, dives further into the creation of hidden spaces and the aesthetics of digital landscapes. Steyerl's piece offers a list of ways to be digitally hidden, a list that, theoretically, any person or corporate entity could follow.² *How Not to be Seen* is a multimedia project that found its final form as a circulatable video, but

¹ Ryals, Phil. "[Recalling the AUTODIN](#)". *Museum of Computer Culture*. Museum of Computer Culture. Retrieved 27 March 2017.

² Hito Steyerl, *How Not to be Seen: A Fucking Didactic Educational .MOV File*, (2013).

includes greenscreen animation, 3D renders, actors, narration and a seemingly equal distribution of pre and post-production effects. While this piece does not touch on cybernetic urbanism by name, “Lesson IV: How To Be Invisible By Disappearing”, features appropriated footage of a luxury housing development render. Instead of leaving the white, rendered, ghostly citizens to inhabit their condos, Steyerl includes her own figures, recorded in front of a green screen, to inhabit the space as well.



Figure 2.1: *How Not to be Seen: A Fucking Didactic Educational.MOV File*, Hito Steyerl, 2013.



Figure 2: *How Not to be Seen: A Fucking Didactic Educational.MOV File*, Hito Steyerl, 2013.

3D imaging can be a discordant medium to employ in institutional critique art because of how strongly it is associated with the developers' gaze. The developers' gaze, in this case, refers to the perspective and subsequent use of imagery that seeks to create or perceive landscapes as commodities. Much like drone footage and aerial viewpoints, which are also used throughout Steyerl's video piece, 3D imaging abounds with military, capitalist, and colonial connotations. In Steyerl's essay *Free Fall: A Thought Experiment on Vertical Perspective*, she discusses the aerial perspective, writing that the "view from above is a perfect metonymy for a more general verticalization of class relations in the context of an intensified class war from above—seen through the lenses and on the screens of military, entertainment, and information industries".³ These lenses prescribed by Steyerl to the vertical perspective are just as

³ Hito Steyerl, "In Free Fall: A Thought Experiment on Vertical Perspective," e-flux, April 2011, <https://www.e-flux.com/journal/24/67860/in-free-fall-a-thought-experiment-on-vertical-perspective/>

relevant in the analysis of 3D imaging, especially when they are used in conjunction with one another.

In *How Not to be Seen*, Steyerl has harnessed the connotations of 3D imaging through appropriated footage while simultaneously mitigating them through post-production operations. She removes the render from the imagined and utopic universe of the developer, where it is designed to be sold, and converts it into a universe where it is designed to be inhabited. Not just by rendered ghosts, but by digital versions of counter-cultural agents that use this newly created space as a playground.

One of the most common ways that an individual citizen interacts with augmented reality and aerial perspective simultaneously is through mapping applications such as Google Maps. In Vince Staples' music video "FUN!", he takes on the user interface of Google Maps to tour his home neighborhood in Long Beach, California.⁴ The music video, which was directed by Los Angeles-based artist and filmmaker Calmatic, shows kids playing, women fighting, and young men getting arrested.^{5 6} The majority of the actors in the Google Maps segment of the video are black, but FUN! ends by revealing that the person controlling the virtual walk-through of the neighborhood is a young white boy on an Apple Laptop.⁷ Much like the use of second-person voice in "Click Here for a Free Virtual Tour", the final shot of this video intentionally considers the viewer, who would traditionally remain unseen in screen

⁴ Scott, Dana (July 6, 2015). "[Vince Staples: Long Beach's Most Wanted](#)". [HipHopDX](#).

⁵ "CALMATIC," CALMATIC, accessed April 24, 2020, <https://calmatic.net/>)

⁶ "FUN!", Youtube Video, 2:18, "Vince Staples", November 1, 2018. <https://www.youtube.com/watch?v=vz9-pXuvFEU>.

⁷ Ibid

based art, and places them within the piece itself. It converts viewer into guide, and demands that their own socio-political location as a voyeur be interrogated.



Figure 3: “FUN!”, Vince Staples, 2018.

FUN! starts with the Google Earth interface positioned to show the entire world, and then quickly zooming in on Southern California and placing the ‘person’ icon down in Long Beach. FUN! uses the same animation that Google uses to move the viewer from block to block to cut between the video’s scenes. In the first chorus of the song, Vince Staples sings “Fun/ we don’t want to fuck up nothing/ and we don’t give a fuck bout nothing/ we just want to have fun/”. Throughout this chorus, the video depicts three black men stealing bikes from a white woman’s yard while Staples waits on the sidewalk. The second chorus shows the men again, this time being detained by police in a nondescript car wearing a uniform that reads “Gang Unit” several Google Maps’ blocks later. This scene quickly shifts to a different angle in order to show children throwing rocks at the camera, which is understood to be the Google Maps van. Before

the video switches out of Google Maps altogether to show the young boy on his laptop, Staples sings the last chorus in a park with a group of friends. The final Google Maps shot zooms in on this park sign so it can be clearly read as “Ramona Park”.⁸

This project uses 3D imaging and augmented reality, specifically with the Google Maps software and interface, to critique the surveillance of non-white neighborhoods. The video asserts that this surveillance is done by both government entities, such as the police, and culture vultures, individuals that romanticize and ultimately appropriate from communities that they aren’t a part of, such as the boy at the end who is positioned as the controller of the virtual tour.

Both pieces present a critical approach to urbanism through the appropriated visual language of 3D imaging. Proving that it is possible to do so is not only critical as a framework for my art piece “Click Here for a Free Virtual Tour”, but for the discipline of Art and Technology as a whole.

Methodology

For my thesis research, I have utilized a constructivist framework. As defined by the Chair Group for Landscape Architecture; Sanda Lenzholzer, Ingrid Duchhart, and

⁸ Ibid

Jusuck Koh in their essay *Research Through Designing*, a constructivist methodology is one that takes into account individual, social, and creative context.⁹

Social constructivism has a clear human-focused culturally grounded perspective in which attitudes, beliefs, interaction and experiences are the subjects of research. [...] The aim in social constructivist research often is the generation of theory or meaning. The researcher's intent is not to find generalizable and quantitative knowledge, but rather to 'make sense' of situations in a qualitative and contextual way. The methods used generally are open-ended, inductive and interpretive. The research directly or indirectly involves the researcher because their interpretations are at the core of research evaluation. Here, the main criteria are authenticity, originality, credibility, transferability and dependability.¹⁰

This framework not only recognizes the non-quantitative nature of research that requires social analysis, but also the position of the researcher within it. I choose this project because of my relationship with the place and the subject matter. To conceal my emotional involvement in the research would be not only disingenuous but potentially oppressive. The epistemology surrounding the 'disappearing' researcher is rooted in eurocentric perceptions of objectivity. The 'point zero perspective,' a term coined by the Colombian philosopher Santiago Castro-Gomez, refers to the writings within philosophy and science that seek to erase the geopolitical location of the subject.¹¹ While this is done in an attempt to assert universality, the result is a researcher whose biases are exacerbated by way of obscuration.

I began my research in the Winter of 2019, when I first heard about the Smart City resolution that was passed in June 2018. A month prior to that, I completed a short

⁹ Sanda Lenzholzer, Ingrid Duchhart, and Jusuck Koh, "'Research Through Designing' in Landscape Architecture," *Landscape and Urban Planning*, March 5, 2013, 125.

¹⁰ Ibid, 127.

¹¹ Ramon Grosfoguel, "The Implication of Subaltern Epistemologies for Global Capitalism: Transmodernity, Border Thinking, and Global Coloniality", *Critical Globalization Studies*, Ed. W. I. Robinson (NY: Routledge, 2005), 284.

research paper examining the increase in hostile infrastructure in Southeast Portland in relation to increasing gentrification. A new focus on Resolution 37371 was the natural continuation of my interest in changing urban landscapes and data infrastructure, as it put in vague terms the implementation of integrated technology throughout Portland. The majority of my research in the written portion of my thesis has been conducted online. This includes examining the public responses to Smart Cities, analyzing their constructed digital identities conveyed through their web presence, and incorporating details regarding specific plans for new Portland infrastructure. Nearly all of the essays and art pieces discussed are also digitally accessible.

I conducted research and analysis of Southeast Portland's physical changes by mining my own experiences growing up in the area. It may feel like an exercise in nostalgia to rely so heavily on memory in an academic endeavor. However, a lack of adequate records and a global pandemic leaves little room for much else. Changes that are made to street corners, businesses, and parks are either not documented at all or are done so in zoning documents and newspaper blurbs that are so inaccessible they nearly fail to exist.

However, even if I had a file with photogrammetry drone footage of every day and of every block of Sellwood for the last 20 years, I would not be inclined to use it. A person's memory, with its fallibility, nostalgic warp, and relative inability to quantify, gives way to a truth that lives outside of the paradigm of data-driven reality altogether. In a thesis that seeks to resist the kind of information technology that is increasingly relied on to build a city, how could I reject the embodied evidence that comes from texting my parents about what restaurant replaced our local strip club?



Figure 4 : “Text Conversation”, Marcella Rosen, 2020.

As I began to focus on developing the art component of this thesis, I struggled with conceptualizing something that could visually represent all the information I had gained through my research. Eventually, I decided to shift my perception of the art from a conclusion to a prequel. I no longer want my 3D space to be seen as an infographic of

my written work, but rather an articulation of what I wanted to understand when I began this project originally. I wanted to understand the technological development of my neighborhood academically the way I already understood it emotionally. I wanted to parse my more visceral responses to new crosswalks from the perspective of myself as The Citizen, rather than myself as The Researcher.

Chapter 2: The Smart City as Definable

In June 2018 the Portland City Council adopted Resolution 37371, which aims to implement programs that will transition Portland, OR, into a smart city.¹² A smart city (SC), is broadly characterized as a city that uses data collection technology to improve the city's infrastructure, networking, and flow. A common example of an SC program is the use of traffic sensors to report on areas of congestion, or free WiFi throughout the city that allows for location monitoring to reveal gaps in public transportation. There is ambiguity as to what constitutes an SC, especially since most urban areas integrate some level of tech and data processing into their development. Currently the world's 'smartest cities' include New York, Tokyo, Paris, Dubai, Hong Kong, Seoul, Amsterdam, and Singapore.¹³ The term "smart city" exists on a continuum that ends with a city that is created "internet up", which is a term used to describe an environment designed from scratch based exclusively on data processing. The more that data collection is used to design or redesign the urban built environment, the more of an SC that municipality becomes. While a traffic sensor program may be an example of a standalone 'smart' development strategy, a city can be considered more of a "Smart City" by integrating long-term commitments to reshaping a city in ways that are informed by and begets new data infrastructure.

¹² "Smart Cities." Drugs and Vice Division RSS. Accessed March 12, 2019. <https://www.portlandoregon.gov/bps/76713>.

¹³ IESE Business School, "These Are The Smartest Cities In The World For 2019," Forbes (Forbes Magazine, May 21, 2019), <https://www.forbes.com/sites/iese/2019/05/21/these-are-the-smartest-cities-in-the-world-for-2019/#642992801429>

A theoretical characterization of an SC is significantly more nebulous, questioning the capitalistic foundation of improvement. In the essay “Towards a Critique of Cybernetic Urbanism: The Smart City and the Society of Control”, Maroš Krivý argues that defining an SC is antithetical to its practice, claiming that “the elusiveness is part of its strategic appeal: the SC’s lofty promises can be fluidly adapted by public and private actors to suit their momentary concerns. Behind the lack of specific content there is a flexible orientation towards an immediate future”.¹⁴ This flexibility enables the SC’s ability to follow public and corporate trends, thus making it purposely ineffective to define. Krivý also discusses the role noopolitics play in the SC’s fluidity.

Noopolitics, as defined by Maurizio Lazzarato in his 2006 piece “The Concepts of Life and the Living in the Societies of Control”, exists as a supplementary concept to Foucault’s biopolitics. Biopolitik is a social theory that outlines the ways in which the state exercises control over human life through politics, while noopolitik is a concept that refers to the control of political thought via the manipulation of public opinion with mass media and state forces.¹⁵ Maroš Krivý expands on this theory by writing that “control is exerted by inducing action rather than restricting it, or, more precisely, by ‘curating’ a networked terrain within which action is nurtured”. The development of SCs lie at the boundary of information technology, urban planning and architecture, and corporate noopolitics.¹⁶

¹⁴ Krivý, Maroš. “Towards a Critique of Cybernetic Urbanism: The Smart City and the Society of Control.” *Planning Theory* 17, no. 1 (February 2018): 8–30. doi:[10.1177/1473095216645631](https://doi.org/10.1177/1473095216645631).

¹⁵ Lazzarato, Maurizio. “The Concepts of Life and the Living in the Societies of Control1.” In *Deleuze and the Social*, by Fuglsang, Martin, and Bent Meier Sorensen. Edinburgh University Press, 2006. Edinburgh Scholarship Online, 2012. doi: 10.3366/edinburgh/9780748620920.003.0009.

¹⁶ Krivý, Maroš. “Towards a Critique of Cybernetic Urbanism: The Smart City and the Society of Control.” *Planning Theory* 17, no. 1 (February 2018): 8–30. doi:[10.1177/1473095216645631](https://doi.org/10.1177/1473095216645631).

The desire of government bodies and urban planners to control and optimize the built environment for exclusion of marginalized groups has a history that far precedes that of data analytics. In philosopher Giles Deleuze's 1990 book *Control and Becoming*, and in his 1992 essay "Postscript on the Societies of Control", he theorizes about societies transitioning away from discrete areas of control like schools, prisons and hospitals, to societies that are ubiquitously controlled by their networking and communication. Deleuze extends Foucauldian theories about a physical space's ability to control its inhabitants into digital spaces, writing that; "we're moving toward control societies that no longer operate by confining people, but through continuous control and instant communication".¹⁷

In her 1995 book, *The Culture of Cities*, Sharon Zukin discusses the shift in the use of 'cultural capital' in the design and construction of New York City. Zukin specifically explores the connection of entities such as museums, cafes, and restaurants to the commercialization of public spaces.¹⁸ She postulates that, while gentrification can appear to create an environment that is safer or more inhabitable, it actually creates areas that are designed for private profit and excludes those who can't afford it.¹⁹ The same year, Richard Barbrook and Andy Cameron published their essay, "The Californian Ideology", which outlined the rise in neoliberal ideology centered on innovation and technology to further capitalistic exploitation under the guise of modernity.²⁰ In 1995, these two essays may not have appeared to overlap. As data

¹⁷ Deleuze, Giles (1990) *Control and becoming*. Gilles Deleuze in conversation with Antonio Negri. *Futur Antérieur* 1, np. Available at: www.generation-online.org/p/fpdeleuze3.htm

¹⁸ Zukin, Sharon. *The Cultures of Cities*, Blackwell Cambridge, Mass, Oxford 1995.

¹⁹ Ibid

²⁰ Richard Barbrook and Andy Cameron, "The Californian Ideology," *Mute* (MetaMuta, September 1, 1995), <http://www.metamute.org/editorial/articles/californian-ideology>)

integration within infrastructure increased in the twenty-first century, however, this “Californian Ideology” and Zukin’s theories about the monetization of public spaces continued to merge. In more recent writings, these ideologies are frequently integrated for implementation or critique. The combination of commercially optimized public space and continuous technological innovation is what has led to the Smart City in its current form.

A recent text that explores the overlap between urban planning principles and integrated technology is *Uneven Innovation: The Work of Smart Cities* by Jennifer Clark, published in February 2020. In this book, Clark contextualizes emerging technologies within the framework of the contemporary urban landscape. One chapter, titled “Smart Cities as the New Uneven Development,” particularly focuses on the impacts of technocratic solutions when adopted politically then outsourced physically by local government.²¹

One of the earliest countries to implement SC infrastructure was South Korea. Seoul, the nation’s capital, is often billed as the ‘world’s first Smart City’, transitioning to data-driven infrastructure in 2014.²² Songdo, the business district of Incheon, South Korea, is a 1,500 acre development built almost entirely of data-driven infrastructure. The architectural style of Songdo marks a dramatic shift from the Bilbao effect of generating wealth in a neighborhood by using iconic and distinctive architecture. According to Orit Halpern, in her 2015 book *Beautiful Data*, Songdo is “a landscape where bandwidth and sustainability are fantasized as organizing life through a

²¹ Jennifer, Clark. *In Uneven Innovation: The Work of Smart Cities*, 181-200. New York: Columbia University Press, 2020. Accessed May 11, 2020. doi:10.7312/clar18496.11.

²² Linda Poon and CityLab, “Songdo, South Korea's Smartest City, Is Lonely,” CityLab, July 9, 2019, <https://www.citylab.com/life/2018/06/sleepy-in-songdo-koreas-smartest-city/561374/>

proliferation of interfaces to the point of ubiquity”.²³ While the district is leading the world in LEED certified space per capita, it is also significantly underpopulated. Designed in 2002 to be the next Hong Kong or Singapore, the number of residents in 2018 just was slightly over 100,000, falling short of their 2015 goal of 300,000. Although Songdo is clean with great public transportation, it is speculated that the lack of communal spaces and night life have to do with its inability to entice new residents.²⁴

In order to build Songdo into the data-driven environment that it is today, the Incheon government partnered with the U.S. tech corporation Cisco.²⁵ Other than having the chance to test beta-stage cybernetics, it may not be clear what Cisco has to gain from contributing millions of dollars to develop Songdo. The return on Cisco’s investments come not from the purchasing of products by individual consumers, but from the monetization of the data that can be gathered through digital infrastructure within Surveillance Capitalism. As defined by Shoshana Zuboff in her book *The Age of Surveillance Capitalism: A Fight for Human Nature at the New Frontier of Power*, Surveillance Capitalism is:

A new economic order that claims human experience as free raw material for hidden commercial practices of extraction, prediction, and sales; 2. A parasitic economic logic in which the production of goods and services is subordinated to a new global architecture of behavioral modification; [...] 4. The foundational framework of a surveillance economy; 5. As significant a threat to human nature in the twenty-first

²³ Orit Halpern, *Beautiful Data: A History of Vision and Reason since 1945*, Durham, NC: Duke University Press, 2014. Kindle Edition.

²⁴ Linda Poon and CityLab, “Songdo, South Korea’s Smartest City, Is Lonely,” CityLab, July 9, 2019, <https://www.citylab.com/life/2018/06/sleepy-in-songdo-koreas-smartest-city/561374/>

²⁵ Charles Bethea Ross Arbes, “Songdo, South Korea: City of the Future?,” *The Atlantic* (Atlantic Media Company, February 4, 2015), <https://www.theatlantic.com/international/archive/2014/09/songdo-south-korea-the-city-of-the-future/380849/>

century as industrial capitalism was to the natural world in the nineteenth and twentieth; 6. The origin of a new instrumentarian power that asserts dominance over society and presents startling challenges to market democracy; [...] 7. A movement that aims to impose a new collective order based on total certainty; 8. An expropriation of critical human rights that is best understood as a coup from above: an overthrow of the people's sovereignty.²⁶

The data economy is quickly growing, but it is still hidden from many citizens. While awareness that applications like Facebook and Gmail are collecting data has risen in the last several years, there is still very little documentation of the buying and selling of data that occurs between corporations. Profit is often created through data collection, analysis, and trade, as well as through explicitly obscuring this process from the citizens who are subject to it.

Artists' attempts to resist the commercialization of the public sphere predate the city's cybernetic elements. Many contemporary artists have focused on the intentionality with which control spaces are created and obscured, with disruption often being a method of exposition. The collective Situationist International created practices opposing the increase of the urban environment as a commercial control space throughout the 1950s. Led by Guy Debord, members of the collective would perform the "dérive," French for 'drift'. This was the act of walking around a city in a way that resisted its designed capitalist flow.²⁷ In his book, *Introduction to a Critique of Urban Geography*, Debord describes the physical characteristics of this form of control as "the sudden change of ambiance in a street within the space of a few meters; the evident division of a city into zones of distinct psychic atmospheres; the path of least resistance

²⁶ Zuboff, Shoshana. *The Age of Surveillance Capitalism* (p. 2). PublicAffairs. Kindle Edition.

²⁷ Guy Debord (1955) *Introduction to a Critique of Urban Geography*. Les Lèvres Nues #6 (Paris, September 1955). Translated by Ken Knabb.

that is automatically followed in aimless strolls (and which has no relation to the physical contour of the terrain)".²⁸ This movement marks an early and well articulated attempt by artists to resist the commercialization of their urban environment.

The strategy of creating control spaces through exclusively physical means, however, has ended. As social, digital, and physical spaces continue to merge and change under corporate influence, data and the built environment's effect on each other becomes an increasingly tight feedback loop. In her 2017 essay, "A City is Not A Computer", Shannon Mattern rejects the metaphor that a livable urban environment can be created and programmed solely from data. She outlines the dangers of viewing data analytics as an infallible scientific process by distinguishing between data and information. Data, she asserts, are the raw numbers gathered by machines, but it does not become usable information until it is interpreted.²⁹ The interpretation process is just as mutable as traditional urban planning, and perhaps is even more so because it presents itself as objective and scientific. Near the end of her essay, Mattern also discusses the types of knowledge that is mandatory to city-building that cannot be captured by raw data. She asks:

What are the non-textual, un-recordable forms of cultural memory? These questions are especially relevant for marginalized populations, indigenous cultures, and developing nations. Performance studies scholar Diana Taylor urges us to acknowledge ephemeral, performative forms of knowledge, such as dance, ritual, cooking, sports, and speech. These forms cannot be reduced to "information," nor can they be "processed," stored, or transmitted via fiber-optic cable. Yet they are vital urban intelligences that live within bodies, minds, and communities.³⁰

²⁸ Ibid

²⁹ Shannon Mattern, "A City is Not a Computer," Places Journal. (Feb. 2017): <https://placesjournal.org/article/a-city-is-not-a-computer/>

³⁰ Ibid.

In her essay, we can see the result of the capitalistic shift in urban planning via the neoliberal belief that data and technology are the most effective way to create an environment: A city is no longer simply a place that should be redesigned to accompany citizens who have money to spend, it is also a place that should be redesigned using as much data, gathered through embedded tech, as possible.

Resolution 37371

Resolution 37371 was not Portland's first attempt at installing smart technology. In 2016, Portland bid to participate in a project that would establish city-wide WiFi in order to improve public transportation, ultimately losing to Columbus, Ohio.³¹ That project was paid for by a \$40 million grant from the U.S. Department of Transportation and \$10 million from Vulcan Inc., a tech company founded by former Microsoft CEO Paul Allen.³² The new Portland SC resolution, unanimously approved by the city council in June 2018, does not outline specific monetary avenues for the SC development. Since then, however, the funding has come from a variety of grants, private donors, and other City of Portland branches like the Department of Transportation and the Department of Planning and Sustainability. All of these funding avenues are channeled to Smart City PDX.

Smart City PDX is the City of Portland's new organization in charge of

³¹ Njus, Elliot. "Portland Officials Make Final Pitch for \$40 Million 'Smart City' Grant." OregonLive.com. June 09, 2016. Accessed March 12, 2019.
https://www.oregonlive.com/commuting/2016/06/portland_officials_make_final.html.

³² "City of Columbus." Major Employers. Accessed March 12, 2019.
<https://www.columbus.gov/smartcity/>

implementing integrated technology projects. The steering committee listed consists only of the city council members and city employees. The Smart City PDX goal stated “is to address inequities and disparities using data and investing in technology-driven projects that improve people’s lives”, which is paralleled by the mission statement on Portland’s government website that states it will “make our city a place where data and technology are used to improve people’s lives, particularly in underserved communities, to support a healthy, safe, more affordable and prosperous Portland for everyone”.^{33 34}

The first projects that were initiated by Smart City PDX were *Air Quality Sensory Testing and Deployment* and *Portland Urban Data Lake (PUDL)*. The air quality project seeks to gather data on pollution in different points in the city, since standard air quality statistics report on cities as a whole. PUDL is a project aimed at creating infrastructure that would be able to support the amount of data that will be collected by the other SC projects. It will be a cloud storage platform that has various levels of public access. The Smart City PDX website alludes to the future availability of all collected data to the public, while also stating that the PUDL will allow Portland to better partner with the private sector.³⁵ Neither proposal webpages included timelines or information on funding.

It is understandable that the initial projects for the SC transition would need to include data infrastructure. Despite the focus on the digital existence of data, it should not be forgotten that there are physical components as well. Even a platform hosted in the cloud requires space for servers, storage, and hardware; in addition to a team of

³³“Guiding Principles.” Smart City PDX. Accessed March 12, 2019. <https://www.smartcitypdx.com/guiding-principles>.

³⁴ “Smart Cities.” Drugs and Vice Division RSS. Accessed March 12, 2019. <https://www.portlandoregon.gov/bps/76713>.

³⁵ “Projects.” Smart City PDX. Accessed March 12, 2019. <https://www.smartcitypdx.com/projects>.

developers, supervisors, and designers. While not explicit in the small webpage dedicated to outlining the PUDL project, it is likely all of these things will need to be set up and paid for before the SC can go any further.

One of the more recent projects that has been under development in the last year is the PREPhub. As described on the Smart City PDX website, the PREPhub is a “new kind of infrastructure designed to operate entirely off-grid during a disaster, providing crucial services that include power, communication and emergency first aid supplies”.³⁶ It is not clear from the website if some of the less crisis-oriented amenities, such as the charging station, would be functional for citizens all the time or just when the hub is activated during a disaster. Either way, it is not marketed as a resource that will be consistently accessible.

If this is how the Smart City PDX office has chosen to present the PREPhub, it speaks to the fluidity of values that Maroš Krivý asserts as integral to the SC’s ability to maintain both its public and private sector facades. If the PREPhub truly only allows charging and communication during a disaster, then it speaks to the SC as a perpetrator of infrastructure that posits itself as creating solutions for the future while ignoring the inequity of its present.

³⁶ “Projects.” Smart City PDX. Accessed March 12, 2019. <https://www.smartcitypdx.com/prephubs?rq=prephubs>



Figure 5: PREPhub graphic, Smart City PDX.

Chapter 3: The Smart City as Neoliberal Utopia

The viral essay titled “WE ARE ALL VERY ANXIOUS” by the anti-capital collective *We are Plan C* outlines the different stages of late eurocentric capitalism by their ‘dominant system’ and their ‘dominant effect’. According to *We are Plan C*, each phase of capitalism has its own dominant reactive effect that maintains its power “*until strategies of resistance able to break down this particular affect and /or its social sources are formulated*”.³⁷ Integral to the cycle of capitalistic phases is the subsequent appropriation of that reactive effect into the next cycle. For example, raves appear as a strategy for resistance from the dominant effect of the 60’s “boredom”, and in the following phase, large-scale corporate music festivals are introduced as a profitable solution to counter-culture partying.³⁸

The appropriation of resistance strategies is not only present in large scale phases of commodification, but rather an instrumental part of the continuation of neoliberalism that extends into every facet of its expression.

Thus, when technocratic concepts of utopia began to radiate out from their Silicon Valley epicenter, it becomes essential that that ideology is adapted to fit the sociopolitical environment to which it spreads. The failure of a corporate entity to not plaster local ideology onto a project can lead to citizen unwillingness to adopt it. This was demonstrated when Sidewalk Labs, a subsidiary of Google focused on integrating technology, proposed the Quayside development project in Toronto, Canada. The project aimed to create the “first neighborhood built from internet-up”, and was

³⁷ “We Are All Very Anxious.” We are Plan C, April 4, 2014. <https://www.weareplanc.org/blog/we-are-all-very-anxious/>.

³⁸ Ibid

proposed roughly one year before resolution 37371 was passed in Portland.³⁹ During the Summer of 2018, controversies surrounding the project grew, specifically regarding a lack of transparency about who would own the data generated from this site, and multiple members of the advisory board resigned.

Rit Aggarwala, the company's head of urban systems, responded to the demand for transparency by stating that; "[t]he idea that questions around data privacy and governance have to happen before public engagement can turn to urban design [is] irresponsible".⁴⁰ Wylie responded to Smart City Labs not with a condemnation of technology integration in cities, but by explaining the role of corporations in its planning and profitability. She wrote that SCs:

"offer tech companies opportunities to generate profits by assuming functions traditionally carried out by the public sector and by selling cities technologies they may or may not need. The business opportunities are clear. The risks inherent to residents, less so." ⁴¹

Wylie identifies those business opportunities as the buying and selling of personal data without community ownership. She poses the questions: "[s]hould the insights from our data be given away or sold to a company so it can use it to build services it will sell back to us (or to others)? Is the intellectual property related to this data something our cities and residents may want to hold onto and manage – or perhaps license"? ⁴² Wylie also points out that even if the city and public had access to all the data gathered, Smart

³⁹ Bliss, Laura, Laura Bliss, and CityLab. "Behind the Backlash Over Sidewalk Labs' Smart City." CityLab. September 07, 2018. Accessed March 12, 2019. <https://www.citylab.com/design/2018/09/how-smart-should-a-city-be-toronto-is-finding-out/569116/>.

⁴⁰ Ibid

⁴¹ "Smart Communities Need Smart Governance." The Globe and Mail. March 02, 2018. Accessed March 12, 2019. <https://www.theglobeandmail.com/opinion/smart-communities-need-smart-governance/article37218398/>.

⁴² Ibid

City Labs would still have the opportunity to process that along with all the additional data collected by the other subsidiaries of Alphabet Inc. (Nest, Waze, LinkNYC), which empowers them to profit substantially more off of citizen data than the city itself would ever find possible.

The concerns of Wylie are echoed in the work of many theorists exploring Surveillance Capitalism. Surveillance Capitalism, as defined by Shoshana Zuboff, is a form of capitalism that “unilaterally claims human experience as free raw material for translation into behavioral data”.⁴³ David Harvey in his book, *Seventeen Contradictions and the End of Capitalism*, also outlines the dangers of the consumer becoming the product, writing:

The consumers, furthermore, produce information, which is then appropriated by the owners of the media for their own purposes. The public is simultaneously constituted as both producers and consumers, [...] is an important corollary here [...] capital profits not through investing in production in these spheres but by appropriating rents and royalties on the use of the information, the software and the networks it constructs.⁴⁴

In this passage Harvey explores the way consumers become non consensual producers of corporate profit and how this data then creates new networks. This is not only an additional lens to understand the infrastructure built by data, but also to view the reproduction or ‘feedback loop’ of corporate noopolitics. This feedback loop is also alluded to by Wylie above, as she highlights that the data gathered will ultimately be sold back to us.

⁴³ Zuboff, Shoshana. *The Age of Surveillance Capitalism: The Fight for the Future at the New Frontier of Power*. London: Profile Books, 2019.

⁴⁴ Harvey, David. *Seventeen Contradictions and the End of Capitalism*. Oxford: Oxford University Press, 2015. Page 237



Figure 6: Twitter bots for Sidewalk Labs, documented by Sean Craig.

In July 2018, Sidewalk Labs tried its hand at some late in the game noopolitics, and created Twitter bots to tweet support for the project. Unfortunately, all the bots tweeted the exact same thing, and the campaign was quickly exposed by reporter Sean Craig. The tweets and accounts have since all been deleted.⁴⁵

On May 7, 2020, Sidewalk Labs announced that the project was being officially abandoned. Although they claimed the choice to cease was due to economic barriers related to COVID-19, many people see it as a result of citizen resistance and an unwillingness of Sidewalk Labs to respond to the regulatory and geographical concerns that were consistently raised. In a New York Times article about the development's

⁴⁵ Craig, Sean. Twitter Post. July 8, 2019 4:41 PM.
<https://twitter.com/sdbcraig/status/1148376538284511232>

halt, the former CEO of Blackberry, Jim Balsillie, was quoted saying, “This is a big step back for surveillance capitalism and a victory for making technology serve society rather than capture it”.⁴⁶

So what can other Smart City organizations learn from this? Certainly that the relationships between cities and corporations will run smoother when kept hidden from the general public. Additionally, that the political landscape of some cities does not reflect desire for the ubiquitous tech found in Silicon Valley.

Smart City PDX reflects a response to these mistakes. The website shows a broad alignment with social issues that are recognized to be important to Portlanders - specifically that SC technology will make the city more eco-friendly, more affordable, and more inclusive. Their homepage includes platitudes about the way that they are going to use technology to improve people’s lives in underserved communities. Their ‘Contact Us’ page has directions on how to bike to their downtown office.⁴⁷ And, despite being responsible for the most robust data management system that has ever been built in Oregon, the website itself is hosted on Squarespace. In a formal analysis of the website, I would say that it is designed referentially to the website of a grassroots nonprofit (of which Portland has many), and my one critique would be that not using WordPress to host lacks verisimilitude.

It is unlikely that citizens want their government to spend millions on the installation of surveillance cameras, but with enough media connecting SCs to energy

⁴⁶ Austen, Ian, and Daisuke Wakabayashi. “Google Sibling Abandons Ambitious City of the Future in Toronto.” *The New York Times*, May 7, 2020. <https://www.nytimes.com/2020/05/07/world/americas/google-toronto-sidewalk-labs-abandoned.html?smid=em-share>.

⁴⁷ “Contact Us” Smart City PDX. Accessed March 12, 2019. Smartcitypdx.com/contact-us

efficient transportation, they may start to internalize the notion that data processing is inextricably tied to stopping climate change. Smart City PDX curates this terrain by both appropriating Portland's social issues, and obscuring its connection to bigger tech conglomerates such as Google.

Although Smart City PDX never publicizes its relationship to Google, resolution 37371 was passed the same summer that Sidewalk Labs announced Portland as one of the 16 cities it would be starting projects in.⁴⁸ The Smart City PDX website does however list Smart Cities Labs under the website's 'National Partners' tab, which is a subsidiary of Sidewalk Labs.⁴⁹ It is a somewhat vague branch of Sidewalk Labs, although it seems to be more focused on transportation. Its website also contains no mention of Sidewalk Labs, so if you were tracking this organization from its listing on the Smart City PDX website, you still wouldn't know Google had anything to do with it. The website also doesn't mention the use of the app Replica, which is Google technology that uses data to simulate driving and transit patterns of an entire city via phone tracking.⁵⁰ Replica is an app that is provided to Portland by a 500,000 dollar contract with Sidewalk Labs, so why does Smart City PDX list Smart Cities Labs as their national partner instead?

The listing of Smart Cities Labs on the National Partners page, rather than the corporation that is actually supplying technology and contracts, demonstrates a

⁴⁸ "T4America Blog." Transportation For America. Accessed March 12, 2019. <http://t4america.org/2016/10/18/16-cities-join-t4americas-smart-cities-collaborative-to-tackle-urban-mobility-challenges-together>

⁴⁹ "Company Overview of Alphabet Inc." Bloomberg.com. Accessed March 12, 2019. <https://www.bloomberg.com/research/stocks/private/snapshot.asp?privcapId=29096>.

⁵⁰ Kaye, Kate. "Portland Quietly Launches Mobile Location Data Project with Alphabet's Controversial Sidewalk Labs." GeekWire, May 28, 2019. <https://www.geekwire.com/2019/portland-quietly-launches-mobile-location-data-project-alphabets-controversial-sidewalk-labs/>.

purposeful attempt by Smart City PDX to distance themselves from Google. After the Quayside backlash there is a new precedent for SCs integrating data technology that includes noopolitik digital curation as well a corporate obscuration.

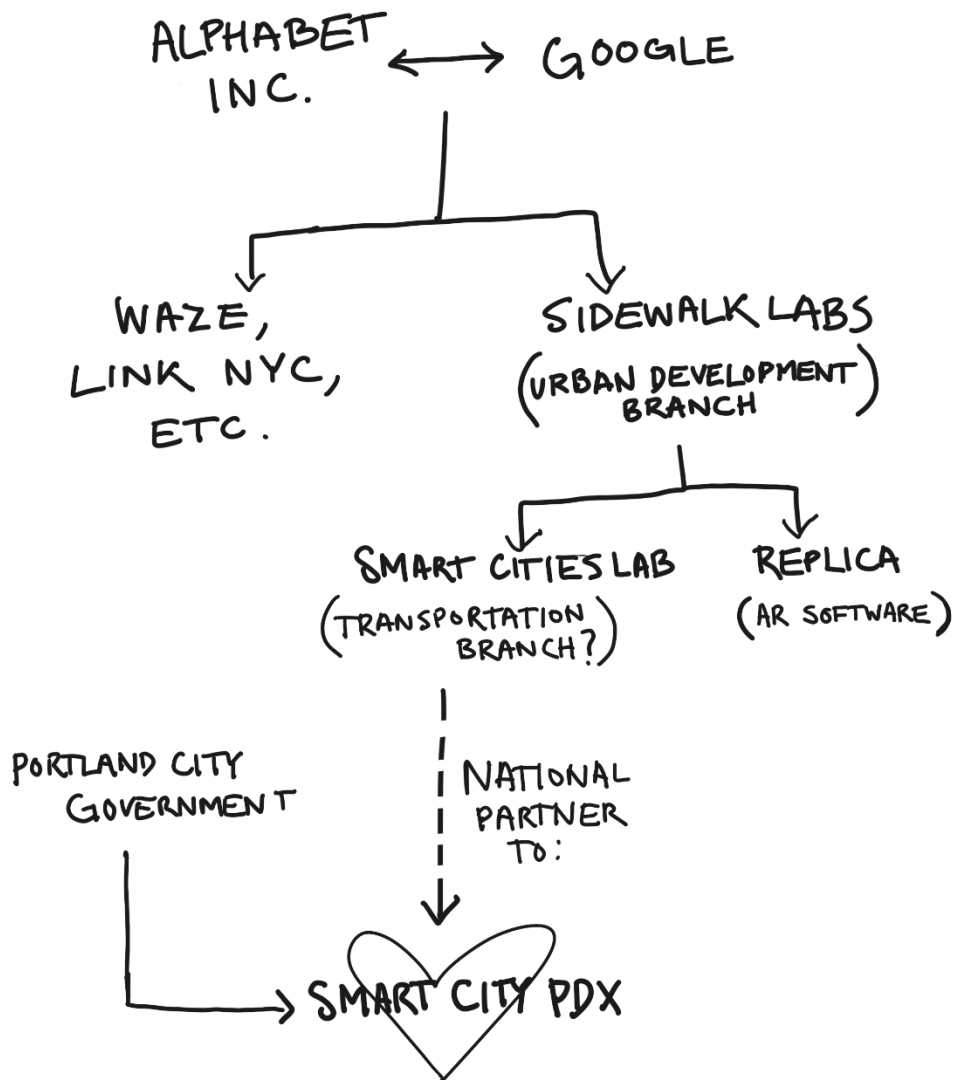


Figure 7: Google Subsidiary Chart, Marcella Rosen. 2020.

Chapter 4: The Smart City as Resource Distribution

New York City is considered one of the ‘smartest’ cities in the world, although much of the technology that contributes to the title long pre-dates the descriptor of SC itself. NYC’s famous subway system, for example, is a large factor in its characterization as an SC. However, the aging, city-owned, state-operated system contradicts the SC’s unwavering coordination with private companies and marketed modernity. More than any specific type of infrastructure, SCs are defined by their ever-shifting relationship to a commodified idea of utopia, and, as previously articulated by Krivey, a “flexible orientation towards an immediate future”.⁵¹ NYC’s consistent alignment with the SC brand reveals that the title reflects a national and global perception of modernity rather than explicit architectural components.

One of NYC’s more recent initiatives that fits a more current and data-driven approach to SCs is the installation of LinkNYC kiosks throughout the city. These kiosks provide free WiFi, 4G for phone calls, charging ports, and they have subsequently been met with strong public support. In one of the early phases of the LinkNYC kiosk project, when there were only 65 kiosks city wide, over 5,000 people signed up for use in a single week.⁵² The Associated Press reported that many of the users of the kiosks were houseless, and although the information was collected primarily through interviews, it still supports the notion that these kiosks provide many citizens access to a

⁵¹ Krivý, Maroš. “Towards a Critique of Cybernetic Urbanism: The Smart City and the Society of Control.” *Planning Theory* 17, no. 1 (February 2018): 8–30. doi:[10.1177/1473095216645631](https://doi.org/10.1177/1473095216645631).

⁵² Fung, Brian. "The Tremendous Ambitions behind New York City's Free WiFi." *The Washington Post*. April 08, 2016. Accessed March 12, 2019. <https://www.washingtonpost.com/news/the-switch/wp/2016/04/08/the-tremendous-ambitions-behind-new-york-citys-free-wifi/>

digital resource they might otherwise lack.⁵³ The physical structure may be funded by LinkNYC, which is also a subsidiary of Sidewalk Labs, but does that inherently mitigate the potential benefits of its existence to certain communities?⁵⁴



Figure 8: LinkNYC Kiosk. Accessible:<http://nymag.com/intelligencer/2016/03/nyclu-raises-linknyc-privacy-concerns.html>

Answering this question requires further analysis about the problematics of SC management, not just the intrinsic existence of urban technology. It should be clarified that ‘urban technology’ is an extraordinarily vague term. Sometimes it refers to physical tech infrastructure, such as the LinkNYC booths. Sometimes it refers to technology used to collect data that will go on to inform new infrastructure, such as air pollution and traffic sensors. Sometimes it refers to tech or infrastructure that collects data for

⁵³ Matthews, Karen. "Homeless Avid Users of NYC's Free Wi-Fi Kiosks." The Associated Press, via The Morning Call. August 24, 2016. Accessed March 12, 2019. <https://www.mcall.com/news/nationworld/mc-nyc-homeless-using-wi-fi-hotspots-20160823-story.html>.

⁵⁴ Bliss, Laura, and CityLab. "Behind the Backlash Over Sidewalk Labs' Smart City." CityLab. September 07, 2018. Accessed March 12, 2019. <https://www.citylab.com/design/2018/09/how-smart-should-a-city-be-toronto-is-finding-out/569116/>.

non-governmental knowledge, which the LinkNYC booths also provide. Often it refers to projects that are at the center of a Venn diagram for all three. The last example, technology that is used as a source of data production for corporate entities, tends to be the object of the most critique. However, all of these processes participate in pre-existing urban planning models that prioritize economic development over equitable and citizen-oriented initiatives.

When discussing the distribution of technology in cities in her book, *Uneven Innovation: The Work of Smart Cities*, Jennifer Clark writes “an emphasis on technical innovation has obscured the need for innovations in urban governance and investments in local government.”⁵⁵ Similarly, an emphasis on the critique of the surveillance technology in SCs has obscured the need for critique of urban governance that allows it.

An unwillingness to delineate the two is understandable. The design of many U.S. cities has moved towards privatization and outsourcing so much so that separating the local government from its corporate partners feels futile.⁵⁶ It seems as though city governments have adopted the private sector’s ideals of economic growth for so long that the distinction comes across as a failure to understand the contemporary history of urban planning. However, imagining a future that excludes commercialization of urban landscapes and includes accessible technology requires a local government that is perceived by citizens as robust enough to provide equitable infrastructure.

Due to the strength of Silicon noopolitics, the chasm between the perceptions of urban data collection and perceptions of urban planning is particularly deep. While it's

⁵⁵ JENNIFER, CLARK. "SMART CITIES AS THE NEW UNEVEN DEVELOPMENT." In *Uneven Innovation: The Work of Smart Cities*, 181-200. New York: Columbia University Press, 2020. Accessed May 11, 2020. doi:10.7312/clar18496.11.

⁵⁶ Ibid, 183.

true that digital space and physical space have different physical materialities, it often goes unacknowledged that they are subject to the same social properties. As Shannon Mattern explores in her essay, “A City is Not a Computer”, data that is gathered using smart technology must then be processed, and it is during this ‘processing’ that the same exclusionary practices included in many urban strategies are revealed. Mattern concludes:

we need new models for thinking about cities that do not compute [...]. In contemporary urban discourses, where “data” rhetoric is often frothy and fetishistic, we seem to have lost critical perspective on how urban data becomes meaningful spatial information or translates into place-based knowledge.⁵⁷

Data analytics and collection are presented as infallible by their perpetrators, and yet even when critiqued by those in opposition to its implementation, the blame falls largely on private sector influences. City governments are viewed as passive bystanders to the agenda of corporate power, rather than important and long term allies in its success. In her chapter “Smart Cities as the New Uneven Development,” Clark writes:

Fundamentally, smart cities are a policy problem, not a technology problem[...] For those interested in cities, economies, and society, the policy questions are much more consequential. These questions fall into two broad categories: (a) privatization and the smart cities project—who owns its infrastructure, data, systems, operations (noted earlier); and (b) funding for and distribution of the smart cities project—the revenue model and the construction of differentiated markets within the city: who pays, who benefits, and, ultimately, who has access and who does not.⁵⁸

When integrated technology is examined as a resource that contributes to the livability of a city, the question is not whether certain areas would benefit from better

⁵⁷ Shannon Mattern, “A City is Not a Computer,” Places Journal. (Feb. 2017): <https://placesjournal.org/article/a-city-is-not-a-computer/>

⁵⁸ JENNIFER, CLARK. "SMART CITIES AS THE NEW UNEVEN DEVELOPMENT." In *Uneven Innovation: The Work of Smart Cities*, 189.

public transportation, monitored air quality, or free WiFi and outlets. Instead it becomes: why are these amenities only accessible through the private sector, and why does a local or state government prioritize the distribution of them based on potential benefits to the economy over that to the citizens?

In some ways, this thesis encourages the recharacterization of SC as a more mundane, though perhaps more complex, neoliberal expression of urban planning. The same goals that have existed since the '50s still exist, which are to increase the financialization of urban zones at the expense of the citizens who can't keep up. This is not to say that SCs deserve no singular analysis. There should absolutely be examination and critique of the new modes of surveillance, prosumerism, displacement, and private sector involvement that have and will continue to rise as integrated technology becomes the default for cities' proposed development projects. However, to assert that SCs harm communities without the explicit consent and assistance of local governments limits the scope of citizen responses and actions and erases the nuances about the kinds of infrastructure that could be provided under a significantly altered system.

There should be recognition that in certain socio-geographical locations like Portland, access to communication systems has become a requirement for many people. Therefore wanting your government to provide access to that is a reasonable expectation, as evidenced by the growing view of broadband internet as a utility rather than a luxury. There should also be recognition that beautiful and clean outdoor spaces are beneficial for any area. Development, and specifically technological development, can positively serve communities. However, it requires a cultural shift not only in the

relationship between urban development and corporate power, but between a government and who it serves.

Chapter 5: The Smart City as Weaponized Public Space

The history of hostile design in the urban-built environment extends beyond the integration of modern information technology, both temporally and architecturally. When Eugene Haussmann famously recreated Paris during the 19th century, it was done so without the use of data monitoring equipment but with congruent desires of creating urban control spaces through architecture.⁵⁹ Integrated technology projects don't happen because of the local government's love of software; cities that partner with private sector entities do so because of consistent efforts to maintain economic growth. While recognizing the long history of public control spaces, it is important to analyze the new ways that surveillance technology exacerbates gentrification and policing of the commons in many SCs, including Portland.

Hostile design (also known as defensive architecture, hostile architecture, unpleasant design, exclusionary design, or defensive urban design) can be broadly defined as architecture made specifically to exclude, harm, or otherwise hinder the freedom of a human being, often aiming to remove certain sections of a community from public space.⁶⁰ These attempts to control how individuals interact with a space became more commonly implemented in urban built environments in the 1970s. Modern hostile design is derived from the philosophy of Crime Prevention through Environmental Design (CPTED), which is based largely on the work of criminologist C.

⁵⁹ "The Man Who Created Paris." BBC Culture. BBC, January 26, 2016. <https://www.bbc.com/culture/article/20160126-how-a-modern-city-was-born?referer=https://www.google.com/>.

⁶⁰ Stuart Semple, "Hostiledesign," Hostiledesign, , accessed December 04, 2018, <https://hostiledesign.org/>.

Ray Jeffery and architect Oscar Newman. It was Newman who developed a system of application for a built environment.⁶¹ CPTED seeks to prevent crime but also, and more relevantly, prevent the perception of crime. One of the primary strategies is Natural surveillance. Natural surveillance seeks to increase visibility and the perceived risk of being seen in a ‘deviant’ act, thus creating a space where people are self-monitoring and are unable to act or exist privately. Examples of this include lighting particular areas and creating landscapes where all passing vehicles act as surveillance.

more site-specific analysis of integrated technology’s impact on an area can be had via Southeast Portland’s Bybee orange line rail stop and its next-door neighbor, Westmoreland Park. The orange line was added to Portland’s train system five years ago to increase public transportation options that started farther south.⁶² Westmoreland Park was also a development site starting in 2014, but unlike the Bybee train stop, which was brand new, the park was pre-existing infrastructure that was redesigned.⁶³

The Westmoreland Park redesign was considered a restoration project for salmon. There is a creek that surfaces in the north end of the park before going underground for another mile. Previously, the creek was controlled using a cement channel. The water was slow moving and constantly full of debris produced by the hundreds of ducks and geese that occupied the park year round. The plant life was mostly restricted to the riparian zone along the water’s edge. Birds dominated the rest of the area, which was a mowed grass field, to such an extent that kids referred to it as

⁶¹ Cara Chellew. (2016). Design Paranoia. Ontario Planning Journal. 31. 18.

⁶² ["Portland–Milwaukie MAX Orange Line"](#) (PDF). TriMet. July 2016. [Archived](#) (PDF) from the original on April 23, 2019. Retrieved May 14, 2019.

⁶³ “Westmoreland Park.” Westmoreland Park RSS. Accessed May 21, 2020. <https://www.portlandoregon.gov/parks/61107>.

“duck poop park.” Picnic tables, benches, the play structure, and the branches of the giant sequoias in the park’s middle to southern end were the most excrement-free places to sit.

Since my childhood the landscape has been transformed into a semi-wetland. The water is no longer channeled and the lawn has been replaced with a savannah grassland full of native plants. You can walk through the area on unobtrusive wooden bridges, and the salmon have been able to use the waterway to continue their journey to the ocean. Other parts of the park, ones that were not conflicting with the salmon life cycle to begin with, have also been redone to fit the more naturalistic aesthetic. The playground, which used to be a more traditional mix of colorful metals and plastics, is now a ‘nature based play area’ made up of large rocks and smoothed tree trunks with ropes to aid climbing. The bark chips have been replaced by sand, which children can build up and move around to control water that flows from an elevated hand pump.



Figure 9.1: Westmoreland Park Before Construction, Photograph by Patrick Norton.
<https://www.portlandoregon.gov/bes/article/439236>.



Figure 9.2: Westmoreland Park After Construction, Photograph by Patrick Norton.
<https://www.portlandoregon.gov/bes/article/439236>.



Figure 9.3: Westmoreland Park After Construction, Photograph by Patrick Norton.

<https://www.portlandoregon.gov/bes/article/439236>.

The new play structure removed some plastic tunnels where it had once been common for people to sleep. Many of the original physical uses of the structure can still be achieved, such as climbing, sliding, and digging, and are simply recreated with less synthetic materials. However, any parts of the play structure that had provided coverage from both eyes and weather were not rebuilt. This removal of protective structures was also applied to the giant sequoias that populate the middle section of the park. Up until the restoration, the sequoias were a large draw for local kids even more than the play structure itself. They had thick branches that went all the way to the ground, making them easy for even young children to climb. Some of the trees had boards nailed in higher up, so multiple people could sit or lay 30 feet off the ground. When you were standing by the trunk of one of the trees, the density of the pines made it difficult for someone outside of it to see you. Even when it was raining, the radius underneath the trees was kept dry.

Now the first ten feet of branches have all been cut, and the boards nailed in them all removed. If you were driving by the park in a car, you would be able to scan the entire area without anything breaking your line of sight. In Rosalyn Deutsche's text, "Art and Public Spaces: Questions of Democracy", she identifies *specifically* the gentrification of parks as an indicator that New York City in the '80s wished to destroy shelterless citizens that didn't contribute to the economy. She asserts that this destruction is caused by the following:

Failure to recognize the homeless as part of the urban public; disregard of the fact that new public spaces and homelessness are both products of redevelopment; the refusal to raise questions about exclusions while invoking the concept of an inclusionary public space.⁶⁴

Westmoreland Park's redevelopment intentionally removed protective infrastructure in an attempt to make the space less hospitable to people experiencing houselessness or people participating in deviant activities, but how is this hostile redesign related to integrated technology? We must consider Westmoreland Park's relationship to the neighboring MAX train station.

A critique from right-leaning citizens of new MAX stops is typically about the risks associated with bridging neighborhoods of different socio-economic levels.⁶⁵ My grandpa, for example, has been known to refer to new MAX lines as 'crime trains.' From a similar perspective (though separated by several degrees of liberalism), new families who move into the area also create pressure for the city to enforce perceptions

⁶⁴ Ibid.

⁶⁵ Njus, Elliot. "Assault, Vandalism and Theft: Inside TriMet's Dramatic Crime Spike." oregonlive, May 24, 2018.
https://www.oregonlive.com/news/erry-2018/05/60970cfc5b3255/crime_on_trimet_by_the_numbers.html

of safety during travel, and in the area overall. Although the park had existed for a long time with elements that created shelter and privacy, its newfound proximity to the train stop compounded, from the perspective of a city planner, the need for CPTED. The increase of integrated technology is a form of economic growth and the intentional gentrification of parks is outlined as a symptom of that growth. Perhaps a park where it was common for people to sleep at night was acceptable in the old Southeast Portland, but in a developing area full of young middle class families commuting everyday to their jobs downtown, surveillance and perceptions of safety are required. In this way, it is not the addition of public transportation that creates hostile design, but rather the city's implementation of secondary infrastructure in response to citizens' anxieties about spaces in which class integration occurs.

Secondary infrastructure refers to design elements created to support a political or social use of space that is not directly linked to its utilitarian or perceived function. While a park's primary, or perceived primary, function might be to provide an outdoor communal space, it may be designed from its conception to include infrastructural elements that will control the scope of its usage more subtly. Secondary infrastructure should not be interpreted to mean that these design elements are an afterthought by their designers, but rather that they are created to support an agenda that is obscured from the demographics that they most seek to accommodate.

With use of data collection, secondary hostile infrastructure is becoming increasingly exacting. Most obviously, the natural surveillance strategies of the '70s are easily bolstered through the use of cameras, motion sensors, and citizen transit tracking. However, there is also the broader influence that SC implementation has on

urban displacement. Tech-based surveillance methods are often developed alongside other integrated technology and work within a positive feedback loop of gentrification. This means that the more an area gentrifies, the more the area will be prioritized for SC projects. Even further, it means the more that an area has SC projects, the more hostile design can be quickly and violently implemented. SC projects also inform future versions of themselves. As put by Jennifer Clark in *Uneven Innovation: The Work of Smart Cities* : “the data that [is] generated by and in cities determine the design of smart cities products and services and the primary market for them”.⁶⁶ Smart technologies not only compound the feedback loop of hostile design, but they create new avenues for exponentially effective displacement.

⁶⁶ JENNIFER, CLARK. "SMART CITIES AS THE NEW UNEVEN DEVELOPMENT." In *Uneven Innovation: The Work of Smart Cities*, 196.

Chapter 6: The Smart City as Conclusion

Imagining technology and urban planning outside of neoliberalism is extremely difficult. Indeed, a city like Portland would share only a passing resemblance to itself if created in its absence. In fact, terms such as ‘city’ (let alone Smart City) that are used to define the spatial regulations of financial zones would likely not exist at all.⁶⁷ The strengths of concentrated living would reflect the benefits of shared social practices, rather than that of centralized economic development.

Smart City PDX, and thus resolution 37371, proves a relevant case study to examine the various methods of operationalization used by SCs. As a resolution, it reveals the way that citizen involvement is bypassed when it comes to technology integration in the urban environment. The resolution was quietly approved with no citizen vote, little press coverage, and no disclosed source of funding. This secrecy extended into the corporate obscuration by Smart City PDX. Their website claims it is going to use technology to improve the lives of underserved communities but does not list a single nonprofit or grassroots community organization on its Partners’ page.⁶⁸ Rather than revealing Smart City PDX’s relationship to Sidewalk Labs, they opted to list the lesser known subsidiary Smart Cities Lab. The decision of Google to have quiet involvement in Portland is a direct response to their failure to develop Quayside, Toronto as originally planned. The community push-back to that project reflected a growing literacy amongst citizens about the risks associated with unregulated data ownership and taught the private sector that future integrated tech projects would

⁶⁷ Ibid

⁶⁸ “Partners” Smart City PDX. Accessed March 12, 2019. smartcitypdx.com/partners.

require significantly more site-specific marketing. The timing and strategies of Smart City PDX reflect that change.

All case studies are hometowns. Metaphors are real neighborhoods. Formal analysis of architecture doesn't remove a physical structure, only communicates its existence. Thought experiments about what Portland could be is not changing what Portland is right now. Which is police violence in parks at night, loss of digital and physical commons, nowhere to buy cheap cigarettes, nowhere to send your kids after school, and nowhere private to sleep. Research within academia can lead to understanding and changes in perception just as often as it can lead to distance and a clinical apathy, and many times I don't know which direction this thesis has pulled me.

Westmoreland park is beautiful now, and I am happy for the kids that will grow up playing on it, but it has come at the unnecessary cost of safety and shelter for people that are unhoused. The relationship between the infrastructural changes made to the park and the new train stop illustrates the way that integrated technology often operates within environmental, safety, and public service initiatives. It is so important to understand these elements as extricable, as removable caveats rather than required sacrifices. The prioritization of urban tech subsequent to the increasing gentrification of neighborhoods reveals the way these projects are distributed, and how the local government creates feedback loops of displacement. To reiterate Jennifer Clark, the continued desire to innovate a city with urban technology is a means to circumvent our real need for complete reorganization of the way we create our urban landscapes. Understanding the active role that our governments play in citizen displacement is critical to learning the actions that we can take against it.

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