

Media@LSE MSc Dissertation Series

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MANUFACTURING THE MAPPED METROPOLIS

*A Social Semiotic Analysis of Cartographic Representations of
Gentrification and Displacement in New York City*

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Published by Media@LSE, London School of Economics and Political Science ("LSE"), Houghton Street, London WC2A 2AE. The LSE is a School of the University of London. It is a Charity and is incorporated in England as a company limited by guarantee under the Companies Act (Reg number 70527).

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ABSTRACT

Gentrification is one of the most visible and contentious processes of urban change disrupting the spatial landscape of contemporary, Western cities. Stimulated by neoliberal urban policy, one of the principal consequences of this phenomenon is the displacement of low-income residents as middle-and upper-class populations reinvest in neighbourhoods previously characterised by decay and disinvestment. The re-urbanisation of the middle class has spurred a process of class colonisation that goes beyond the economic transformation of an area, causing the cultural and ideological appropriation of urban spaces. Using social semiotic analysis to examine three social cartographic representations of gentrification and displacement in New York City, this dissertation argues that the visual imaginations of these processes reproduce power-knowledge relations that privilege middle- and upper-class residents by de-emphasising the negative effects of gentrification on working class populations. The deployment of this methodology allows for an examination of the ways in which cartographic representations of social processes can propagate dominant discourses of power and social order through the use of semiotic resources. Drawing on previous scholarship on gentrification, displacement, and cartographic knowledge-making, this dissertation ultimately reveals how social cartography mediates representations of gentrification and displacement through a semiotically constructed narrative of urban revitalisation.

INTRODUCTION

Deconstruction urges us to read between the lines of the map – “in the margins of the text” – and through its tropes to discover the silences and contradictions that challenge the apparent honesty of the image. (Harley, 1989: 3)

One of the most studied phenomena in urban sociology, gentrification is a controversial urban development process (Beauregard, 1985). Characterised as a spatial manifestation of economic inequality, there is a widespread fascination with the phenomenon in scholarship as well as the mainstream media, because it touches on the intersection of class and culture, an area of great contention in Western society (Sutton, 2018). While the manifestations of gentrifying urban space vary across time, place, and stage, scholars tend to concur that the defining trait of this process is an influx of capital, followed by the displacement of residents, and the social, cultural, economic, and physical transformation of an area (Brown-Saracino, 2010). This results in a change in local “social character,” in which previously neglected neighbourhoods are being transformed into landscapes of consumption that cater to a more affluent clientele (Brown-Saracino, 2010; Perez, 2004).

While elected officials, real-estate investors, and the middle-classes tend to view it as a means to reverse urban decay and revitalise city centres, gentrification often results in increased housing prices, loss of social networks, and the risk of displacement for the urban poor (Bernt & Holm, 2010). Historically, policymakers have adopted definitions of displacement that enable them to exercise wilful ignorance regarding this fact and withdraw from “welfarist” policies to increase private investment in urban centres (Hackworth, 2013). This political enabling of unregulated urban investment forces working class populations out of their neighbourhoods in order to promote city-wide economic growth (Hackworth, 2013). Some scholars maintain that part of the responsibility for the abandonment of urban policy that protects working class communities from the negative outcomes of gentrification lies with social scientists, arguing that there has been a

lack of intervention and provisions of policy alternatives in critical scholarship (Bernt & Holm, 2010).

Using social semiotic analysis to examine three social cartographic representations of gentrification and displacement in New York City, this study aims to examine how underlying discourses about these urban processes further a class-based ideological narrative where the displacement of low-income residents is de-emphasised to further a rhetoric of urban revitalisation. The three maps that were chosen for analysis were all produced with the purpose of aiding policymakers in making more informed policy resolutions. Drawing on previous scholarship on social cartography, this research project operates on the assumption that the visual classification practices that are inherent to maps, and particularly cartographic representations of social processes, inevitably imbue these texts with the power to reconceptualise how we understand urban change. Working from this assumption, the purpose of this dissertation is to attempt to provide insight into the ways in which dominant social and cultural beliefs about gentrification and urban displacement are conveyed through social cartography.

LITERATURE REVIEW

Gentrification as Ideology

A central question in gentrification scholarship is whether the phenomenon should be considered a net benefit or a net detriment to cities and their users (Billingham, 2015). This debate largely centres around the variations in impact on new and existing residents in terms of who gets to reap the benefits, and who bears the burden (Zuk et al., 2017). Although it is in large parts a socio-economic process, gentrification is also an ideological and political event that changes the spatial make-up of the city in a way that re-establishes upper- and middle-class groups' influence and power over space (Beauregard, 1985). This leads to the displacement of low-income residents and low-margin retailers as more affluent populations and businesses move into the area and raise the cost of living (Newman & Wyly, 2006). The terms that are used to describe these effects vary

across the literature. What some describe as “social cleansing” (Cameron, 2003), others refer to as “relocation” (Kearns & Mason, 2013), depending on the focus of the scholarship (Easton et al., 2020).

The dynamic of class antagonism that is inherent to gentrification is facilitated by the gentrifiers’ ideological appreciation of city life, as middle-class aspirations shift from suburban to urban (Brown-Saracino, 2010). The power over space that is reinforced when an influx of high earning individuals displace long term residents creates an urban landscape that caters to the preferences of the middle- and upper-classes (Zukin, 2010). Since these residents bring with them a certain culture of consumption, the negative consequences of gentrification are often overlooked as these habits reinforce the image of urban growth (Zukin, 2010). Additionally, there is a certain aesthetic appreciation that frequently goes along with gentrification, what Berglund and Gregory (2019) describe as a celebration of the “‘grit’ found in the present conditions of poverty and the nostalgia of industrial, prosperous pasts” (117). The combination of a neoliberal rhetoric of growth through reinvestment and the middle-class quest for “authenticity” creates a condition in which higher earning individuals usurp working-class communities, displacing current residents while simultaneously appropriating the sociocultural identity of the neighbourhood.

Even scholarship that is concerned with the displacement of incumbent residents often attempts to quantify displacement by measuring the migration to and from dwellings within a neighbourhood, ignoring the sociocultural dimension all together. According to Easton et al. (2010), these studies largely use a unidimensional conceptualisation of measurable displacement, failing to account for the psychosocial ties that bind people to places, as well as the efforts that are often exerted by lower income residents to remain in their homes. This leads to an overall underestimation of the displacement impacts of gentrification (Easton et al., 2010). Bernt and Holm (2010) argue that the failure to accurately conceptualise displacement in gentrification scholarship is partially responsible for the proliferation of neoliberal urban policy. The failure to consider the psychosocial impacts of gentrification on displaced populations runs parallel to the rhetoric of neighbourhood revitalisation and “urban renaissance” that often accompanies the demographic shifts caused by the phenomenon (Berglund & Gregory, 2019).

Considering the cultural and economic driving forces for gentrification, the process can be understood as a cultural and class struggle, in which the competing interests of the middle-and-upper classes and working-class populations come to a head. Scholars such as Atkinson and Bridge (2005) have referred to this process as “class colonisation,” arguing that gentrification as a cultural force privileges whiteness, as well as class-based identities and preferences. Furthermore, they state that the process accentuates social divisions between the gentrifiers and the displaced due to it being catalysed by expansionist neoliberalism in public policy, such as the privatisation of the housing market (Atkinson & Bridge, 2005). A recent manifestation of neoliberal urban policy driving gentrification is the Tax Cuts and Jobs Act signed into law by President Donald Trump in 2017. This bill creates Opportunity Zones, defined as “low-income census tracts that encourage economic development by providing tax incentives” (Din, 2018: 277). Policies like this drastically accelerates the process of gentrification, demonstrating how urban policy can be an ideological tool.

Gentrification in New York City

Postwar suburbanisation was an important determinant of the disinvestment in the American city, as “white flight” left the inner city in a state of decline and widespread property abandonment (Carpenter & Lees, 1995). When cities began losing their affluent families to the suburbs, local governments grew anxious about the “urban crisis” of American cities, as budget gaps were growing between services they were required to provide and the taxes they could collect from poor urban residents (Zukin, 2010).

Within the cities that experienced processes of gentrification in the 1950s and 1960s, the state played a crucial role as local governments actively attempted to attract investment to economically neglected areas (Hackworth, 2013). In New York, gentrification began in the 1950s, at first occurring slowly, as government regulation protected certain areas of the city from rapid change. The rent controls that were specific to New York contributed heavily to the mass-

abandonment occurring in the city between 1965 and 1968, when an estimated 100,000 units were removed from the housing market (Carpenter & Lees, 1995). Institutional disinvestment through redlining was also a large factor leading to the early stages of gentrification, contributing to urban neighbourhood segregation (Carpenter & Lees, 1995). The redlining in New York effectively increased urban segregation by exacerbating the difference in socio-economic mobility across different areas. As government policy preventing private investment was relaxed in the mid-1970s, gentrification became more intense, no longer hampered by measures safeguarding against the displacement of incumbent residents (Hackworth, 2013).

Despite the relaxation of “welfarist urban policy” in the 1970s, the effects of gentrification in major metropolitan areas were still considered spatially insignificant until the turn of the 21st century (Hackworth, 2013). At this point, reinvestment in the urban core changed the urban landscape from containing pockets of renewal within cities characterised by general decay, towards a more pervasive process of urban change (Hackworth, 2013). Lees (2000) calls this “regentrification,” referring to the profound change in urban investment as it diffuses outward into areas that were previously considered “ungentrifiable.” In New York, regentrification has occurred in neighbourhoods like Bedford-Stuyvesant, Harlem, and South Bronx (Hackworth, 2013). As late as the mid-1980s, gentrification scholarship doubted that Harlem could be a “target” for gentrification (Wyly & Hammel, 1999). However, only a decade later, there was “little doubt that the city’s recovery ha[d] returned the process to Harlem with a vengeance” (Wyly & Hammel, 1999: 712). The continued proliferation of gentrification in the 21st century also spurred the inception of “super-gentrification,” a phenomenon where upper-middle-class neighbourhoods transform into exclusive enclaves (Lees, 2003). The combined force of regentrification and super-gentrification in New York continues to increase urban inequality through the intense investment and conspicuous consumption of a new generation of financiers, who are unhampered by the government regulations that protected marginalised areas of the city in the mid-twentieth century (Lees, 2003). In 2020, New York stands out as one of the American cities with the highest percentage of gentrified neighbourhoods, a result of decades of aggressive reinvestment and neoliberal urban policy (Wiltse-Ahmad, 2019; Newman & Ashton, 2004).

Cartographic Power

One of the oldest artefacts of human communication, maps contain rich social histories (Harley, 1987). While maps may initially appear to be simple iconic devices, cartography has functioned as a memory bank for spatial knowledge for millennia, held up as an arbiter of spatial truth and territorial knowledge. In his critique of historiography, Foucault provided a framework for thinking about the history of map knowledge, stating that “the quest for truth was not an objective and neutral activity but was intimately related to the “will to power” of the truth-seeker. Knowledge was thus a form of power, a way of presenting one’s own values in the guise of scientific disinterestedness” (Harley, 2002; Poster, 1982: 119). One of the early scholars grappling with the inquiry into cartographic representations as sites of power-knowledge was J. B. Harley (1989), who began examining the “second text within the map” (9) in order to uncover the relations of power, political interests, and hidden discourses existing within these depictions of space (Crampton, 2001). In this sense, cartography can be understood less as a locational imaging, and more as an abstract machine that replicates and modifies a collective subjectivity (Conley, 1998). Thus, part of the map’s power lies in its ability to project a coherent representation of spatial continuity, creating a mirage of unity to a common cause (Kitchin et al., 2011). This idea borrows from the Foucauldian conceptualisation of cartographic power as an agent that orders the spatialised human experience.

Frequently used as a tool for oppression and dominance, cartographic visualisation affords its creator a God’s-eye view of the mapped territory (Specht & Feigenbaum, 2018). This “cartographic gaze” has been an important tool for gaining control over newly acquired, colonised land, as drawing lines across a territory allowed colonisers to declare what territories belonged to them (Harley, 1989). In fact, what is unique about cartography as a communicative device is that “more explicitly than other modes of knowledge production [...] [it] quite literally entails drawing upon and enforcing a worldview” (Mesterlin, 2019: 252). Today, maps are used in similar ways by planners, investors, and policymakers, operating “on the bodies of unique

places without measuring the social dislocations of 'progress'" (Harley, 1989: 17). Mirroring the divine gaze of God, the cartographic gaze is a predecessor to the surveillant gaze described in Foucault's writing on Bentham's Panopticon (Speck & Feigenbaum, 2018). The cartographic gaze effortlessly "Others" the territory that is observed, immobilising that which is mapped. Since maps contribute to the historical narratives of territories and nations, they embody a particular conception of the world and demonstrate a specific function (Edney, 2019). By recognising the discourses of power inherent to these texts, maps cease to be construed as merely passive records of morphological landscapes but can rather be perceived as refracted images contributing to an evolving dialogue (Harley, 2002).

Social Cartography

Harley and Woodward (1987) define maps as "graphic representations that facilitate a spatial understanding of things, concepts, conditions, processes, or events in the human world" (xvi). This interpretation clarifies that maps need not be representations of a physical landscape but can also be images that provide an overview of social, political, or economic currents; a distinct cartographic practice referred to as "social cartography." Social cartography is defined by Vaughan (2018) as the production of maps that are concerned with the representation of specific aspects of society at a given place and time, aiming to create representations of the relationship between social order and space. The mapping of social geography draws on many of the same practices as geographic cartography, but is concerned with communicating social change rather than just the spatiality of the physical landscape (Paulston & Liebman, 1994).

The mapping of urban spaces has been central to social cartography, with the earliest incarnations of social mapping being largely concerned with visualising epidemic disease in urban centres, associating illness with problems of sanitation and urban poverty (Vaughan, 2018). The anxieties related to the proliferation of the urban poor remained a major concern of social cartography as migration into cities increased exponentially during the industrial revolution. An early notable

effort to map social conditions in the urban environment was initiated by researcher and social reformer Charles Booth, who in the late 19th century produced several maps depicting poverty in London (Vaughan, 2018). The aim of Booth's study was to create a map that would provide a clearer understanding of the living conditions of the residents of London, a study that was prompted by bourgeois anxieties about the potential visibility of poverty (Kimball, 2006). Although his intentions were to use the maps to diagnose social ills and eventually heal them, Booth's map also served the function of easing the concerns of middle- and upper-class residents by providing a detailed overview of exactly where poverty existed (Kimball, 2006).

The class antagonism that was central to the public's interpretations of Booth's poverty maps demonstrate the importance of maps as tools for classification. Social cartography is an instrument for knowledge-making related to our perception of our social worlds, and thus the struggle over cartographic classification stands out as a fundamental dimension of cultural and class relations (Paulston, 1993). Through classification, social maps produce new worlds by helping us "see," and thus "know," the world differently (Paulston, 1996). Because social cartography attempts to visualise social conditions rather than just physical space itself, the way these conditions are represented inevitably carry symbolic power. While all cartography to some extent has the inherent weakness of being iconographic, the use of colour, spatial borders, and other representational choices in social cartography ultimately impose their own meanings onto the social phenomena that are being mapped (Vaughan, 2018).

The Colour-Coded Map

In 1933, the federal government of the United States created the Home Owner's Loan Corporation (HOLC), an organisation that purchased defaulted mortgages in order to refinance them at low interest rates and accommodating repayment schedules (Rothstein, 2017; Aalbers, 2014). In order to ensure that borrowers could make the regular payments, the HOLC had to exercise prudence regarding individuals' ability to avoid default. To create a blueprint for how these refinancing decisions should be made, the HOLC created colour-coded maps of every city in the nation, giving the safest neighbourhoods a green colour and the riskiest a red colour (Rothstein, 2017). If African Americans resided within a neighbourhood, the area automatically earned a red colour, even in communities that were solidly middle-class (Rothstein, 2017). The neighbourhood classifications were a large factor in the HOLC's decision making process, making the maps instrumental in implementing and institutionalising racially motivated redlining practices in the United States, and demonstrating how maps can exhibit prescriptive or even performative qualities (Rothstein, 2017; Aalbers, 2014). Rather than being merely descriptive artefacts, cartographic representations can be used as tools for social control and oppression through their ability to reproduce ideological discourses in their interaction with public and private actors (Aalbers, 2014).

In addition to functioning as a tool for categorisation, the use of colour to classify typologies on a map can also carry powerful moral connotations. Social cartographic representations from the 20th century frequently use dark red to signify "magnitude," with common connotations for this colour being connected to "danger" and "risk" (Kress & van Leeuwen, 2002). The concept of "shading" a map in itself inspires association to decay, both physical and moral (Cosgrove, 2008). 19th century social cartography consistently used darker shades to signify failure in "the spatial narrative of progress" (Cosgrove, 2008: 165). In French statistical cartography, visual representations of poverty and educational standards usually divided the country into two parts, the "illuminated" north, dominated by lighter shades, and a darker coloured south visualised with "cartographic gloom" (Cosgrove, 2008). This tendency can also be observed in the London maps produced by Booth, who colour-coded each street according to its level of poverty or

comfort. In the colour scheme selected by Booth, black and dark blue represented the direst conditions, while light blue, pink, and red signified middle-class dwellings, and yellow (or gold) shading marked the most affluent areas.

In addition to the inherent symbolism attached to these colours, the range of each shade also served a psychological function in easing the anxieties of bourgeois society. This is what Kimball (2006) says about the colour scheme:

Booth's color scale creates a figureground contrast supporting his basic argument—that classes A and B form an object small enough to get rid of. The [...] poverty maps encourages viewers to see the dense and dark colors of poverty, opaque black and dark blue, as figures upon a more general ground of comfort. The figures are serious, even sobering—but their relatively small area in the large areas of light blue, pink, and red makes them seem manageable. (360)

This visual rhetoric led to many viewers of the time concluding that the problem of poverty within the city was much smaller than originally assumed, concentrated in “manageable” enclaves (Kimball, 2006).

Manufacturing Boundaries

Defining spatial boundaries is a crucial part of how we visualise and know cities, since our construction and navigation of the urban environment depends on how we conceptualise that areas relate to one another. Usually, we think of urban space in terms of neighbourhoods, often defined along the lines of “a small urban area within which the residents receive or perceive a common set of socioeconomic effects and neighborhood services” (Goodman, 1977: 483). In the U.S., census tract geography is similarly based on criteria like homogeneity, either in property values, socioeconomic characteristics, or political jurisdictions (Clapp & Wang, 2006). This shows that while the boundaries of urban areas are spatially defined, they are heavily dependent on social phenomena (Jenks & Dempsey, 2007). Furthermore, our proclivity to think about the relationship between communities in terms of distance and borders “privileges the boundary, assuming a homogeneity of experience within its edges” (Mesterlin, 2019: 259).

Using spatially determined definitions of urban areas makes it easier to create an overview of urban areas and locate concentrations of social ills, giving the “neighbourhood” sway as a suitable scale at which to apply urban policy (Jenks & Dempsey, 2007). However, by classifying areas as separate units, we ultimately reinforce certain beliefs and social “truths” about entire sections of the city. Furthermore, by representing such social data visually on a map, we create a way of seeing that conveys that there are clear distinctions between different subdivisions, a spatial illusion that assumes that constructed boundaries can confine undesirable social conditions within its borders. Bourdieu (1989) argues that while representations of geographic space makes it seem like there is a large degree of spatial segregation between inhabitants of one area and those of another, physical social space is more fluid, meaning that even individuals residing in geographically separate areas might at some point encounter each other and interact. In other words, while the spatial relations on the map may look clearly defined and separate, they are likely to be more fluid and less defined by their boundaries in real life. In the detailed notes accompanying his poverty maps, Booth makes it clear that the manufacturing of boundaries was a shortcoming of his colour coding, as it failed to account for the vast variety in the social mix of households on any one of London’s streets (Ball & Petsimeris, 2010).

Interacting with Maps

The reading of the map is as crucial to its meaning as its construction, and cartographic representations are often interpreted based on the viewer’s interaction with the map. In the 19th century, data visualisation technology began being used to produce cartographic representations, a novel connection that was solidified with the creation of Geographic Information Systems (GIS) technology (Specht & Feigenbaum, 2018). While the static map of the pre-digital era tends towards space as stasis, digital geovisualisation often includes animated maps that allow the viewer to command and engage with computed geographic representations (Wilson, 2019). The advances in online mapping software introduce the possibility for interactive mapping to be applied in research projects, giving scholars the opportunity to use interactive platforms with analytical functions (Smith, 2016). The representation of the spatiality of social phenomena across the map plane undeniably changes when the map is moveable, and in some cases even

changeable, depending on how you navigate the interface (Wilson, 2019). This renders the map reader an active agent rather than merely a passive observer, able to reshape the representation according to their use context (Roth et al., 2017).

However, digital mapping also involves direct engagement with ethical dilemmas that arise with the production of cartographic representations, particularly when it comes to social maps (Specht & Feigenbaum, 2018). As mapping tools become more accessible, a variety of creators and map-readers are confronted with the problematic discourses inherent to Western cartographic practices. Some actors have used this opportunity to create cartographic representations with the express purpose of contesting colonial power practices, by rendering social and economic injustices visible (Specht & Feigenbaum, 2018). While this enables the creation of alternate visions for society, the cartographic gaze remains entangled with these practices due to the relationship between power and space that is inherent to cartographic representation and knowledge-making (Specht & Feigenbaum, 2018).

Conceptual Framework

This project employs a framework that conceptualises cartography as a site that reproduces certain power relations. Foucault's framework for thinking of map knowledge as a form of power that orders the spatialised human experience, and Harley's (1989) writing on the cartographic gaze as a tool for reproducing discourses of power are foundational ideas for this work. Working from these notions, social cartography is understood as an instrument for classifying our social world, as the iconographic nature of the map means that these visual representations are imbued with meaning through aesthetic choices such as colour use, the construction of boundaries, and the map interface itself.

Drawing on Atkinson and Bridge's (2005) description of gentrification as a form of class colonisation, this project expands on previous scholarship concerned with the ideological foundations of gentrification and displacement as a site of class conflict, a spatial power struggle in which the middle- and upper-classes displace working-class populations and appropriate

urban spaces. Furthermore, it considers these phenomena to contribute to a neoliberal rhetoric of revitalisation and growth, thus working from the assumption that the cartographic representations concerned with visualising these processes will project these discourses onto the maps. Building off these ideas, the research hypothesis for this dissertation posits that the social cartographic representations of New York analysed in this study will semantically reproduce existing discourses of gentrification and displacement through the use of colour, boundary creation, and map-interaction, ultimately portraying them as non-threatening, or even favourable, processes of urban change.

Research Question

This study is an attempt at examining the ways in which dominant discourses on gentrification and displacement in the 21st century Western world are replicated through social cartography. Examining three maps created with the purpose of informing urban policy, this research aims to provide a qualitative inquiry into the cultural, social, and economic connotations that are communicated through visual representation. The research is guided by the following question:

How are the processes of gentrification and urban displacement mediated through social cartographic representations of New York City?

It is my hope that this study will function as a rudimentary foundation for further examination of the power-knowledge structures that are reproduced through visual representations of gentrification and displacement, as well as how these representations mediate the way we think about these processes.

RESEARCH DESIGN AND METHODOLOGY

Methodological Rationale: A Social Semiotic Approach to Visual Analysis

The objective of this research is to explore the ways in which processes of gentrification and urban displacement are visually represented through social cartography. Since the research question is concerned with the examination of a visual text, I determined that it would be preferable to use a visual analysis method. The visual approach I have chosen to use for this dissertation is social semiotic analysis. Semiotic analysis is concerned with how meaning is generated and conveyed through the social production of signs, operating off the basis that all objects carry beliefs and meanings that have been projected upon them by society (Berger, 2005). To uncover these meanings, images are analysed as evidence of how their creator(s) have “(re-)constructed reality, as evidence of bias, ideologically coloured interpretation, and so on” (van Leeuwen & Jewitt, 2001: 5).

While traditional semiotics provides a framework for analysing the “code” embodied by individual objects making up an image, there is limited attention paid to the identification of specific patterns of meaning within a text (van Leeuwen, 2001). In contrast, social semiotic analysis centres around “semiotic resources,” a term that originates from the work of Halliday (1978), who argued that the grammar of language is a resource for meaning-making rather than a code (van Leeuwen, 2005). Visual resources are defined by van Leeuwen (2005) as “the actions and artefacts we use to communicate, whether they are produced physiologically [...] or by means of technologies” (3). By focusing on the semiotic “resources” of a visual text rather than the structured associations defined as “codes,” social semiotic analysis expands upon traditional semiotic pursuits by recognising the importance of power relations in shaping semiotic systems (van Leeuwen, 2005; Berger, 2005). This method operates from the assumption that signs are motivated rather than just arbitrary relations between form and meaning, and that this meaning is based on the motivation and interests of the makers of the sign (Kress, 2010).

Social semiotic analysis provides a form of inquiry into visual texts that emphasises the context of the image, focusing on how the objects that are represented form a coherent narrative (Berger, 2005; van Leeuwen & Jewitt, 2001). Applied to the analysis of social cartographic representations, social semiotic analysis allows for an in-depth exploration of how representations of space are produced by, and contribute to, their cultural settings (Jewitt & Henriksen, 2016). In pursuit of investigating how gentrification and urban displacement are visualised through map-making, the social semiotic approach offers a method of analysis that enables the uncovering of meaning potentials and social functions by way of identifying semiotic constructions. Through the identification of the semiotic resources contained within the maps, this analytic framework creates an opportunity for the connection between text and sign-maker to become known, with the goal of ultimately providing some insight into the ideological connotations that are inherent to the way we conceptualise gentrification and urban displacement (Jewitt & Henriksen, 2016).

Methodological Procedure

For the purposes of this research, I have chosen to operationalise the social semiotic approach to visual analysis based on Kress and van Leeuwen's (2006) model for social semiotic analysis. This model distinguishes between the representational, interactive, and compositional metafunctions of an image, relating them back to the underlying symbolism based on social theory. The metafunctions of an image refers to its meaning potential, namely what can be meant and done with a particular set of semiotic resources (Jewitt, 2009). By using this framework to assess the semiotic resources of the social cartographic representations I have selected, I am able to systematically analyse the ways in which the textual features of the maps mediate power, social relations, and the signified purposes of the images (Jewitt & Henriksen, 2016).

First, I will consider the "representational metafunction" by looking at the meanings that are embodied by the syntax of the images. In space-based semiotic modes, this is a matter of making sense of the spatial relationships that are depicted, and the relationship between the objects within the image (Jewitt & Oyama, 2001; Kress & van Leeuwen, 2006). This part of my analysis will be concerned with how things are positioned in semiotic space, focusing on lines, colours,

and shapes (Jewitt & Oyama, 2001). According to Kress and van Leeuwen (2006), the visual structures of representation can be either narrative, depicting unfolding processes of change and transitory spatial arrangements, or conceptual, portraying the timeless essence of structures or meaning. The distinction between these two modes of representation is important, as it provides key insight into the discourses that mediate the text (Jewitt & Oyama, 2001). Subsequently, I consider the “interactive metafunction” of the images, described as the ways in which the texts create particular relations between the viewer and the representation (Jewitt & Oyama, 2001). The interactive dimension can be understood as a “language” shared by the author of the text and the viewer (Kress & van Leeuwen, 2006). The analysis of the interactive metafunction of the maps includes looking at distance and point of view, aspects that determine the degree of closeness and involvement the viewer might feel to what is depicted (Jewitt & Oyama, 2001).

Finally, I examine the “compositional metafunction,” which refers to the way the representational and interactive elements of an image relate to each other and compose a meaningful whole (Kress & van Leeuwen, 2006). The compositional metafunction is concerned with how the composition of an image mediates meaning potential, revealing what aspects of the text its author wished to emphasise and understate. The three semiotic resources I will consider when examining the compositional meaning of these texts are framing, salience, and modality (Jewitt & Oyama, 2001). Framing refers to whether elements are represented as connected or disconnected from each other, while salience is the term used to describe how eye-catching an element of the composition is. Both resources are closely tied to the representational metafunction of the images in terms of colour use and boundary-creation. Modality is defined as the “reality value” of the image, a semiotic resource that urges us to consider whether the image represents the world in a way that is objectively true (Jewitt & Oyama, 2001). By analysing the cartographic representations using these three metafunctions, I am able to systematically consider the semiotic construction of the social cartographic representations and how they may contribute to an ideological narrative.

Sampling

For the purposes of this research, it was imperative to collect semantically rich data that would contribute to a better understanding of the power-knowledge structures reproduced by the texts, an objective that required the selection of information-rich sources specifically suited for this type of analysis. In order to find information-rich images mapping urban displacement and gentrification in New York, I chose to use purposive sampling. This is a form of non-probability sampling in which the researcher uses expert knowledge to select a non-random sample based on what characteristics they decide should be represented within the sample (Lavrakas, 2008). Due to the subjectivity inherent to this method, it is best suited for selecting a smaller sample that is meant to represent a restricted population or a limited geographic area, which fits the purposes of this study (Lavrakas, 2008). Since the focus of this study is to analyse the social relations, power dynamics, and ideological discourses that are conveyed through visual representations of urban change in New York, the specific method of purposive sampling utilised to collect my sample is critical case sampling. This method involves selecting and examining a sample of cases that are deemed by the researcher to be “critical” examples of the phenomenon of interest (Etikan et al., 2016). When there are constraints that might limit evaluation to the study of a small number of sites, it makes sense to select “the site that would yield the most information and have the greatest impact on the development of knowledge” (Patton, 2015: 416).

The three maps selected for analysis were found through the databases of the Institute on Metropolitan Opportunity at the University of Minnesota, the website for the University of California project “Urban Displacement Project,” and the “Displacement Alert Project” map created by the Association for Neighbourhood and Housing Development. Each map visualises the related processes of gentrification and/or urban displacement in New York using a variation of colours, constructed boundaries, and descriptors. These maps were selected due to the rigorousness of the data used by these organisations, making them critical cases of social cartographic representations within the field of urban studies. Furthermore, each of the three maps were created with the purpose of informing policy decisions, making them critical examples

of visual texts that may or may not subvert the neoliberal growth model. By limiting the sample to projects created by leading academic institutions and government funded associations, I ensured the selection of a high-quality sample. The choice to gather a sample of maps created by similar institutions with a common purpose also facilitates the ability of the study to compare and contrast how each of these institutions have chosen to represent urban change (Guetterman, 2015). The decision to select samples specifically depicting gentrification and displacement in New York was made due to the pervasiveness of these phenomena within the city.

Potential Limitations

Social semiotic analysis is a powerful tool that allows researchers to understand how communicative texts mediate the relationship between text and sign-maker, allowing for the examination of how power relations are materialised through visual representations (Jewitt & Henriksen, 2016). However, using a social semiotic approach to analyse visual text also creates some challenges for the researcher. Since social semiotics is not a self-contained field, it is only useful when it is applied to specific problems and is actively engaged with social theory (van Leeuwen, 2005). The method should always be viewed as a form of inquiry rather than an attempt to produce a definite answer, inviting the reader to question any interpretations that are made and view them as complementary to previous scholarship on the topic (van Leeuwen, 2005; Emmison et al., 2012).

The social semiotic approach usually lends itself to the analysis of a smaller collection of texts, raising issues around the selection of samples, and the effect this has on the ability to make generalisations. This is an area of critique that is often seen with micro-analytical approaches, and which is sometimes mediated through the selection of a sampling method such as Maximum Variation Sampling (MVS), in which data is selected across a broad spectrum relating to the objective of the study with the purpose of looking at the topic from several angles (Jewitt & Henriksen, 2016; Etikan et al., 2016). Additionally, a large portion of work that is undertaken using the social semiotic approach may benefit from a mixed-method approach that lends itself to analysis of larger scales of data (Jewitt & Henriksen, 2016). However, the social semiotic work

undertaken in this research does not attempt to provide generalisations, but rather, seeks to do the groundwork of exploring a very specific form of visual representation of urban change. For this reason, I have chosen to use a sampling method that purposefully avoids great variation in source material, and to adopt a strictly micro-analytical qualitative approach. This way, I am able to focus my research on the specifics of social cartographic representations of a phenomenon created with the purpose of informing policymaking, rather than providing a perfunctory analysis of a more heterogeneous sample and quantitative analyses that go beyond the scope of this project.

The final concern with adopting a social semiotic approach is the subjectivity that is inherent to this form of analysis. While social semiotic work does utilise a guiding framework, this method still requires individual, in-depth analysis of signs, so it should always be assumed that the researcher's social, political, cultural, and economic background will inevitably affect the interpretation (Iedema, 2001). The subjectivity of the method makes reflexivity an imperative aspect of doing work within the domain of social semiotics. Only when recognising the inseparability of a "theory of representation" from the heterogeneous social contexts in which representations are produced and consumed, can the social semiotic approach do the work of bringing out hidden meanings in a productive manner that does not assume any analytical reach beyond the text that is analysed (Lynch & Woolgar, 1990; Jewitt & Henriksen, 2016). Thus, it feels imperative to note that this project only offers a preliminary and individual inquiry into the subject at hand, rather than making any claims of reaching, or attempting to reach, an objective or neutral conclusion about cartographic representations of urban change.

Ethical Considerations

The research for this dissertation was completed under the guidance of an appointed dissertation supervisor, and a research ethics form was submitted to the Media and Communications department at the London School of Economics and Political Science. One of the advantages of conducting visual research is the fact that the need for direct interaction with human participants is eliminated, which means that there are no ethical concerns regarding informed consent and

harm reduction for vulnerable populations (Emmison et al., 2012). Furthermore, the visual content I analyse in my research does not include depictions of people, making anonymisation a non-issue. However, there are some ethical considerations regarding using copyrighted source material that should be addressed.

While the rise of the internet has made it easy to find visual material to work with, allowing researchers to sidestep problems associated with creating ones' own images, the use of found images for research purposes means removing texts from the context that was originally intended (Emmison et al., 2012; Harris, 2016). While the maps selected for analysis in this study were published for general consumption, they were not intended for use as research materials, and any interpretation of these images inevitably decontextualises them (Harris, 2016). As stated in the previous section, it must be noted that this dissertation does not attempt to draw any definite conclusions or contribute objective "truths" about the subject matter at hand, and any interpretations are the researcher's own. Finally, in order to avoid any problems related to using potentially copyrighted source materials, I obtained permission to reproduce images of the maps that were selected for analysis by contacting the institutions that originally produced and published them. The images used in this dissertation are reproduced with the written permission of these institutions.

RESULTS AND ANALYSIS

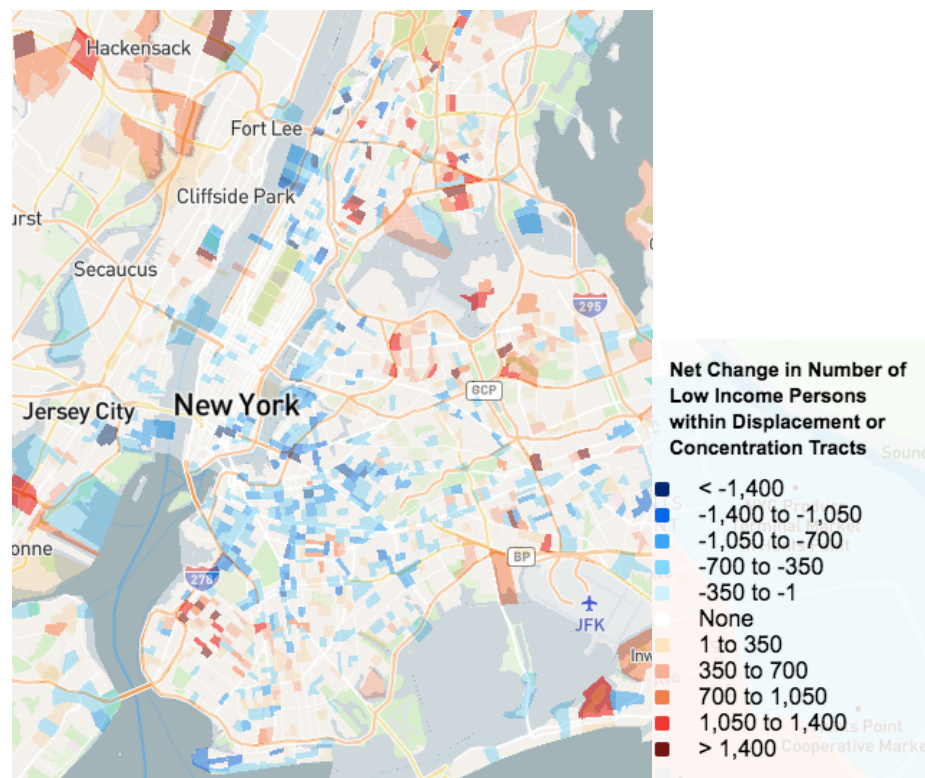
Description of Texts

The University of Minnesota Institute on Metropolitan Opportunity

The map created by the University of Minnesota Law School depicts "Low Income Displacement and Concentration in U.S. Census Tracts" between 2000 and 2016 (Institute on Metropolitan Opportunity [IMO], 2019a). The report that supplements the map states that the purpose of the project is to reveal 21st century patterns of urban change and development. It includes the entire

United States, but focuses on the 50 largest metropolitan areas, analysing neighbourhood change at a census tract-level (IMO, 2019b). The online interactive maps compare the most common types of urban neighbourhood change, poverty concentration, and displacement, in a way that aims to allow for scrutiny of individual census tracts (IMO, 2019b). Rather than attempting to address ideological questions about the desirability of urban neighbourhood change, the purpose of the project is to offer empirical breadth that might help inform future policy resolutions related to gentrification and displacement (IMO, 2019b).

Figure 1 – The Institute on Metropolitan Opportunity (IMO) map of Displacement and Concentration



The Institute on Metropolitan Opportunity (IMO) map portrays the net change in number of low-income persons within displacement or concentration tracts using a colour scheme that ranges from dark blue to dark red. Dark-blue areas indicate the largest reduction in low-income persons, while dark-red areas represent the highest increase in low-income residents. The areas that make up each quadrilateral of colour represent the city’s census tracts. The tract-specific data covers

the percentage of low-income residents in the area in both years, as well as the net change of residents belonging to various subgroups. The subgroups that are recorded includes income groups (ranging from extreme poverty to middle-high income), racial groups, college graduates and college non-graduates, age groups, foreign-born and U.S.-born, and unit types (owner, rental, or vacant). The base map is reminiscent of Google or Apple maps, using a light grey to represent the general urban landscape and green to represent park space.

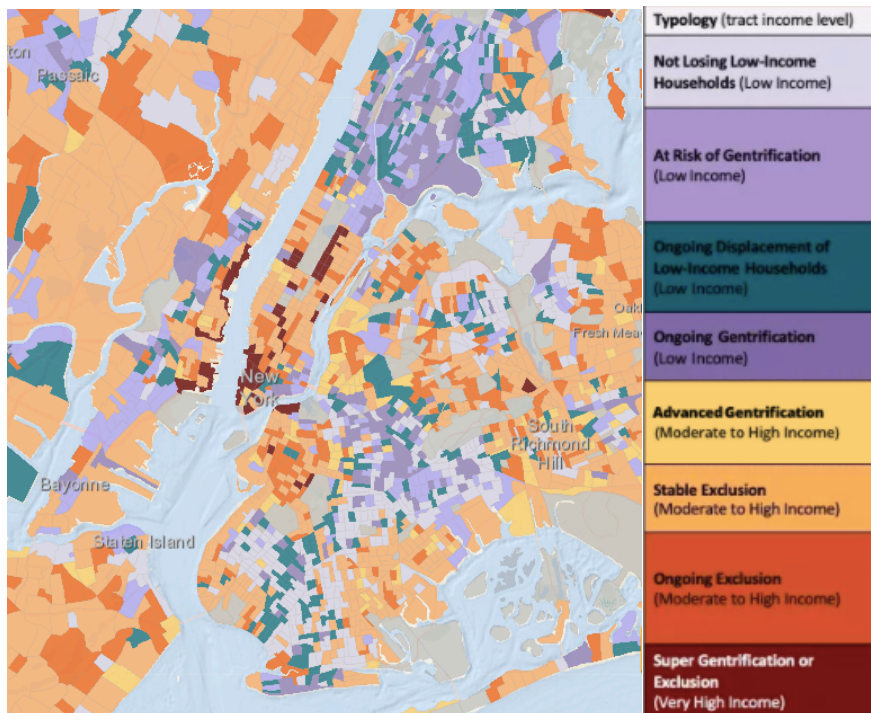
The Urban Displacement Project

Aiming to “understand the nature of gentrification and displacement in American cities,” the Urban Displacement Project (UDP) is a University of California Berkeley research initiative that uses social cartography as a visual tool with the goal of influencing urban policy (Zuk & Chapple, 2015a, para. 1). The map analysed for this project is titled “Mapping Displacement and Gentrification in the New York Metropolitan Area,” and is a research project UDP conducted in consultation with Local Initiatives Support Corporation (LISC) NYC (Zuk & Chapple, 2015b). UDP’s webpage states that the main purpose of the project is to create a visual representation of neighbourhood change, which can function as a tool that provides a regional framework for contextualising ongoing policymaking on community and housing stability (Zuk & Chapple, 2015b). To create a visual representations of these processes, UC Berkeley and NYU students analysed regional demographic data on housing and income in order to understand and predict which areas were currently undergoing the processes of gentrification and displacement, as well as where these changes are likely to occur in the future (Zuk & Chapple, 2015b).

The map created by UDP identifies and visualises eight different types of neighbourhood change, each represented by a colour ranging from light purple to dark red. The areas coloured purple and teal are low-income areas at varying risk of future and current gentrification and displacement. In contrast, the yellow, orange, and red areas represent neighbourhoods with moderate to high income. These areas are all experiencing some degree of ongoing gentrification and displacement. The surface area of each colour is determined by census tract. The map offers the viewer options to include several layers of information, including opportunity zones, public

housing, subway lines, school zoning, parks, and neighbourhoods, that can be added onto the image by ticking a box in the map’s sidebar. The majority of the landmass on the map is made up of the colours used for analysis, with the exception being census tracts that do not fit any of the typologies, which are represented using a grey shade.

Figure 2 – Urban Displacement Project (UDP) Map of Gentrification

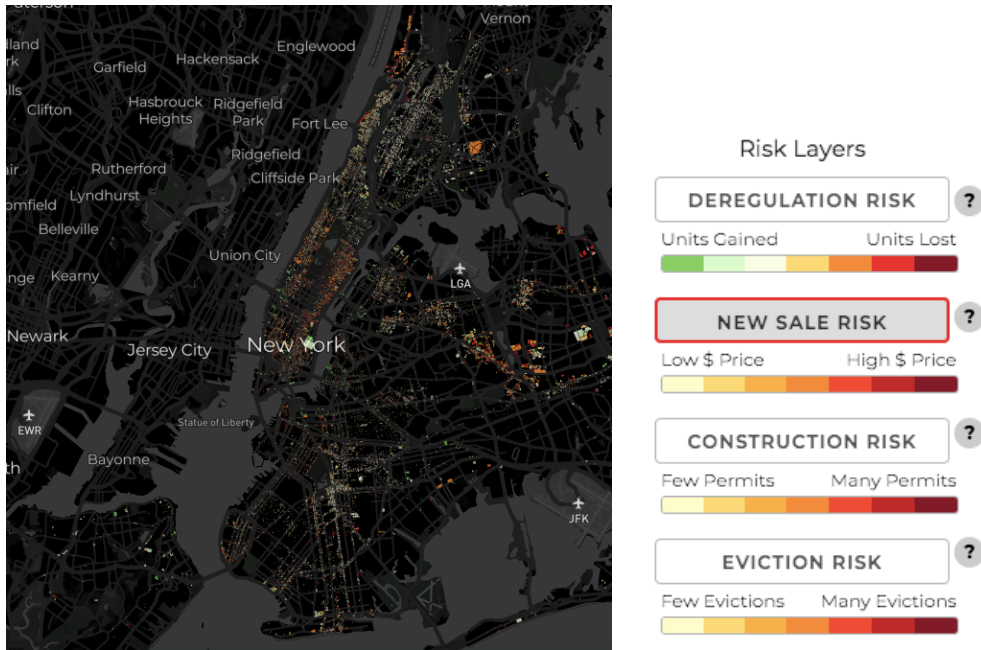


The Displacement Alert Project (DAP)

The Displacement Alert Project map is created by the Association for Neighborhood & Housing Development and provides a citywide view of displacement risk, showing information about each building’s percentage loss of rent-regulated units, where recent sales raise concerns about speculation, number of construction permits, and where court-ordered evictions have taken place (Displacement Alert Project [DAP], 2017). The DAP website states that the project was designed with the purpose of addressing the problem of displacement by “providing effective early

warning information for residents facing harassment and displacement, for communities being destabilised, and for the community groups and policymakers trying to address the crisis” (DAP, 2017, para. 1).

Figure 3 – The Displacement Alert Project (DAP) Map of Displacement Risk



In contrast to the UDP and IMO maps, the DAP map visualises data on a building level rather than using census tracts. The map contains four “risk layers”: deregulation risk, new sale risk, construction risk, and eviction risk. Each layer must be selected separately and creates four different maps. The deregulation risk layer uses a colour scale ranging from green to dark red, where green indicates units gained and red indicates units lost. The three remaining risk layers have a colour scale ranging from light yellow to dark red, where darker reds indicate more permits, more evictions, and higher prices, respectively. The base map itself is coloured black and dark grey, emphasising the bright colours used in the information layers.

Analysis

Representational Metafunctions: The Illusion of Class Segregation

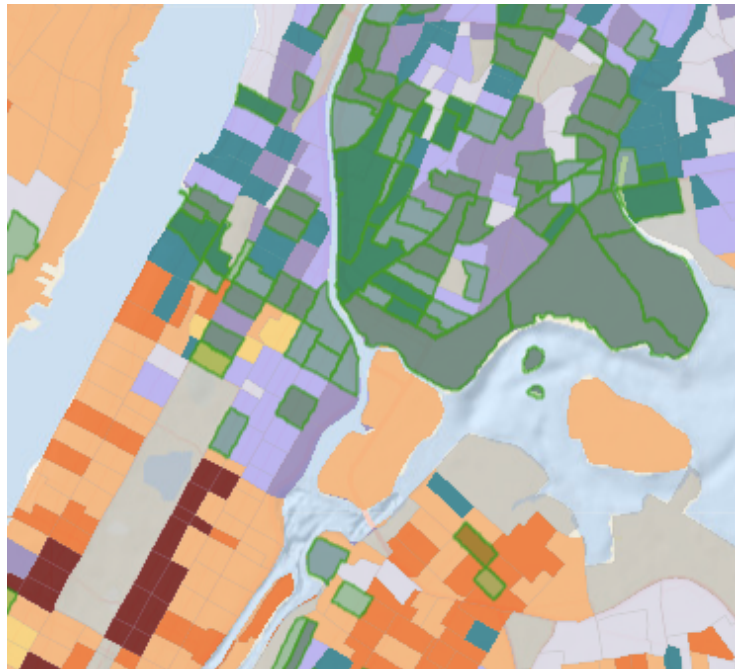
When analysing representations of spatial processes of change, it is somewhat difficult to discern whether the images are narrative or conceptual. While the maps are depicting a process of “transitory spatial arrangements,” which is a feature of narrative images, they are more conceptual in the sense that they do the work of classifying places (Jewitt & Oyama, 2001). Since neither of the three maps have incorporated temporal dynamics, there is no directionality of the texts and thus no vector: there are no indications within the maps of moving towards something (Kress & van Leeuwen, 2006). The maps relate representations of various data points to each other through the use of coloured shapes and their placement on the map, creating a taxonomy of data visualisation, which suggests that these are conceptual representations. The remainder of the analysis will thus work from the assumption that these maps were created as classificatory tools.

Looking at the maps’ lines, both the UDP and the IMO maps visually represent displacement and gentrification by dividing areas into U.S. census tracts and using different colours to constitute various stages of these processes. This form of spatial division creates the illusion that there are strict boundaries between urban areas, reinforcing the belief that social conditions can be contained within a certain neighbourhood (Bourdieu, 1989). This sort of division effectively creates the same effect as the colour-coding on Booth’s London poverty map, where poverty (represented through dark blue shading) appeared to be effectively contained within certain blocks (Vaughan, 2018). This form of imagined segregation might work to ease the anxieties of populations living in census tracts that border those deemed “undesirable,” as it provides the illusion of being effectively insulated from the effects of such conditions due to the use of clear “boundaries.” The use of boundaries also allows policymakers to focus their attention on certain areas deemed to have a higher concentration of the phenomena of interest. However, the distinction effectively encourages the reader to disregard the presence of gentrification and displacement in areas where it is not considered to exist in “high concentrations,” ultimately emphasising that intervention is only of importance in certain areas.

The colour schemes used in both these maps accentuate the boundaries between the census tracts, albeit in different ways and to varying degrees. The creators of the UDP map have chosen to colour each census tract rather than just a select few, as is done on the IMO displacement map. While some tracts are shaded light grey, indicating no loss of low-income households, the infrequency of this colour across the map suggests that almost all of New York is currently undergoing various stages of gentrification and displacement. By emphasising that most of the city is currently undergoing a process of gentrification, the UDP map effectively minimises the downsides of the phenomenon, portraying it as an unavoidable fact of urban life.

The UDP map uses a range of purple to teal shades to map stages of gentrification within low-income areas, and warmer shades like red and oranges to signify stages of gentrification in high-income areas. The use of two different colour palettes within one map emphasises not only the variance in the measured condition between different tracts, but also creates a clear distinction between lower- and higher-income census tracts. This use of colour results in the map reading much easier as “these areas are high income and these are low income” than “these colours signify different forms of gentrification,” thus creating a class-based distinction rather than a distinction between urban processes. Interestingly, the colour scale of the map adds a new dimension when one selects the layer “Opportunity Zones,” which adds a layer of green shading. By adding this layer, the colour scheme can be read as an “investment risk” classification map, with the oranges and dark reds signifying areas it is not economically strategic to invest in. The inclusion of these zones might indicate that the map makers are if not supportive, then at least ambivalent about existing policy that has been shown to accelerate the displacement of low-income residents (Din, 2018).

Figure 4 – UDP Map Segment showing “Opportunity Zones” on the Upper East Side, Upper West Side, Harlem, and the Bronx



In contrast to the UDP map, the IMO map has only shaded a few census tracts, specifically the ones that have a net gain or net loss of >1000 residents (IMO, 2019). This makes the map reader focus on specific areas within the city, discouraging them from considering that displacement may exist in varying degrees across all of New York. The IMO map also uses transparent shades that makes it possible to see the street names and spatial features of the city map they are superimposed onto. This makes the urban landscape seem less abstract than the opaque blocks of colour on the UDP map. However, the ability to see the exact borders of each shaded census tract still reproduces the illusion that displacement can occur within a fixed area while the next block over remains unaffected.

The DAP map avoids creating these distinctions by representing data on a building level rather than using census tracts. This way of representing data arguably gives a more realistic image of how processes of urban change unfold, as it avoids generalisation through the use of census “averages.” By visualising data based on physical units that exist in material space instead of

constructed boundaries, the DAP map also subverts the cartographic practice of dividing areas into imagined units. As a result, the DAP map gives a more holistic impression of how changes in evictions, construction, and housing prices occur across different neighbourhoods simultaneously. The use of a black- and dark-grey base-layer also creates an impression of homogeneity across city neighbourhoods and gives the map a more abstract presentation. The map uses a colour scheme that ranges from light yellow to dark red for three of the four layers, where shades closer to red indicate an increase in each of the measured conditions. The use of dark red on this map can be interpreted to signify “danger,” a condition that is “in flux” or rapidly spinning out of control. This interpretation is substantiated by the use of “risk” as a descriptor for each of the map layers, with the “risk” in question being the likelihood of resident displacement. The colour use on the DAP map stands in contrast to that of the IMO map, which uses dark red to signify an increase of lower income residents in an area. The IMO map colour-use suggests that an increase in lower income populations is the “risk,” not the displacement of these groups.

Figure 5 – DAP Map Segment Showing Deregulation Risk on a Building-to-building Basis in the East Village

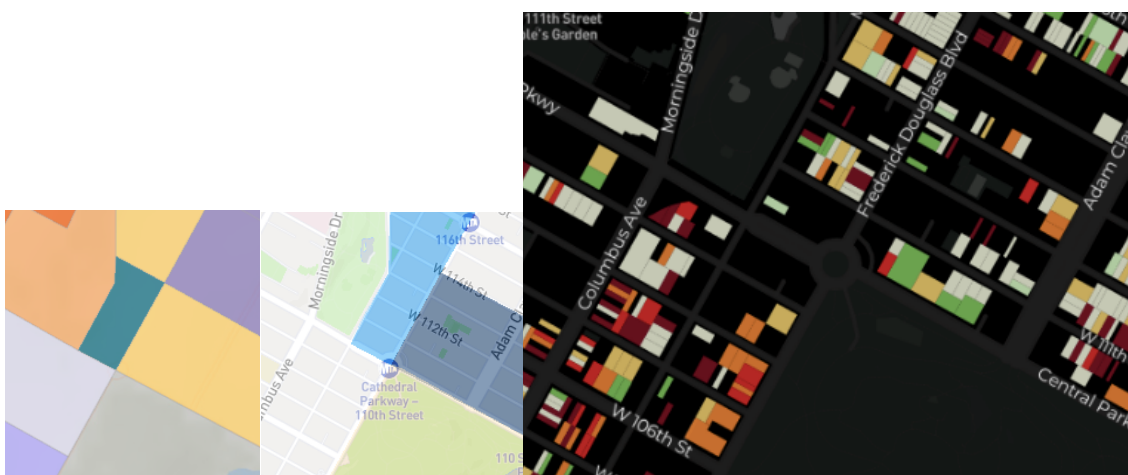


Interactive Metafunctions: The Cartographic Gaze

The interactive metafunction of the three maps affords the viewer greater agency than traditional cartographic representations due to the inherent interactivity of the digital map.

Each of the three cartographic representations allow the map reader to zoom in and out on any area of the city, granting them agency over how they choose to view the data. In terms of distance, these interactive texts enable the viewer to mediate their closeness to the representations. The DAP and IMO maps allow for the greatest level of intimacy, permitting the reader to zoom in to the extent that they can read the map on a street-to-street and building-to-building level. A reading like this allows for a form of immersiveness in which the viewer might feel like they are interacting directly with the neighbourhood they are looking at, creating a sense of familiarity in which the urban landscape reveals its “personality” and individuality (Jewitt & Oyama, 2001). The UDP map does not allow for this form of immersion, as it represents data in the form of solid blocks of colour. This inhibits the inspection of more detailed information about the urban landscape through the use of zoom-navigation, ultimately giving off a more sterile and less personal impression.

Figure 6, 7, and 8 – Map Segments of the North West Corner of Central Park. Left to Right: UDP, IMO, and DAP



Although the level of intimacy that can be achieved with the DAP and IMO maps allows the reader to feel less removed from the urban landscape that is depicted, the map readers' point of view creates an inherent detachment between the viewer and the image. The God's-eye view of most cartographic imagery can be read as an instrument of possession and surveillance, as the cartographic gaze strips that which is mapped of its agency. This solidifies the power relation between the observer and the "observed," in this case the populations that are represented by the visual output (Specht & Feigenbaum, 2018). Although these maps are created with the express purpose of aiding policy processes that should aim to decrease the negative consequences of gentrification, they inevitably reproduce the power-relations that are inherent to these urban processes through the map reader's point-of-view.

The ability to add and alternate between layers of information on the UDP and DAP maps further contributes to positioning the map reader as an agent of power. With the DAP map, this manifests as giving the option to view four different layers of information superimposed onto one background, giving the reader the ability to compare different data sets. The layers that can be added to the UDP map are more supplementary, superimposing various infrastructural features of the urban environment that might be related to processes of gentrification to a lesser or larger extent. The ability to layer urban infrastructural information such as subway lines and public housing on top of the social cartographic representation of gentrification adds some spatial context to the image, allowing the reader to imagine the urban landscape to a greater extent than what can be done by looking at just blocks of colour.

The ability to add or switch between "layers" on the UDP and DAP maps further reinforces the construction of the map reader as a "God-like" entity in their interaction with the map. The viewer's interaction with the representations of gentrification and displacement ultimately allows them to remove themselves from the lived reality of the populations the data represents. This demonstrates the lack of consideration for the psychosocial realities of low-income populations that has historically characterised displacement scholarship, urging us to question what care might be taken to empower these groups in the creation of social cartography (Easton et al., 2010).

Compositional Metafunctions: De-emphasising Displacement and the Neoliberal Narrative

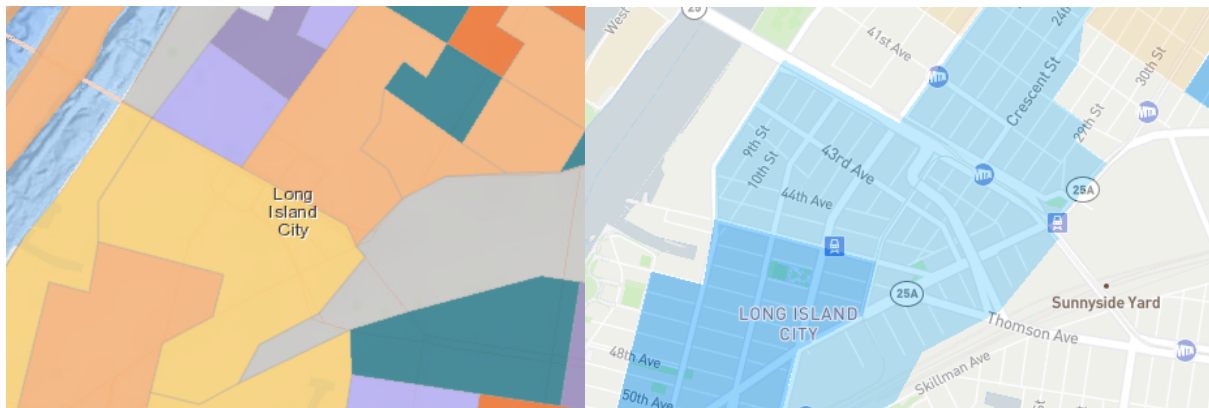
The composition of an image relates the representational and interactive meanings to each other through the interrelated systems of framing, salience, and modality (Kress & van Leeuwen, 2006). The three social cartographic representations of gentrification and displacement all share similarities in composition due to their depiction of the geography of New York, since a large part of the cartographic depiction is based on satellite imagery of the physical shape of the city. Similarly, the choice to visualise data using census tracts and physical buildings means that there is limited room to make creative choices regarding where objects should be placed in the cartographic space. However, some variations can be observed.

There are distinct disparities in framing across the three maps, with different framelines being used to disconnect the elements of the composition. Since the DAP map depicts data on a building-level, there is a natural disconnection between each element because they already exist as separate entities in the urban landscape. The use of buildings to visualise data makes it hard to determine salience on the DAP map, as it requires the reader to zoom in on specific neighbourhoods in order for the output to become fully visible and distinguishable. However, once zoomed in, buildings coloured red appear more salient, making the viewer more aware of areas with higher displacement risk. This is the opposite of the semantic function of the salience resource on the two other maps.

Conversely, the use of census tracts as tools for data visualisation on the UDP and IMO maps result in a greater need to create distinction between units, as these boundaries do not exist in physical space. The UDP map solves this by using a range of clearly distinguishable colours, as well as thin grey lines functioning as a border between each census tract. The visual result of this is a map of coloured blocks that can be clearly distinguished from each other, while simultaneously giving the impression of a lack of “free space,” giving off the impression that the entire city is undergoing a process of gentrification. In contrast, the IMO map has a notable amount of “neutral space” between its elements of representation, and uses the contrasting colours of blue and red to create distinction in areas where there are both tracts with high levels

of displacement and tracts with a high influx of low-income residents. This map differs from the UDP map in that it does not construct visual boundaries between census tracts of the same colour that are positioned next to each other, de-emphasising the tracts as separate units.

Figure 9 and 10 – Distinguished versus Non-Distinguished Boundaries Between Census Tracts in Long Island City. Left to Right: DAP and IMO



The use of neutral space on the IMO map makes the coloured census tracts a more salient element of the composition, drawing the viewer's attention to select areas of the city. However, the colour use obscures the salience of displacement-heavy areas due to the choice to use red to signify areas that have seen an increase in lower income populations, making these tracts the focal points of the map. The reds used for these areas draw the viewer's attention away from the more subdued blue areas, which are more bountiful. This use of dark red is consistent with the tradition in social cartography of consistently using darker shades to signify failure to further a narrative of spatial progress, indicating that displacement is "favourable" and signifies urban progress (Cosgrove, 2008). The combination of colour use and salience gives the reader the impression that it is the areas with an increase in lower-income residents that are the "problem areas," rather than the areas with a high degree of displacement. This visual presentation of data would indicate that the policymakers that are expected to use these maps are looking for areas that may be considered in need of reinvestment.

On the UDP map, the dark reds used to signify “super-gentrification or exclusion” are the most salient features. This is an interesting choice, as it gives the impression that super-gentrification is the most concerning displacement and gentrification category. While this form of displacement certainly contributes to urban inequality and should be paid attention to, the salience of the high-income areas downplays the human cost of ongoing gentrification and displacement in lower income neighbourhoods. The salient elements of both the UDP and the IMO maps connote that areas with high levels of displacement of what is largely low-income populations are not the main areas of interest.

Figure 11 – UDP Map Segment of the Lower East Side

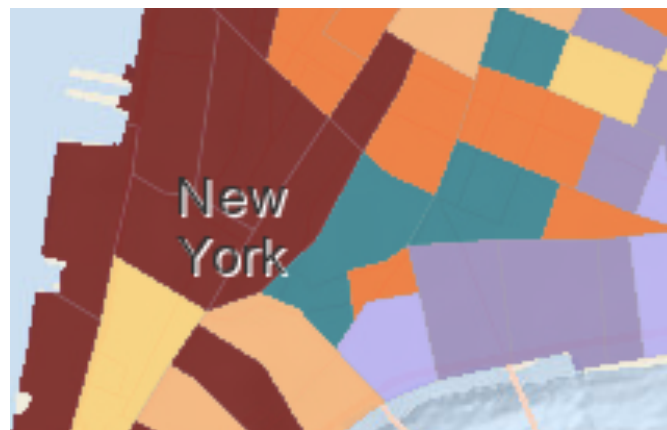
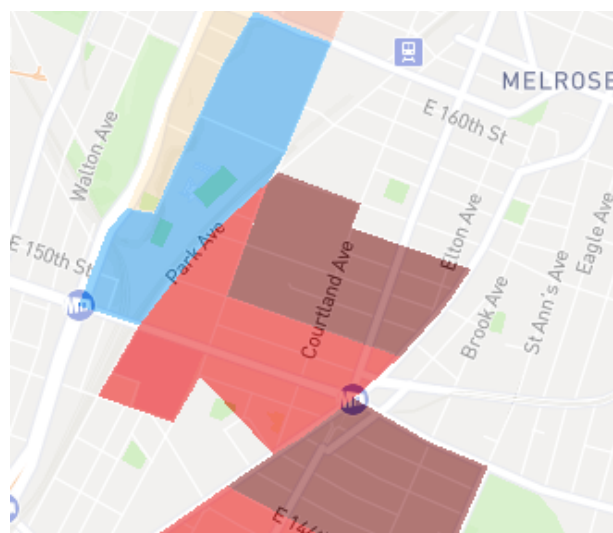


Figure 12 – IMO Map Segment of the Mott Haven/Melrose Area in the Bronx



Similarly, the UDP map's highlighting of high-income areas draws attention away from the areas on the map classified as "low-income gentrifying areas," urging the viewer to be more concerned with the creation of high-income enclaves. However, the UDP map is also interesting because the superimposition of the "Opportunity Zones" layer changes the reading of the map. By adding this layer, the colour scheme reads like an investment map, which is peculiar due to the stated purposes of the map. The inclusion of this layer makes it appear as if the UDP map is pandering to the interests of potential investors, rather than just policymakers. Furthermore, the inclusion of opportunity zones indicates that the map creators expect the map reader to take an interest in policies that promote urban economic growth.

Graphs and diagrams are often thought of as true to reality in the sense that they scientifically represent the world as it is, objectively depicting abstract concepts and data (Jewitt & Oyama, 2001). It is difficult to determine the reality value of the social cartographic representations selected for this analysis, as it would require intimate knowledge about the collection and validity of the data that the maps are based on, as well as an extensive debate about the most useful ways of conceptualising displacement and gentrification (Billingham, 2015). For this reason, there are many ways to approach an analysis of the modality of the gentrification and displacement maps. The DAP map arguably possesses a more nuanced representation of how displacement risk might manifest within a neighbourhood, conveying how varying degrees of risk can exist within the same area. In contrast, the UDP and IMO maps inevitably generalise the spatial manifestation of these processes by classifying whole census tracts as one typology. While this gives an inaccurate impression of how these processes occur, the DAP map also obscures displacement risk to some degree by not emphasising the areas that are at higher risk. It is virtually impossible to determine where the highest concentration of at-risk buildings is located simply by looking at the map, due to the challenge of getting a city-wide overview using this cartographic representation.

DISCUSSION

The above analysis set out to answer the question: *How are the processes of gentrification and urban displacement mediated through social cartographic representations of New York City?* The social semiotic approach adopted for the purpose of examining this question yielded rich results regarding how gentrification and displacement is visually represented on the three maps. Overall, all the social cartographic representations exhibited patterns that supported the research hypothesis.

While the social cartographic representations vary slightly in their use of the semiotic resources analysed in this study, the patterns observed in the three maps demonstrate a general disinterest in contributing to policy alternatives that are focused on minimising the harm caused by gentrification and the subsequent displacement of incumbent residents, instead reproducing a narrative that focuses on the continued “revitalisation” and economic growth of the city. This is perhaps most transparently exhibited on the DAP map, where the inclusion of “Opportunity Zones” indicate a pandering to neoliberal urban policy alternatives that emphasise investment as a gateway to revitalisation (Din, 2018). This interpretation is corroborated by the colour scheme, which indicates a general disinterest in lower income areas by emphasising the classifications of gentrification in higher income census tracts. Similarly, the IMO map seems to assume that any policymaker reading the map will be most interested in areas with increasing numbers of low-income residents, choosing to make these areas salient. Finally, while the semiotic resources used on the DAP map do a better job at emphasising the span of displacement risk across neighbourhoods by mapping displacement risk on a building level, this representation also removes the ability to easily gauge what areas of the city are currently at the higher risk, preventing effective policy intervention. However, this map does stand in contrast to the others in the sense that it focuses on displacement as a “risk,” indicating that this process is of concern to both the creators of the map, as well as the intended audience.

Considering previous research on the failure of critical scholarship in offering policy resolutions that can neutralise the negative effects of gentrification, the results of this study urge us to contemplate the ways in which visual representations may contribute to this continued

negligence. This study was designed to examine how social cartography mediates the processes of gentrification and displacement, and its results have found that these visual representations reproduce class-based power-knowledge structures that reinforce a neoliberal narrative of urban revitalisation. However, the study did not address the ways in which these power relations can be semiotically subverted, leaving room for further scholarly inquiry into the ways in which the reproduction of these discourses can be resisted when using social cartography to visualise data on displacement and gentrification.

CONCLUSION

This dissertation has provided a social semiotic analysis of social cartographic representations of gentrification and displacement in New York City, with the intent of examining how these representations reproduce class-based power-knowledge structures and reinforce a neoliberal rhetoric of urban revitalisation. The semiotic patterns observed in the selected sample are largely consistent with the hypothesis that the maps would de-emphasise displacement tracts while highlighting spatial boundaries. This ultimately affirms the role of gentrification and neoliberal urban policy as ideological instruments through which the upper- and middle-classes re-establish a spatial power dynamic by displacing lower-income, incumbent residents. However, it is important to note that the DAP map attempts to subvert these discourses, albeit in a way that is unpractical for potential policy intervention.

The results presented above indicate that further inquiry into the ways that social cartography mediates urban change may yield rich insight into the ways in which power relations and knowledge structures are semiotically reinforced through visual texts. Extending the sample to include more diverse sources and looking at how dominant discourses may be subverted through the use of semiotic resources could offer a more nuanced perspective on the topic than this dissertation was able to address.

Social cartography offers a representational medium that can render social and economic injustices visible in the spatial landscape, but this requires the use of semiotic resources in ways that subvert the “urban renaissance” narrative, instead focusing on the lived realities of lower-income populations living in gentrifying neighbourhoods. However, this can only be achieved when visual representations mediate the processes of gentrification and displacement in ways that subvert neoliberal discourses of urban development. A social cartographic practice that recognises the lived realities of displaced populations may also contribute to more integrated urban policy alternatives, ultimately aiding the creation of a city that is prosperous and sustainable for all.

ACKNOWLEDGEMENTS

Given the curious web of interpersonal relations and connections that make up a person’s life, it would be foolish or even arrogant to maintain that an individual should take full credit for their achievements. As such, I would like to extend a thank you to the people who have facilitated the undertaking and completion of this academic text. First, I would like to thank my supervisor Dr. Dylan Mulvin for his guidance and encouragement in the early stages of this project’s inception. I also wish to thank Wilfrid Laurier University’s Dr. Patricia Molloy and Dr. Jeff Heydon. Had it not been for their passion and knowledge I would not have fallen in love with this field of study, and I would be much poorer for it.

Completing a Master’s thesis in the midst of a global pandemic was demoralising and lonely, and I would not have retained my last crumb of sanity had it not been for the love and support I received from my friends. I feel especially compelled to mention Renate Leth-Olsen, Rebecca Arbon, and Molly Naylor-Komyatte; three women whose wisdom, ambition, and kindness continues to inspire me immensely. Finally, I would like to thank my friend and peer Dan Wootton, who bravely assumed the responsibility of believing in this project even when I did not. His unwavering support and words of encouragement proved invaluable throughout our Master’s programme – it really is just funny sometimes.

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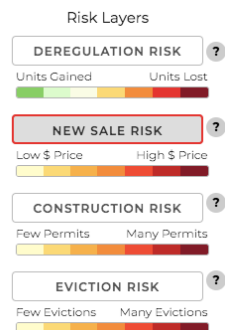
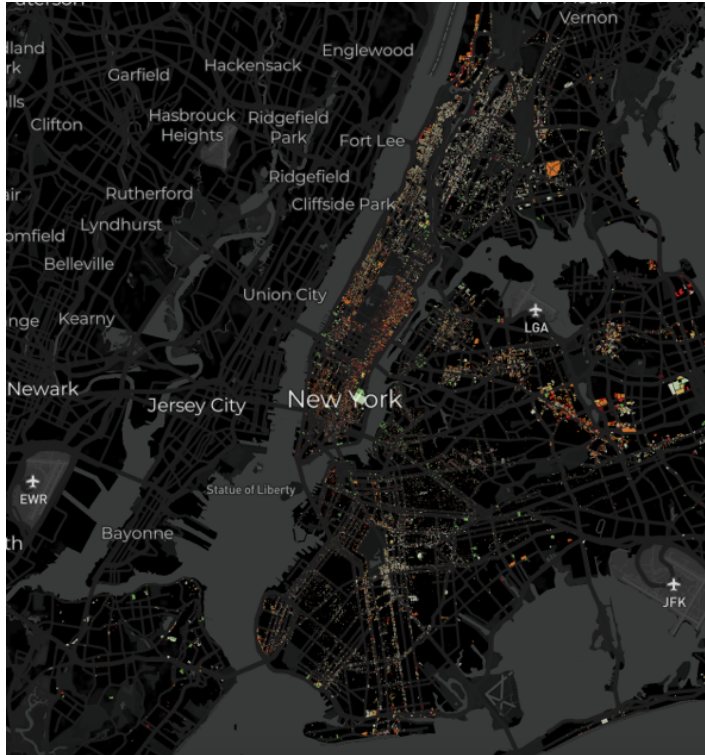
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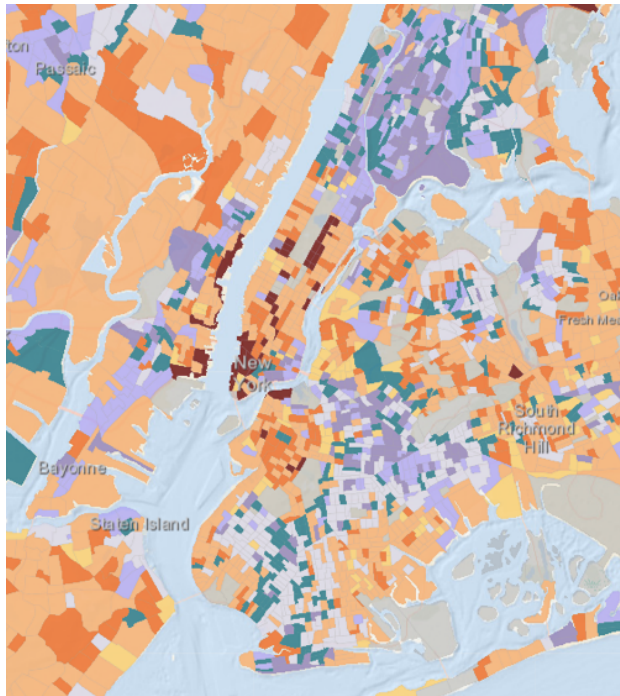
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APPENDIX

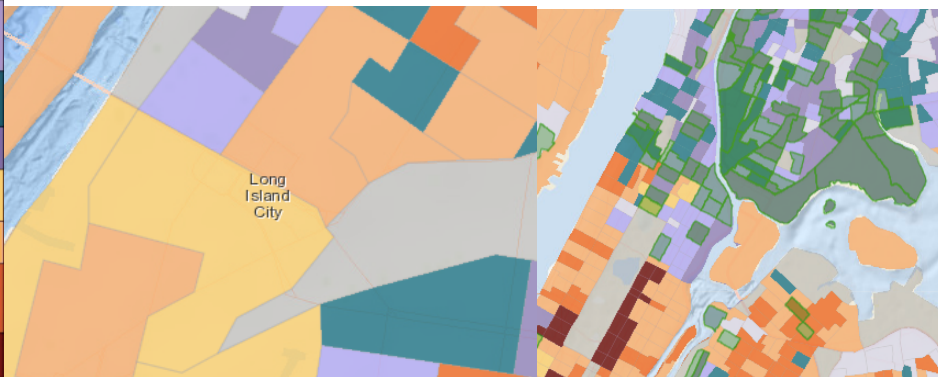
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Typology (tract income level)	
Not Losing Low-Income Households (Low Income)	
At Risk of Gentrification (Low Income)	
Ongoing Displacement of Low-Income Households (Low Income)	
Ongoing Gentrification (Low Income)	
Advanced Gentrification (Moderate to High Income)	
Stable Exclusion (Moderate to High Income)	
Ongoing Exclusion (Moderate to High Income)	
Super Gentrification or Exclusion (Very High Income)	



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ISSN: 1474-1938/1946