NEIGHBORHOOD MAPPING AND NEIGHBORHOOD PLANNING

Revealing the relationship in New York City, 1970-2015

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Abstract

Maps are a central tool to explore spatial relationships used both for analysis and implementation within the urban planning field. However, although they tend to be envisioned as scientific, rational, and objective depictions of the ground, the process of mapping follows a set of abstraction steps that imply the subjectivity of the represented. Maps are affected by the context and process of their creation and carry specific understandings or knowledge frameworks. As they are constantly used in the planning practice, this subjectivity intrinsic in the spatial representations can highly affect how the represented spaces are planned.

In this way, a feedback loop is initiated, where the context and situation on the ground affects the representation while also this one ends up informing plans and policies that will be applied to the ground. This thesis uncovers the extent and implications of this feedback loop between the represented and representation or between mapping and planning. The research focuses on a specific topic, neighborhoods, and follows it through a case study, planning in New York from 1970 to today.

The results of this temporal comparison display patterns that support the existence of a relationship between the goals of each plan, the operationalization of neighborhood that derives from those goals, their representation in the form of maps and the planning practices applied. Therefore, this work shows a case of both how the context can affect the way in which cities are represented and how the representation of cities through mapping has influenced the urban practices deployed in it. This study is essential for planners to understand the underlying mechanism in which power can exert its influence through maps and be aware of the agency that our profession plays in this process.

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Chapter 1. Introduction and Background

> Cartographic reasoning – more explicitly than other models of knowledge production and more overtly than other interpretative devices – quite literally entails drawing (upon) and enforcing a world's view. (Meisterlin, 2019, p. 3)

Maps can be understood as a graphic tool to represent space with the aim of facilitating the understanding of relationships, events, and processes (Harley and Woodward, 1987). However, they fall prey to the intrinsic duality of any representational tool: the same abstraction process that allows for representation entails the creation of a particular view of that space. As a consequence, the spatial conceptualizations resulting from maps' generation processes transform them into not only readers but also producers of place and social identities. As such, maps become both tools to comprehend and active generators of knowledge (Pickles 1991, 1995). The knowledge produced can potentially impose the conceptualizations used to create the map into the actual place. In this way, a loop is created, where space informs its representation while representation influences space and its inhabitants.

The scientific and cultural frameworks that influence map construction emphasize a central danger of cartography; while maps might be understood as scientific tools of analysis, their process of creation is dependent on a specific system of abstraction and a particular instance of a socio-historical perspective. In this way, the map, from its neutrality pedestal, can be wielded without further scrutiny and start exerting its influential power over place (Harley, 1989). In addition, maps' underlying interests and conceptualizations are often hidden from the bare eye, making them significantly difficult to track (Woods, 1992). The connection between knowledge and power

further enhances the potential of maps to be used as an undetected, and conceivably insidious, instrument of power (Crampton and Krygier, 2016).

Critical cartography, as a discipline that "challenges academic cartography by linking geographic knowledge with power" rose to prominence in the 1990s (Crampton and Krygier, 2016, p. 11). Since then, subjectivities, biases, and power structures intrinsic to maps have been increasingly acknowledged by scholars. However, instances where maps might be wielded as instruments of power or produce space, in addition to represent it, may still be taking place. Urban planners, as natural generators and consumers of maps, should understand how these relationships unfold and can influence their practice. The lack of acknowledgment of the full implications of the impact of mapping practices can lead to either a misuse of this tool or short-sightedness when dealing with unintended consequences of planning. On the other hand, a deeper engagement of planning practice with the understanding of these relationship has the potential of increasing the reach and possibilities of one of the most central tools for planning.

The understanding of these relationships can be better unveiled through the analysis of a specific case study, looking at the relationship between mapping and planning by following the thread of a specific topic in a certain context. This work will look at how neighborhoods have been mapped and planned in New York City from 1970 to today.

Neighborhoods can be understood as an example of spaces that are representative for the community, being labelled as symbolic and emotional (Rappoport, 1977), or connected with a sense of belonging, identity and social capital (Carmon and Efrat, 2015). Consequently, they are both especially susceptible to being influenced by specific spatial representations and are representative of the community.

Although neighborhoods have been considered as a universal and timeless concept (Cooley, 1909), both used as a tool for planning practice (Dewey, 1950) and analyzed by planning theory (Guest 1984), the concept carries a multiplicity of definitions (Greer 1962, Suttles 1972, Fischer 1971, Park, 1952) that have also been evolving through time. In addition, if different individuals perceive neighborhoods differently (Coulton, Zane Jennings and Tsui, 2013), their universality is further challenged. These circumstances make them difficult to grasp, represent or map.

On the other hand, neighborhoods are a key piece in our understanding and management of cities as urban planners, be it as a natural way in which communities organize themselves (Cooley, 1909) or as a system to divide cities in administrative units that affect political organizations and provision of services (Shevky and Bell, 1955; Abu-Lughod, 1969; Carmon and Efrat, 2015). As a consequence, their use as a spatial unit can promote hard definitions of their boundaries. This not only implies the connection with ecological fallacies such as the modifiable areal unit problem (MAUP) (Dark and Bram; 2007) and the uncertain geographic context problem (UGCoP) (Kwan, 2012), but can also contradict the intrinsic fluid nature of neighborhoods. As a consequence, there is often a mismatch between the official administrative neighborhood boundaries and the community-felt territory (Foster and Hipp, 2011).

New York City is commonly labelled as a city of neighborhoods. While people often use them to orient themselves or as a sign of identity, their limits are blurry, changing through time, and official boundaries used for planning purposes had not been created until very recently. Traditional units used for quantitative analytical purposes are community districts, local representative structures far larger than neighborhoods and census tracts, groups of city blocks

smaller than neighborhoods. However, in 2010, a new unit was created by the Department of City Planning: neighborhood tabulation areas (NTAs), which attempt to replicate the neighborhood scale, with additional constraints. Since then, these units have been used for multiple city-wide plans and research about neighborhoods.

This thesis explores the relationship between mapping and planning by studying how neighborhoods have been mapped and how they have been planned in citywide plans of the New Work City Department of City Planning. In particular, the focus is placed in one turning point, when the representation of neighborhoods became a *shapefile*, or when neighborhoods in New York City started to be represented using vector polygons embedded in Geographical Information Systems, and the planning implications of this shift. The creation of bounded units, through the introduction of a vector-based dataset, brings a radical transformation of the spatial conceptualization of neighborhoods from blurry and dynamic to hard limited and timely fixed.

Through this study, this work critically addresses an instance in which the representation of cities through mapping have influenced urban practices deployed in it. Therefore, it detects the assumptions on the categories of knowledge intrinsic in a series of produced maps and assesses their impact in policy-making. The focus, then, is the relationship between image-based conceptualizations of neighborhoods and citywide approaches for neighborhood level planning.

This research also aims at bridging the connection between critical study of maps as generators of knowledge or action and the implications of their specific instances in urban planning approaches. The final aim is to depict how the creation of maps can have a double impact. In the same way that they reflect the world's vision of their creator, they also shape the world's vision of their readers. Their purpose is to assess our surroundings but their existence also shapes them. If,

as Harley states “to catalogue the world is to appropriate it” (Harley, 1989, p.13), to define neighborhoods might imply owning them.

Planning practice is deeply intertwined with both mapping and power relations. On one side, understanding and unleashing the full potential of maps as a tool for planning should be embraced as core for the discipline at large. On the other side, the recent turn toward technocratic practices connected with the introduction of Geographic Information Technologies (GIS) and data-based decision modelling in the profession might be demanding a greater attention being paid to these shifts. A theoretical reflection of these changes happening in planning practice might be able to inform the profession on how to address contemporary issues derived from them.

Chapter 2. Literature Review

This chapter will address significant literature that frame the research of this thesis. Firstly, it will describe the evolution of the concept of "neighborhood" and its use in the planning practice, as reference for how neighborhoods have been mapped and planned in New York. To be able to understand the interrelationships between mapping and planning, a review of how maps have been conceptualized as producers of space and their capacities to affect the places they represent will be carried out. This understanding of maps will be, then, framed within the field of critical cartography.

What is a neighborhood?

A neighborhood has been described as both a universal and fuzzy concept, without a single standard definition. This blurriness has not prevented multiple scholars and practitioners from making use of them as a system to understand and manage cities. As a consequence, a palimpsest of definitions of the term neighborhood has been evolving, highly dependent on physical and theoretical contexts in terms of space and time.

Park, Burgues and McKenzie (1925), from the Chicago ecological school, attempted to create a neutral description of neighborhood in the first half of the 20th century by applying theories drawn from plant and animal ecology. Others, however, challenged this universal conceptualization. For instance, Jacobs (1961) claimed that traditional neighborhoods had lost their meaning and function in modern cities (Carmon and Eizenberg, 2001).

As Grannis (2009) affirms, "urban social scientists have treated 'neighborhood' in much the same way as courts of law have treated pornography: a term that is hard to define precisely,

but everyone knows it when they see it" (p. 27). This disagreement on the possibility of reaching a standard definition has not prevented researchers and practitioners to make use of the concept and attempt to operationalize it. Cooley (1909) argued that neighborhoods are a natural phenomenon that, as a cluster of people, have existed since the ancient world and, therefore, cannot be left out in the understanding of cities and societies (Carmon and Eizenberg, 2001).

Although reaching a single neutral definition of neighborhoods appears to be a daunting challenge, some main elements can be traced throughout the different approaches and timelines. Neighborhoods have been defined as natural areas (Park, 1952) or social areas (Greer, 1962), in both cases understood as physically distinguishable, with a unique population, social mechanisms of control and aggregate behaviors. Another approach has focused on its interactions among the community, defining them as interaction systems (Suttles, 1972).

A dichotomy repeatedly addressed throughout the discussion is the understanding of neighborhoods as a physical or a social entity or a combination of both (Keller, 1968). Rappoport (1977) argues that neighborhoods consolidate both social and physical spaces and consist of boundaries, social networks, local facilities, and symbolic connotations. Tuan (1974) uses this connection to explain the transformation of spaces into places by a process of attachment of meaning and value.

Natural, social, and interactions are iterated over definitions. Bronfenbrenner (1979) recovers the idea of a contextual ecological system. Olson (1982) revisits the neighborhood as a form of social organization that determines behavior. Webster (1983) departs from the word "neighbor", dividing the definition in two main aspects: living close to one another and rendering mutual assistance, therefore focusing on the internal interactions. Schwirian (1983) also focuses

in the network of informal ties and common identification through symbols. Carmon and Eizenberg (2001) present a similar standpoint twenty years later, defining neighborhood as "continuous physical proximity among people together with some social attitudes, such as friendliness, and/or special behaviors, such as mutual assistance" (p. 11). However, Rich (2009) focuses on highlighting that neighborhoods are socially constructed concepts while Foster and Hipp (2011) recover the concept of neighborhoods as ecological contexts, also adding the idea of being a bounded area. This overview offers a glimpse of what Guest and Lee (1984) already pointed out in the 1980s: the meaning of neighborhood might be inherently ambiguous due to its lack of institutional features.

Neighborhoods have also been contrasted with residential areas and activity areas. Schwirian (1983) argues that what distinguishes a neighborhood from a residential area is the level of social organization, making social networks very significant for this change and highlighting the temporality of the state neighborhoods. Schwirian states that residential areas might become neighborhoods and vice versa, implying the unstable aspect of the neighborhood condition.

Jones and Pebly (2014), though, challenge traditional notions of neighborhoods through the conceptualization of activity areas as opposite to residential ones. They argue that people, through their daily lives, are exposed to multiple other places aside from their residential zones. A residential area might fail to be representative of social ties or community if most of the daily time of an individual is spent away from home.

Finally, yet another discussion in the conceptualization of neighborhoods is their understanding as natural or administrative units. In their pursuit of a universal definition, academics and scholars seem to consider neighborhoods as a phenomenon naturally inherent in

societies. However, city neighborhoods often function as administrative units for political organization or a provision of services (Shevky and Bell, 1955; Abu-Lughod, 1969) and the planning and analysis of areas (Dewey, 1950). It is not clear how the administrative unit divisions respond to the natural or symbolic communities and the repercussions of their mismatch (Guest & Lee, 1984). A consequence of this duality might be that administrative units labelled as neighborhoods end up being considered as scientific proxies of the natural phenomenon (Wellman and Leighton, 1971).

Although the conceptualization of neighborhoods is a contested issue, the discipline of urban planning has repeatedly been confronted with their understanding and management. Neighborhoods have repeatedly been attempted to grasp, define, count, and measure to address them within the planning practice.

Defining and Measuring Neighborhoods in Urban Planning

Urban planning and neighborhoods have been intimately related throughout history, as Carmon and Eisenberg (2001) present on their evolution review. Sociologists of the early twentieth century, especially those from the Chicago school, claimed that such primary relations among neighbors are essential for maintaining the social order, as they create effective informal control systems (Cooley, 1909). From 1950 to 1970, architecture and urban design were perceived as tools to influence social relationships, such as close friendship or crime and delinquency. This era and its mindset present instances of slum clearance and bulldozing as methods to face social issues through physical modification of neighborhoods. This approach was subsequently widely criticized for its reliance on physical determinism (Vale, 2012).

The turn of planning from a top-down rationalist approach to communicative and participative practices (Healey, 1992) also affected the perception of neighborhoods. There are multiple examples of citizen participation included in neighborhood rehabilitation, such as Model Cities in the United States, Neighborhood Improvement Program in Canada or Neighborhood Social Development in France (Carmon and Eizenberg, 2001).

Nevertheless, a deterministic idea on what a good neighborhood is prevails. While Jane Jacobs (1961) advocated for community empowerment in her influential work *The Death and Life of Great American Cities*, she presented a very specific vision of how a city block, and neighborhood, should look and function, blinded to other possible understandings. In addition, the traditionalist principles of the new urbanism movement revived the physical determinism applied in neighborhoods. “Underneath the detailed design instructions of the new urbanism lies the same old belief of architects that by means of proper design of the physical environment one can create a better social world” (Carmon and Eizenberg, 2001, p. 439).

From the 1970s to the ‘90s, the rise of the neoliberalist economic tendencies spurred a specific type of neighborhood regeneration based on introducing higher economic classes. This method led to displacement, favoring what Carmon and Eizenberg (2001) call “public-private initiatives of planned gentrification” (p. 440). An example of this approach that caters a specific image of a desired neighborhood is the promotion of innovation districts, that use marketing strategies to attract capital investment and the creative class (Mele, 2000 and Florida, 2014). These place-based strategies to modify the human ingredient of the neighborhood are important factors in spurring neighborhood change and displacement scenarios (Carmon and Eizenberg, 2001), an issue that multiple cities are facing today.

Most of these latest trends in neighborhoods and planning are connected with the theoretical concept of neighborhood effects (Sampson, Morenoff and Gannon-Rowley, 2002). This theory states that the characteristics of a neighborhood can highly affect opportunities and quality of life of their residents (Carmon and Eizenberg, 2001). The different components of these effects can include child and adolescent development, delinquency, and crime (Grannis, 2009), physical and mental health (Diez Roux, 2004), life satisfaction (Byoung-Suk Ellis, Leiva and Rogers, 2010), and political voting (Johnston and Pattie, 2014).

In order to attempt to measure the concept, Sawicki and Flynn (1996) collected a set of neighborhood indicators that academic discussions had touched upon. These measures included census and administrative data, surveys, rating scales, interviews and ethnographies, residents' descriptions, photographs, drawings, and mixed methods approaches. The efforts to address neighborhood planning in New York City also include a multiplicity of attempts of operationalizing and measuring neighborhoods, ranging from case studies to data-driven quantitative approaches. This research will use this framework to unpack and categorize these efforts to compare them with their mapping counterparts.

Being a spatial phenomenon, any attempt to measure neighborhoods would face the definition of its boundaries. Consequently, multiple studies have also challenged existing methods to draw those boundaries or looked for alternatives to existing ones. Foster and Hipp (2011) argued that administrative boundaries might not be representative of natural neighborhoods and suggested using Geographic Information Systems (GIS) to introduce new conceptual methods that allowed avoiding the use of aggregated data. Some studies have attempted to draw those boundaries based on residents' perspectives, be it through surveys (Guest and Lee, 1984 and Jones and Pebley, 2014)

or interviews (Guest and Lee.,1984, Coulton et al, 2013 and Williams, 2011). More recently, a new trend has focused on using the potential of social media to find new ways of quantifying a neighborhood and drawing its limits (Johnston and Pattie, 2014 and Nguyen et al, 2016).

However, the delimitation of finite boundaries brings systematic issues of spatial aggregation, which have been identified with the MAUP (Dark and Bram, 2007) and the UGCoP (Kwan, 2012). As different groupings of data within areas will vary the results, the definition of their boundaries highly impacts the outcome of the analysis. These delineation of spatial units does not only render different results depending on the different groupings but also might not reflect the context on the ground.

Grannis (2009) argues that, in the case of neighborhoods, the MAUP would not exist if neighborhood boundaries were drawn responding to theoretical parameters instead of administrative convenience. However, even researchers have the tendency to fall prey to the opposite. The availability of administrative units that approximate the theoretical phenomena foster academics taking them as a proxy of neighborhoods and using them for research (Grannis, 2009). In other words, "theory succumbs to the preponderance of data" (Grannis, 2009, p. 4). Nicotera (2007), states that there is a subjective experience connected with neighborhood perception that make them difficult to coincide with official units or data. All in all, significant issues have been detected when considering that aggregated data within boundaries is an appropriate method to define and quantify neighborhoods (Foster and Hipp, 2011).

These tendencies promote treating neighborhoods as "colored boxes on a map or sets of geo-referenced variables" (Grannis, 2009, p. 4), losing sight of their complexity and fluidity. In addition, the focus on maps can emphasize certain aspects that are easier to convey with

administratively defined polygons, overlooking those that are not (Grannis, 2009). These limitations have not prevented extensive mapping of neighborhoods used in urban planning.

Maps as producers of space

Urban planners are inevitably connected with the "Knowledge of Space" as it is the basis where their work takes place (Hayden, 1995, p. 14). In *Dessin de l'Ouvrage*, Lefebvre (1981) builds the concept of the social space and advocates for its potential production. He affirms that every society produces its own space and that those distinctive social spaces generated throughout history are essential for the shaping of economic production and social reproduction.

The premise of social space creation is the location of a group of individuals in a place. As Hayden states (Hayden, 1995), place is an overcharged word that can be connected with homestead, location, open space in a city or social hierarchy and also entails aesthetic and personality meanings. Place has also been associated with rights, specifically, in the 19th Century, the right of a person to own land (Hayden, 1995). If, as Lefebvre affirms, social space directly affects social reproduction and economic production, limiting access to space can be used as a means to restrict political rights, economic development, or social growth (Hayden, 1995). The limitation to land through property is, therefore, a direct tool to limit access to space and the possibilities of the restricted collectives. Additionally, there are subtler restrictions connected with space that do not necessarily relate with exclusion from private property. Space can be owned, defined, and segregated in multiple ways.

The control over the territory to exert these different types of influences requires specific tools. In order to regulate the space, it needs to be represented through maps. Lefebvre (1981) also

addressed this relationship through its conceptualization of the triad of social space, formed by spatial practice, a representation of space, and representational space. The spatial practice includes production and reproduction. It produces the space through appropriation and domination. The representation of space is also connected to the production and imposition through understandings, signals, and codes. It is the designed or conceptualized space of the expert, the planner and technocrat, intellectually elaborated through ideological and specifically crafted knowledge frameworks. Finally, the spaces of representation or representational spaces are those lived through their images and symbolism, becoming the space of the dwellers or the users. They respond more to cohesion than to coherence and are connected to clandestine codes of social life.

Being an instance of a spatial practice, planning relies on representations of space to manage spaces of representation. To the extent that urban planning practices involve mapping neighborhoods and distributing resources according to the mapped visualization of cities, urban planners are actively engaged with the creation, reproduction and use of maps as central planning tools. Therefore, understanding the underlying effects of these connections is crucial to ensure both efficacy and equity when addressing this discipline.

Critical cartography

The connection between representation of space, or mapping, and representational space has been explored through a specific discipline: critical cartography. Critical cartography can be understood as critique applied to representation techniques and maps, specifically (Crampton and Krygier, 2016). If critique is an "examination of the assumptions of a field of knowledge" with the objective to "understand and suggest alternatives to the categories of knowledge that we use" (Crampton and Krygier, 2016, pg. 13), critical cartography should be directed towards re-

examining the inherent knowledge frameworks that maps entail. Consequently, it involves uncovering all the layers of beliefs, presumptions, cultural, and social structures that affect the process of map making. It implicates dissecting both the direct claims being made and the hidden existing limitations that maps can impose. In the context of planning for neighborhoods, it implies deconstructing how they have been operationalized, how the socioeconomic context and theoretical frameworks have impacted this conceptualization and how this has affected their representation through maps.

The nexus between cartography and power can be explained by the fact that maps are a specific type of knowledge based on spatial relationships. In addition, maps have been historically used by the powerful as means to construct and exert control over the territory and its dwellers. As a consequence, critical cartography challenges "academic cartography by linking geographic knowledge with power" (Crampton and Krygier, 2016, p. 11).

As Harley (1989) argues, the rules governing the construction of maps implement constraints or limitations and create a conceptualization of space. On one hand, scientific epistemological rules promote the standard scientific model of knowledge and cognition. On the other, cultural rules introduce values, such as ethnicity, politics, religion or social class. Those rules are intrinsically affected by the power in place, engineering, ratifying, and legitimating class and power through visualization techniques in maps (Harley, 1989).

However, understanding maps as including specific visions and frameworks of knowledge that can be linked to power is fairly recent. As Crampton and Krieger review (Crampton and Krygier, 2016), in the late 19th Century and early 20th century, cartography was generally understood as a scientific discipline that carried with itself the idea of control and constraint.

During the second World War, there was shift in cartography that focused on empirical map design and communication. However, it is not until the 1990s that critical cartography rose to prominence. Although it is a term now spread around intellectual and academic fields, practice related with cartography still struggles to address its implications.

Therefore, this thesis has the double objective of using the framework of critical cartography to understand more in depth these relationships but also raising awareness in the field of planning practice of the dangers of using maps without understanding the full extent of their implications.

Chapter 3. Materials and Methods

This thesis performed a longitudinal analysis of neighborhood planning and mapping in New York City from 1970 to 2015. This section will explain this comparison and its framework as well as the case study, the materials used, their origin and the reason for their selection.

Case Study: Neighborhood Mapping and Planning in New York City 1970-2015

New York is a city located on the eastern coast of the United States of America, composed of five boroughs: Manhattan, Brooklyn, the Bronx, Queens and Staten Island, and more than 180 neighborhoods. Its population of 8.4 million (US Census, 2013) make it one of the most densely populated cities in the United States.

New York City also has a history of addressing neighborhoods for planning from the citywide scale. Mayor John Lindsay (1966-1973 in Office) introduced significant structures to reinforce decentralization in planning. He implemented the community school district system in 1969, the Office of Neighborhood Government strategy in the early 1970s, and the community board system established in its present form in late 1970s (Forman, n.d.). His administration's study *The Neighborhoods, the City and the Region: Working Papers on Jurisdiction Structure* (1973) and the plan for *Neighborhood Preservation in New York City* (1973) indicate a clear concern on addressing the connection between the neighborhood scale and citywide planning.

Although other administrations later used the structures created by Lindsay, it is not until Mayor Michael Bloomberg's administration (2002-2013 in Office) that a major implementation in the structures to plan for neighborhoods is made: The creation of neighborhood tabulation areas

(NTAs) as a new spatial unit in 2010, reinforced by the administration's push for a data analysis approach to the planning practice.

The introduction of this unit should be understood within the framework of prior city divisions. Census tracts are small-area units that aim at providing the means for analysis and efficient administration of large cities in the United States. Created in 1940 by the federal government of the US and containing populations between 3,000 and 6,000, their boundaries are permanently established to allow for timely comparisons. Their original conformation attempted to generate homogenous areas in terms of population size, area and demographic characteristics (Department of Commerce. Bureau of the Census, 1947). Certain basic data from the US Census is published in smaller units, such as blocks or block groups, however, due to their higher statistical reliability, most analysis still use Census Tracts as the smallest spatial unit.

Community boards were conceived as a mechanism for empowering neighborhoods through connecting areas of the city, community districts, with its own representative unit. There are currently 59 community districts in New York (12 in the Bronx, 18 in Brooklyn, 12 in Manhattan, 14 in Queens and 3 in Staten Island), with a maximum of 250,000 people per community district. The first Community Planning Councils were created by the Manhattan Borough President in 1951 but it is not until 1975 that 59 Boards were established by the Charter Revision Commission. Their original purpose was serving fragmentation and empowerment of local communities but their equivalent spatial unit, the community district, is larger than traditional neighborhoods.

School districts were created in 1969, under the Lindsay administration, in parallel with the New Work City Department of Education (Chen, 2018) and divide the city in 32 areas. Other

subdivisions are Police Precincts, Health Areas, Fire Divisions or taxi zones (New York City, Office of the Mayor website).

Neighborhood Tabulation Areas (NTAs) (Figure 01) were created in 2010 to project populations at a small scale from 2000 to 2030. Their aim was to serve PlaNYC, a long-term sustainability plan that Mayor's Bloomberg administration developed for the city. Although their name suggests they intended to replicate neighborhoods, the Department of City Planning disclaimed it. The limitation of a 15,000 minimum population necessary for their statistical purpose forced combinations of traditional neighborhoods. Their boundaries were also forced to coincide with census tracts and PUMS, which also limits their capacity of representing traditional neighborhoods (New York City, Office of the Mayor website).

Metadata and official descriptions of the NTAs offered by the Department of City Planning and the Mayor's Office highlight their intrinsic limitations in replicating "real" neighborhoods, disclaiming that purpose for their creation. However, since 2010, they have been widely used as a proxy of neighborhoods by multiple academic studies and professional plans (Bik et al, 2016; Frye et al. 2017; Goedel et al., 2016; Haggag et al., 2017; Tuccillo, 2015; Ya, 2014; Lin et al, 2014; Meltzer, 2016; Segler, 2015; Sun and Li, 2015, Tsao et al, 2016).

Figure 01. Neighborhood Tabulation Area Boundaries. (Department of City Planning, 2018)

Materials

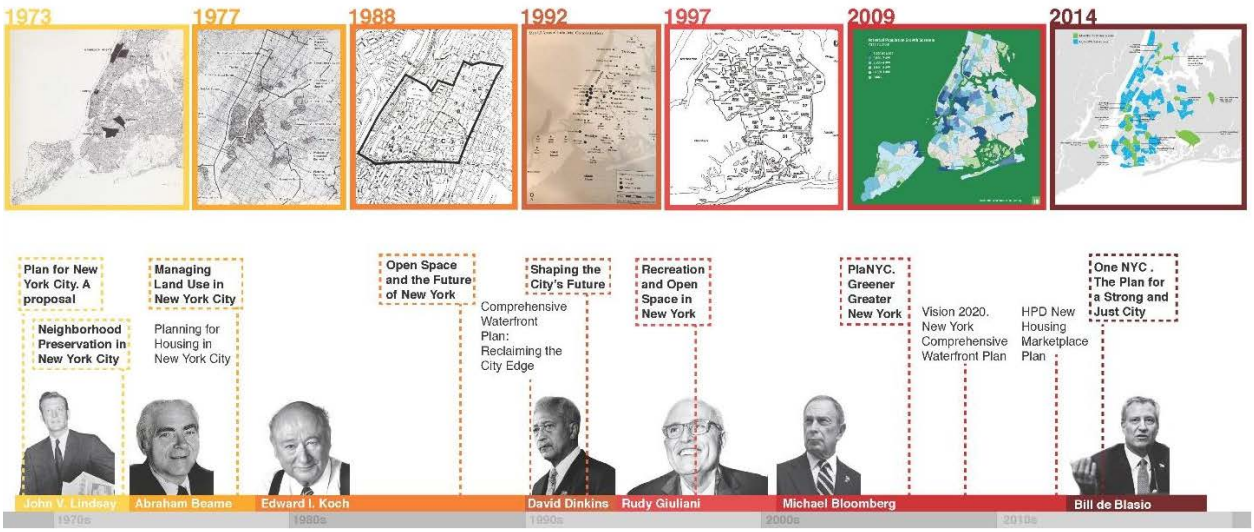

Figure 02. Timeline with examples of the maps included in the plans analyzed

1969. John V. Lindsay	Rudy Giuliani. 1994	Michael Bloomberg. 2009	Bill de Blasio. 2014
			

Table 03. Four Official Neighborhood maps analyzed

The principal material examined were urban plans produced by the Department of City Planning of New York from 1970 to 2015. Available plans were collected and a sample was selected responding to certain criteria. Only citywide plans were chosen, as this research aimed at examining the relationship between the city and the neighborhood. The focus was placed on how the city accounts for neighborhoods when planning instead of how neighborhood planning is performed at small scales. In addition, those plans depicting maps or descriptions of neighborhoods were given preference. Finally, plans responding to cross-temporal topics were prioritized in order to facilitate comparison. For instance, public and open space plans were selected because multiple administrations had addressed this topic when planning at a city.

After this first selection, a second filtering was carried out. The first round of plans was subject to a more superficial analysis, while these second ones were examined more in depth. Plans that, due to the specificity of the topic, were less comparable with others, were eliminated. In addition, lack of accessibility to professionals involved in the crafting of the plans was also

considered. Those with the most representative neighborhood maps were also prioritized. Finally, at least one plan per administration was selected (Figure 02).

After the plans were chosen, the change amongst them was analyzed addressing two primary aspects: The representation of neighborhoods, be it through maps, other graphical expressions or descriptions, and the neighborhood level policies and plans implemented.

The conceptualization of neighborhoods within those plans was taken into consideration through a range of means. The frequency of the use of the term neighborhood was monitored, the context and instances where it was used together with the use of specific neighborhood names as well as the neighborhood scale to implement plans or policies. The motivations behind these detected changes were addressed as well.

The departure point was understanding the main purpose of the plan to create a baseline for comparison. In both the earliest and in the latest plans, the main driver was preparing the city for the future. However, the challenges and goals vary, clearly tied to the socioeconomic context.

The type of studied plans ranges across time. While some of them are more comprehensive, not only addressing the whole city but also attempting to be a summary of the most important issues - Plan for New York City. A proposal (1969), Shaping the city's future (1993), PlaNYC (2007), OneNYC(2014) - others are centered in a specific topic. In some cases, such as in Neighborhood Preservation in New York City (1973) or Open Space and the Future of New York (1988), the plan is used as a tool to create a process with the aim of seeing it replicated. In other cases, the plans are communication devices to share the main goals of the administration and the policies that are being implemented - Shaping the city's future (1993), PlaNYC (2007), OneNYC(2014).

Two main types of maps were included in the analysis. In the first place, the neighborhood maps of the plans selected, to be able to detect how mapping for neighborhoods was being carried out in relationship with each specific plan (Figure 02). Secondly, official neighborhood maps published by four administrations were also examined, from 1969, 1994, 2009 and 2014 (Table 01).

When analyzing the representation of neighborhoods in the plans, several parameters were considered. The evolution of precision in their definition, including aspects such as location and boundaries. The change in overall number, name or location of neighborhoods. Specifically, the study payed attention to the creation of new neighborhoods, areas that were not considered as such before and might have recently been incorporated in the neighborhood imaginary.

Finally, the representational techniques and technologies used to create the analyzed visualizations were examined. Factors such as the introduction of Geographical Information Systems (GIS) might have spurred the drawing of hard boundaries, due to the central role of polygons in GIS based techniques. Besides, the greater access to quantitative data and potential for its management might have spurred a change of the map's role within the planning process, from a more qualitative tool to a more quantitative one.

To complement these main primary sources, 14 semi-structured interviews were conducted with professional planners involved in the crafting of those plans and maps. Their perspective was useful to shed light into the goals and practices deployed in each of the plans, the purposes and making processes of the maps and the approach to neighborhoods in each plan and administration (see questions in appendix). Aspects such as the author, methodology and specific purpose of the map within the plan were be addressed.

Methods

The analytical framework that structured this research was based on untangling the relationships within the feedback loop between represented and representation, or between representation of space and representational space (Lefebvre, 1981). This device of critical analysis attempts to integrate the multiple understandings of neighborhoods used in urban planning (Carmon and Eisenberg, 2001), the socioeconomic context and knowledge frameworks that impact the process of creation of maps (Harley, 1989), and their relationship with power (Crampton and Krygier, 2016) and creative potential (Corner, 1999). The process of mapping and planning has been embedded in the loop, dividing it in four axes or elements: neighborhood (or the ground), concept, map and plan, and four quadrants or steps: operationalization, visualization, decision and implementation (Figure 03).

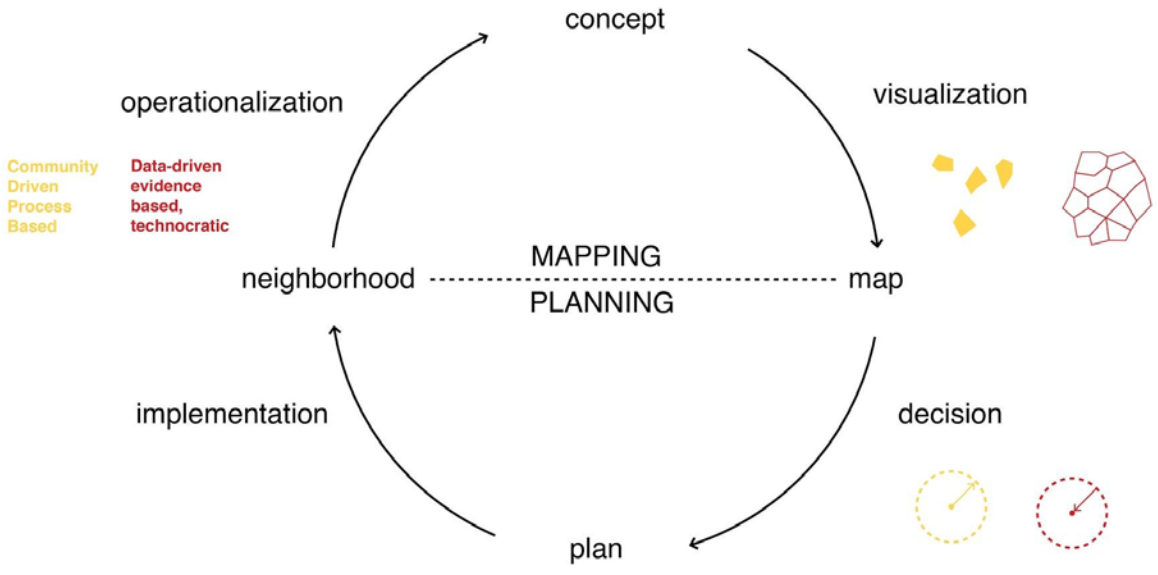

Figure 03. Mapping-Planning feedback- loop. Analytical framework developed to approach this research.

The upper half of the loop deconstructs the process of mapping, which includes two steps to bridge the gap between the "place" and the abstracted "space". The first step is the operationalization of the element or place represented, it is determined by the context which, in this case, is understood through the goals of the plans. These goals, detected through the informed reading of the plans and interviews with planners, integrate two main contextual effects: the political agenda of each administration and the planning practices of the moment. While the plans analyzed respond to different contextual challenges, their major trends can be summarized in two extremes: those based in community driven processes and those relying in data-driven tendencies, with technocratic approaches.

The next step on the device connects the concept with the map through visualization processes. The study of the plans' maps, including their means of representation and process of creation inform this quadrant of the loop. The understanding of the maps analyzed is also assisted by their classification in three main types: reference, analytic and thematic. Although the maps studied cover a vast range, they can be included within two main extreme points: those that focus on specific studied areas, using representational tools to highlight them against a reference background, and those that divide the whole area in different fragments, focusing the attention in the boundaries between those parts (see diagrams in figure 03, visualization).

The lower half of the loop represents the planning side, also divided in two quadrants that bridge the gap between the representation of the space, or the map, back to the place or, in this case, the neighborhood. The first one connects the map with the plan through the decision making processes informed by those maps. This step has been explored by studying the neighborhood

based policies included in the plans and understanding the approach to neighborhoods from the planners involved. Two extreme positions can be detected but plans range in all the spectrum in between. In some cases, the approach used to address the understanding of the concept of neighborhoods is what I called, inductive, as they generally depart from a series of case studies that they subsequently aggregate through a set-up iterative processes. The conceptualization is built from the specific neighborhood up to the city. On the other side of the spectrum we can find deductive approaches, when planning departs from a city wide vision and zooms in to the specific by using data to compare the parameters of all the neighborhoods that conform the city and then choosing those that stand out. The approximation to the creation of a proxy is, then, built from the city down to the neighborhood, by visualizing data at the city level and, through a process of prioritization, zoom-in to the neighborhood (see diagrams in figure 03, decision).

The last step of the feedback loop connects the plan back to the neighborhood, or the place. This work will not include the study of this part, as it focuses on the analysis of the plans published but not their actual implementation or impact. Nevertheless, further research could apply the same analytical framework and close the circle by looking at how plans have been transformed into actions and their intended and unintended effects on the ground.

The analytical device presented has been used to guide the methodological processes deployed in this research and as a framework to interpret the findings. However, its structure has the potential to be carried further, being applied as a comparative tool to uncover the relationship of mapping and planning in other places and contexts.

Chapter 4. Findings and discussion

The discussion of the findings will articulate the relationships existing between mapping and planning neighborhoods that this study has revealed. Consequently, this section will be organized through the three steps of the feed-back loop used as a methodological framework: operationalization, visualization and decision.

This discussion will unfold how one step has impacted the next one and how temporal connections can be drawn between mapping and planning practices. In this way, the shift in the planning profession towards technocratic practices can be followed and disentangled through a specific turning point: the transformation, in 2010, of the map of neighborhoods in New York City into a vector dataset, the Neighborhood Tabulation Areas. This change highlights the agency of mapping as a tool for planning and the implications or potential of its acknowledgement as such in the planning practice.

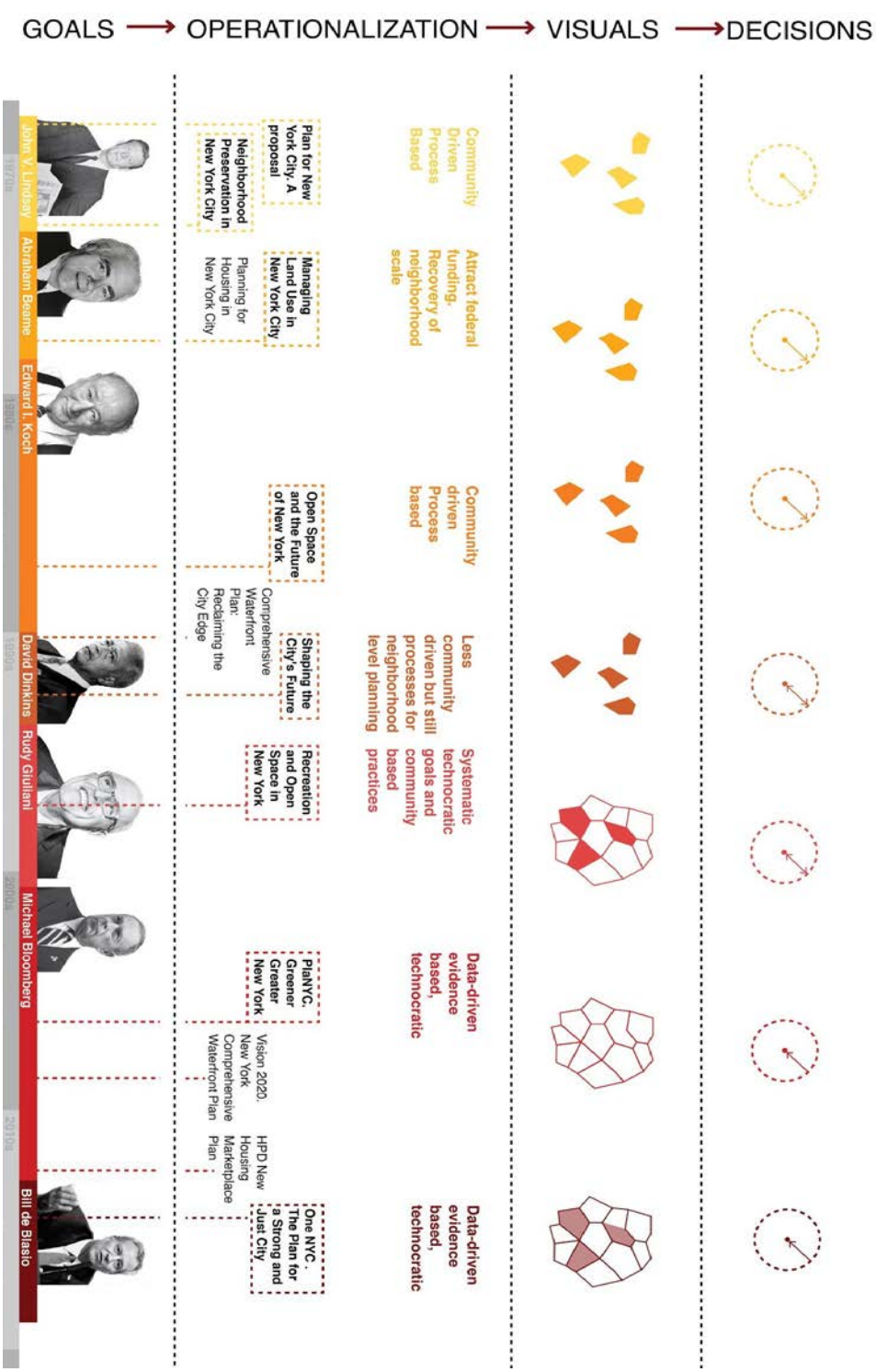

Figure 04. Summary of observations of the studied plans organized through the steps of the analytical feed-back loop.

Operationalizing Neighborhoods: from the ground to the concept

Neighborhoods are constantly used throughout the plans as a fundamental element that conforms the city and, specially, as a tool of identity. In the texts of the plans, the term neighborhood attempts to offer the reader a sense of scale and proximity to the community. Neighborhood is used instead of “area”, “section” or “zone” in order to embed a sense of specificity, belonging and social character in the writing. Specific neighborhood names are used both in the text and maps to identify an area, infrastructure or services. When general issues or plans are presented, they are often exemplified by explaining specific cases, and neighborhoods are used to identify the place where the action is happening. In this direction, they are used as a proxy of the elements that conform a city, repeatedly being described as the different pieces that build the ensemble that is New York.

On the other side, neighborhoods are repeatedly mentioned by planners as a problematic unit of analysis. Their intrinsic complexity of conceptualization and definition makes them difficult to be defined by permanent hard boundaries and quantifiable methods. Therefore, planners interviewed, without denying the important role they play in a city, communicated a sense of uneasiness when dealing with neighborhoods.

Consequently, neighborhoods in planning seem to be at the service of bridging the gap between the planned city and the lived city. They connect the plans and analysis produced with the everyday experiences. They aim at engaging the community and translating policies to the “people in the ground”. Their potential to make this link has pushed urban planners to overcome the difficulties they present and attempt to exploit their potential as a planning tool. Although all the planners interviewed acknowledged the difficulty of capturing their multiplicity of facets and

subjectivities, efforts to create proxies that approximate them enough to be able to operate are constant found throughout the plans.

Nonetheless, the operationalization of the concept neighborhood has evolved over time, with changes that can be traced throughout the different plans studied. Although, across all the plans, the word neighborhood is used often, ranging from once every three pages to two times a page, the context in their use varies across plans. The importance of the concept is significant for every plan assessed, but the ways of attempting to grasp it are different and how neighborhoods are deployed as a planning tool changes as well. The time comparison shows how the operationalization of the term and their use in planning practices are interrelated or, how neighborhoods are understood determines how they are evaluated and planned.

There are significant differences in the ways neighborhoods are planned across time. While, in some plans, neighborhoods are a main unit of analysis and planning - Open Space and the Future of New York (1973), some others only use them to give a sense of small scale planning or as a tool to identify certain areas, services or infrastructure- Managing Land Use in New York City (1977), Planning for Housing in New York City (1977). From the different plans that use neighborhoods for planning purposes, some approach them in a citywide comparative manner- PlaNYC(2007), OneNYC (2015) - while others develop specific in depth case studies - Neighborhood Preservation in New York City (1973), Open Space and the Future of New York (1988).

As a sequence, first, there is the understanding of what a neighborhood is, which impacts the understanding of how a neighborhood should be or which neighborhoods qualify as “good” neighborhoods and which ones are in need of improvement. Finally, these categorizations of

“good” and “bad” neighborhoods determine which policies and plans are implemented. Throughout the qualitative study of neighborhood approach within the plans, these different understandings can be tied to the goals of the plan, which depend on two main factors: the administration agenda and the planning practices deployed.

The administration agenda **c**omprises the main objectives each specific administration attempted to implement regarding urban planning in the city. In this study, its change over time was tracked through the written purpose of the plan’s introduction section and by the different planner’s views. The results were framed under the socioeconomic context that New York faced in that time period and the political views and goals of the administration in office.

Planning practices are major approaches and techniques that planners used. They were identified majorly through the interview responses but also through the referents used throughout the plans’ text. The findings were connected with broader planning tendencies and shifts of planning theory happening regionally, nationally and globally.

Major shifts in the goals of the plan are tied with changes of administrations. However, a general tendency can be detected throughout time. Earlier plans operationalize neighborhoods by praising diversity, identity and mixed use - Plan for New York City. A proposal (1969), Neighborhood Preservation in New York City (1973). Therefore, they are planned to preserve their character with focus on rehabilitation and to increase livability and presence of activities, specially retail. This conceptualization places a significant importance into the public realm, and the goal of increasing its quality. The report of Shaping the City’s Future (1993), for instance, refers to Jane Jacobs’ (1961) premises when stating that “one of the most important design considerations in the

physical arrangement of neighborhoods is providing “eyes” to watch public streets”. The attention given to urban design and “streetscape” in this plan is rarely found in later cases (Figure 04).

This approach is connected with the challenges that the city was facing at the time, such as population fleeing to the suburbs, lack of resources and services and even bankruptcy. Initially, the administration aims at improving the living conditions in neighborhoods, with some of them even being referred as “ghettos” and “slums” (Plan for New York City. A proposal, 1969). Subsequently, the question of how to manage empty land becomes central, with a tension between using it as an opportunity to provide services or to gain funds for the city (Open Space and the Future of New York, 1988).

The planning practices deployed respond to broader shifts of planning theory. Plans from the initial years studied display attempts to encourage community based planning through laying out processes that engage Community Boards and various types of neighborhood organizations. Neighborhood Preservation in New York City (1973) promotes the creation of programs to provide “more responsive government to communities” giving as examples the Neighborhood Conservation Program, The Little City Halls, Urban Action Task Forces, the Neighborhood Action Program or the Office of Neighborhood Government (Figure 04).

In addition, when planners were interviewed, they repeatedly referred to a general concern about “repeating the mistakes of the past” connected with Robert Moses and its top-down planning approach, stating that, after the 1960’s “neighborhoods became more central to city planning and much of the planning was done on a neighborhood by neighborhood basis.” (Planner involved in Managing Land Use in New York City,1977) or the idea that, as a consequence of the discussion

Jacob vs, Moses, neighborhood planning was envisioned as “the right perspective to take on the evolution of the city” (Planner involved in Open Space and the Future of New York, 1988).

Consequently, it seems that the transition of rational top-down planning in the 1960’s towards a more community driven and process-based approach taking place in planning theory at the time can also be detected in planning practice through the studied plans.

On the other hand, later plans seem to connect the concept of neighborhood with housing and access to basic services, conveying other priorities when defining adequate neighborhoods (PlaNYC, 2007, OneNYC, 2015). There is a clear shift towards housing and development, particularly detected during Mayor Bloomberg’s administration, which Mayor de Blasio’s would turn into affordable housing. PlaNYC’s objectives were to expand the housing supply potential to “decrease the gap between supply and demand” and the means to achieve it was giving room to private owners to change allowed uses and densities. To be able to expedite this process “PlaNYC attempted to identify the neighborhoods with growth potential and rezone for high density development” (Planner involved in PlaNYC, 2007). The plan aimed at transforming areas with other uses, such as industrial, into neighborhoods, in order to increase the residential capacity. To this end, PlaNYC also fostered improving the connections between neighborhoods by developing areas in-between.

Therefore, compared with previous administrations, there is a tendency on focusing in the private realm, understanding private as the spaces where individuals develop their intimate lives and also an encouragement of the involvement of the private sector. The conceptualization of neighborhoods seems to be more tied to the residential area (Schwirian 1983) and its maximization. From a public perspective, ensuring access to the essential services that will allow that growth, in

line with the operationalization of neighborhoods as systems to manage the provision of services (Schevky and Bell, Abu-Lughod, 1069). For instance, connectivity and access to transit also gain a prominent space in the plans. However, their importance is connected with development, as transit is envisioned as a way to guarantee the manageability of growth by providing mass commuting options to areas that will face an increase housing presence or higher densities.

Finally, there is a growing concern on sustainability and, later on, resilience, which get translated into the neighborhoods framework through either promoting “sustainable smart growth” (PlaNYC, 2007) that spurs infill strategies and higher densities, or neighborhood resilience and vulnerability.

In terms of the administration agenda, there is a clear shift in general attitude. The earliest plans studied show a disbelief for the city to recover and become an attractive place. The focus is placed in ensuring the presence of minimum services and not “pursuing the chimera of a mass return of the middle class to suburbia” (Plan for New York City. A proposal, 1969). PlaNYC, on the other end, envisions the future of New York City as bright, recognizing the potential value of the city, finding ways to extract it and not only acknowledging the influx of people but even envisioning it as a challenge to face.

The differences in priorities when planning for neighborhoods mirror the diversity of challenges that the administrations dealt with. A shift towards an optimistic view of the city is clear, with the value extracting possibilities brought as a consequence. While New York is perceived as a worthless entity in the beginning of the study period, its potential starts increasing towards the end. Giuliani's administration focused on safety and policing, which can be perceived in the concerns expressed by planners in the interviews regarding public space (Recreation and

Open Space in New York, 1997). This reveals an underlying belief in the value of making the city safer, which did not seem to be a priority before. The clearest shift, though, is temporally located within Bloomberg's administration which, through urban growth, transforms the city into a machine for value extraction. De Blasio's concern with equity and affordability can only be understood within a context in which the city has become a treasured destination instead of a place from where to flee.

It is during Bloomberg's administration, as well, that the most radical shift in the planning practices deployed takes place. Although digital technologies and early instances of Geographical Information Systems (GIS) had already been introduced within the public planning scene, it is not until Bloomberg that data analysis gains such a prominent role within city planning. If we compare the attempts of creating a comprehensive database of Recreation and Open Space in New York (1997) of Giuliani's administration with New Housing MarketPlace and PlaNYC use of data, both from Bloomberg's administration, the differences are striking. The reliability on data is radically higher in the latter. This shows a rise in urban analytics use in planning practice, which was generally coupled with technocratic approaches that defended the use of data as an objective and efficient system that can be used to avoid personal biases or cumbersome processes and enhance efficiency.

> When you plan at the neighborhood level there is an intrinsic bias. You plan for the neighborhoods that you know about and you neglect the neighborhoods that you don't know about. (...) Neighborhoods where planners don't go become neglected. In order to avoid that bias, we have to look at data. (...) we can only avoid the bias by asking the right questions and looking at the right data
> - Planner involved in PlaNYC (2007) and the creation of the NTAs

Visualizing Neighborhoods: from the concept to the map

Maps are tools that accompany planners throughout the planning process by playing different roles in different steps. The interviews and the studied plans show that the three main types of maps can be found within the planning practice: reference, analytical and thematic. However, how each type has been considered changes throughout time and administrations.

Reference maps are, generally, part of initial steps in the planning process. Official Neighborhood maps created by the different administrations seem to be used as reference maps when planning for the city (Table 01). Although they are fairly similar one from another in terms of how the information is displayed, some subtle differences can be unveiled. The first is the lack of boundaries in the 1969 map. Community districts had not still been implemented in that time and, therefore, their boundaries are not included.

The map of Giuliani and Bloomberg administration are similar. They both depict a blue background where the city of New York floats, barely showing the surroundings, with similar type of colors used to represent the different community districts, as are the font and color of the text. However, the 1969 and 2014 map also have similarities. They give a higher importance to the surroundings of the city and the milder colors and thinner lines used to differentiate community districts in De Blasio's case make it more relatable to Lindsay's.

In terms of neighborhood names and location, there is a significant change between 1969 and 1994, with both new neighborhoods appearing (45) and old ones disappearing (50). The map, however, shows similar information from Giuliani's to Bloomberg. Finally, De Blasio's version has some changes compared with the 1994 or 2009 versions (9 new neighborhoods) but does not reach the level of change between Lindsay and Giuliani.

Reference maps of earlier plans are used to go to the field and collect data or to make initial decisions on how to approach the issue at hand. Initially, the cumbersome process of making new maps for each occasion would imply a wider use of reference maps through the discussion. In final plans, these type of maps seem to be used less often, as all of them attempt to convey a message or have a specific theme and, therefore, would fall in the category of thematic.

Analytical maps are those used for the planning process in order to perform spatial analysis and make decisions. These types of maps are mainly of internal use and are not included in the final version of the plans. Consequently, they can only be reconstructed through interviews with professionals involved in the analysis or through approximating them looking at the results displayed in the plan. Although they are probably the most relevant when understanding how neighborhoods are planned, they are also "lost" in the process or "invisible" for people outside of the planning process. This entails an inherent limitation in the possibilities of the analysis, as we are blinded from the most significant part of process. We are only capable of seeing the tip of the iceberg, having to estimate everything that is underwater, as "all of the maps that are actually used to inform policy do not appear in the plan" (planner involved in OneNYC, 2015).

However, attempting to do this process of piecing together how these maps might have been and how were they used is still useful to further understand the role of mapping in planning. The reconstructing process of these maps shows an earlier tendency to use them to compare them with qualitative observations, even including that type in the map, and as tools to engage with the community. For instance, a planner involved in Recreation and Open Space in New York (1997), explains how he "took some reference maps, sometimes even made by hand, to go around the city, take notes on then, go back to the office and compare his notes with the record of the city". In

general, these maps generated were used to understand relationships on the ground and plan as a result of those.

Later, planners link analytical maps with discussions on zoning, and which areas to prioritize when allocating services or funding. “For instance, we would look at the percentage of population below poverty in this map as a way to address equity and then we would select the areas that were in most need.” (Planner involved in OneNYC, 2015). In addition, they are used to visualize models of speculation about the future, such as population growth or floodplains, in order to plan for that.

Finally, thematic maps are the most common of those analyzed in the plans. As their main function is to convey a message, they are highly dependent on the goals of the plan. Therefore, they can also be extremely useful to, uncover underlying objectives and intentions. In the plans analyzed, those are the ones that might display neighborhood boundaries and portray neighborhoods in a more different manner. Neighborhoods are represented with names located in the map, with point locations, with hatched highlighted areas or with boundaries. In many of the maps, neighborhoods names are displayed within community district boundaries. In earlier maps, boundaries are created when a case study of the neighborhood is done. In later maps, Neighborhood Tabulation Areas (NTAs) are used.

The earliest planners interviewed show a concern in making them readable and understandable for every type of public so they can serve as a reference for others. Later professionals interviewed expressed higher interest in conveying certain messages or supporting narratives. There is also a clear concern on how that message will be perceived by the community. Nevertheless, in both cases, maps are clearly used as an advocacy tool. In some cases, in order to

convince public officers of the needs to allocate funding in certain areas or topics. “Yes. The maps were used to advocate for the different needs of public space in the city” (Planner in Recreation and Open Space in New York, 1997). In other cases, the objective was persuading the community of the benefits of a certain policy, like in the case of PlaNYC, where maps attempted to “persuade the public” that the locations to rezone for high density development were appropriate (Planner involved in PlaNYC, 2007). In addition, there is an added layer of advocacy when externalizing the mapping process by using private consultants. These entities also engage in advocating dynamics to persuade the city of the benefits of performing certain types of analysis or using particular maps.

However, not only the use of the different types of maps changed across time, but also the underlying understanding of the role of the map in the planning process that professionals have. These changes, as in the case of the operationalization of neighborhoods, can be tied with different planning practices and schools of thought. From planners stating “"Every maps are a bird's eye view, a representation of what is on the ground and what is intended to be on the ground” (Planner involved in Managing Land Use in New York City, 1977) to latter planners passionate about the analytical capabilities of mapping. Community driven planners, on the other hand, understand them as advocacy tools or a way to engage with the community.

Although maps are considered as an essential tool in all the cases, what is understood as “analysis” is not perceived in the same way across different planners. While some interpret spatial analysis as purely quantitative (New Housing Market Place, 2007) others advocate for using maps as a ground based, qualitative experiential tool, with planners involved in Open Space and the

Future of New York (1988) stating that “maps were made by going to the site and taking notes, the process of creation meant that you were understanding what you were talking about”.

Planners engaged in one type tend to perceive more limitation. In the other, not deeming it as “appropriate” or “real” analysis. Most current planners stated that, before, maps were only used as illustrations, but not as analytical tools. For them, computerized spatial analysis and GIS is what allowed the use of the map for analysis. On the other hand, planners engaged in earlier analysis sometimes claim that GIS might have, in fact, simplified the analysis. In this sense, the quantity of available data would facilitate the image given of performing a complex analysis when, in fact, attempting to respond to every question at once might imply not responding to any thoroughly.

One of the planners involved in Open Space and the Future of New York (1988), explained the differences on analyzing open space accessibility. While PlaNYC would create a ¼ mile radius around parks “without considering other characteristics”. Their study included surveys and interviews that revealed that the distance people were willing to walk to a part depended on many factors aside from the distance from the nearest open space, including topography, neighborhood physical or mental boundaries, family size and working hours. Comparing the Bronx and the Upper West side revealed how physical and demographic conditions would highly determine these differences.

The introduction of Neighborhood Tabulation Areas (NTAs) is in close relationship with this change in the map based analysis, tied to the use of GIS technologies. NTAs represent a radical alteration from previous understanding of neighborhoods for two main reasons. Firstly, they have hard boundaries. Secondly, they present an image of the city where every inch is included in a neighborhood, not considering areas that might have another use or category. In addition, the use

of an officially top-down generated dataset for both planning practice and research can bring a myriad of impacts.

For instance, the connection to the NTAs creation with the recent rise of popularity of open data and consequent Geographic Information Systems (GIS) methods of analysis can be associated with the return to a technocratic positivism (Pickles, 1991). While community districts were not only statistical units but also tools of community representation through community boards, the lack of a similar system attached to the NTAs might inadvertently have implied a rebirth of a rational top-down approach to planning. The temporal analysis shows how top down planning goals can be coupled with the raise of the use of this dataset when mapping neighborhoods, reinforcing this hypothesis.

How can these changes be detected throughout the maps included in the study? If we closely compare the maps included in the 1973 plan, Neighborhood Preservation in New York City, from Lindsay administration, to the maps included in PlaNYC, from Bloomberg administration and the one introducing NTAs, we can see how differently mapping neighborhoods is addressed (Figure 05). We can detect how, in the maps from 1973, the areas that are part of the study are highlighted in a hatch and the rest of the map is acting just as a reference. While, in the map from PlaNYC, every inch of the city is included and divided in polygons. Every part is included in the analysis and ranked through the color scale, the “colored boxes” that Grannis (2009) referred to. This implies that every single area is considered a neighborhood. It is comprehensive and with contiguous boundaries.

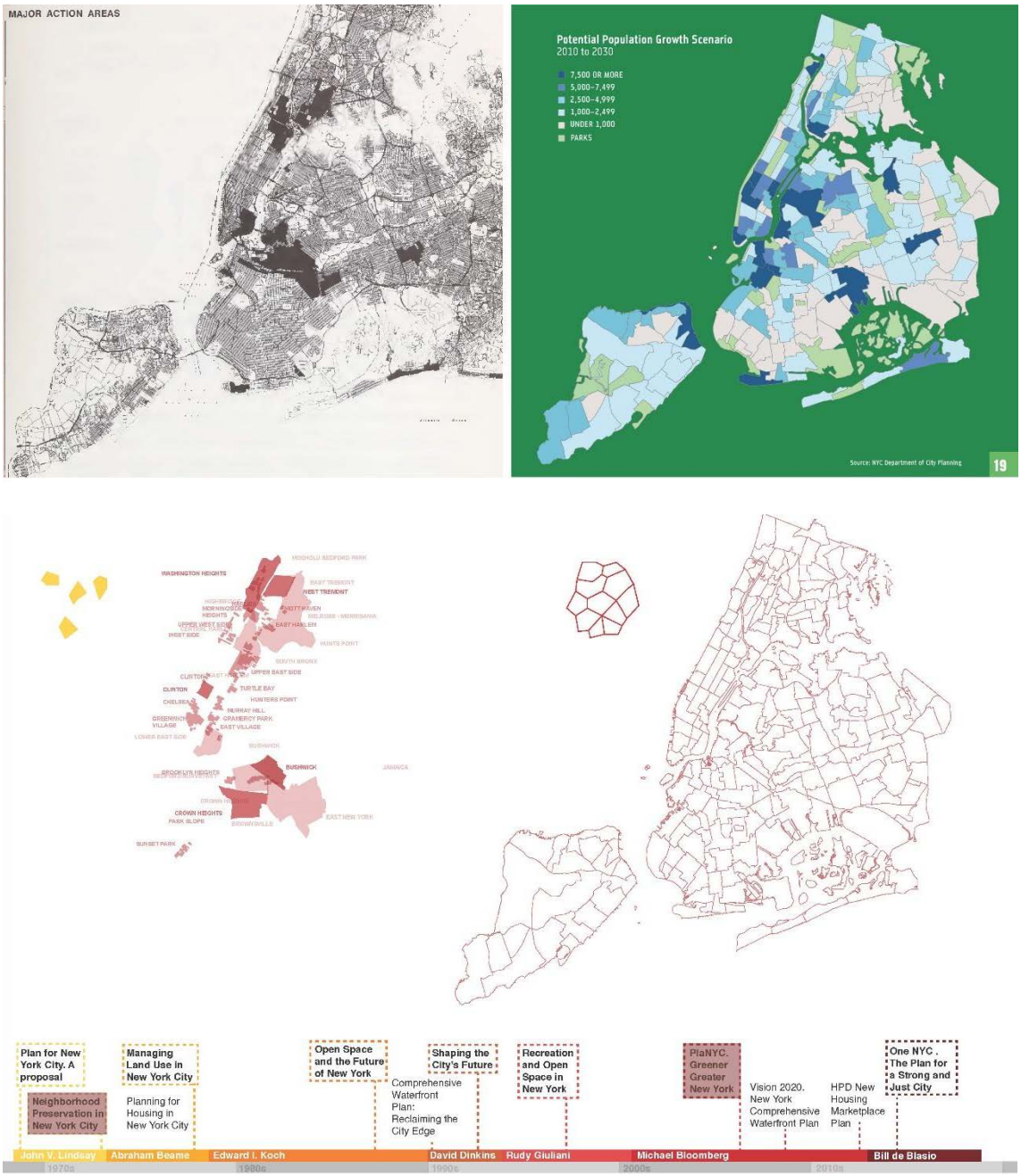

Figure 05. Neighborhood Preservation in NYC vs. PlaNYC

If we abstract the form of representation, we can even see the tendencies more clearly. In the map of the left, certain areas are the total focus of attention while, in the map of the right, the boundaries are the focal point, covering the whole city.

A similar comparison could be made with the most recent plan studied, OneNYC, from De Blasio administration (Figure 06). If we compare it with PlaNYC, we can see here how not all NTAs are rendered, but only those that are highlighted for a certain reason. This approach might seem less comprehensive than PlaNYC and more similar to the one taken in 1973. Nevertheless, the analytical maps, those being lost in the process and not included in the plan, should be taken into account. In order to render this final thematic map with the highlighted areas, a first comprehensive ranked map of all the NTAs must have initially been created. The interviews point out that, even if the final map attempts to render a different message or not convey a comprehensive view of the city, the process of analysis that lead to the policies implemented did. The city had a clear interest in using NTAs as a tool of analysis in order to help people to identify with the areas more easily than when using other census geographies (Planner involved in OneNYC, 2015)

Although planners seemed to be aware of their limitations in terms of becoming a proxy of neighborhoods, NTAs were the main unit of analysis for OneNYC because the Department of City Planning was interested in exploiting their identity capacities. This points outs at the tendency of datasets to bleed from one administration to the next one, even when the initial intentions for their use might have changed. This approach is radically different from the one described in the 1973 plan, where the maps are rendering those areas that are part of a specific neighborhood program. In order to access the program, communities had to do an application for each neighborhood to be considered. Consequently, a process was set up that would go from the community, applying for the neighborhood to be considered, to the DCP, reviewing the application, performing a neighborhood profile, and then including them in the map and the program.

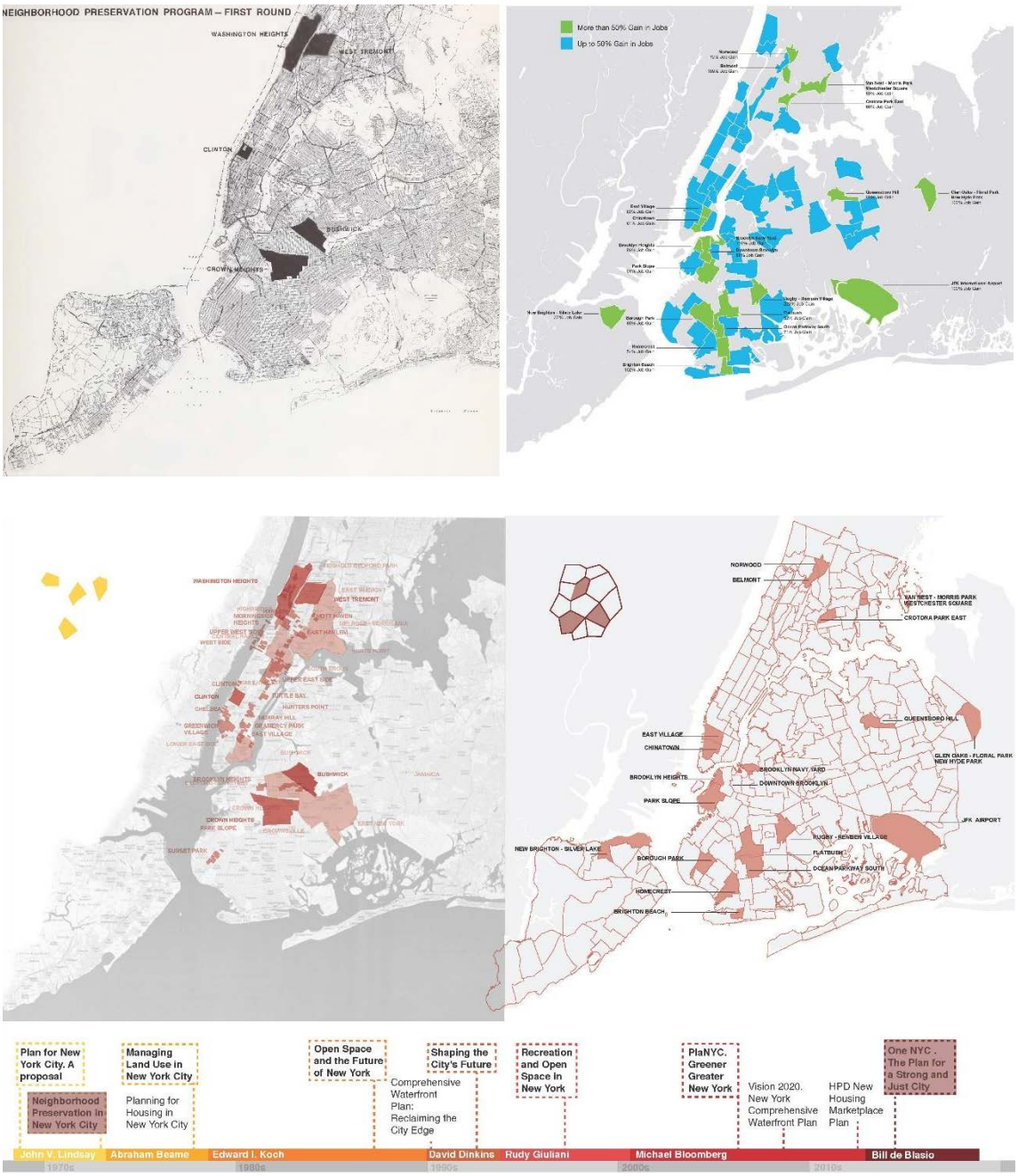

Figure 06. Neighborhood Preservation in NYC vs. OneNYC

In addition to these observations, when asked about planning at the neighborhood scale, recent professionals have repeatedly expressed their frustration with the non-coincident boundaries

of all these units of analysis, such as NTAs, Community Districts or Zip Codes, which brought issues of aggregating data (Planners involved in PlaNYC, 2007, and OneNYC, 2015).

Besides, they have also addressed the difficulty of planning at the neighborhood scale in citywide plans, claiming that neighborhood level planning was difficult to embed in macro planning processes (PlaNYC, Vision 2020, OneNYC planners).

However, these two main difficulties are clearly paralleled with the two problems of the MAUP ecological fallacy (Dark and Bram; 2007). Having a multiplicity of boundaries that respond to different purposes could be considered beneficial as it reduces the hardness of those limits. In addition, it seems that earlier planners accepted the scale of the city and found systems to manage it while, now, frustration arises when the city does not adapt to the methods used to map it. This hints at the possibility that the problems planners are encountering might be, in fact, related with the restrictions imposed by the use of certain tools.

In this sense, the use of GIS and current mapping tools seem to be acting as normalizer, forcing categorization and equal representation of the city. All neighborhoods have to be represented in the same way, all the city have to be a “neighborhood” and the boundaries have to be coincident and adjacent. The methodology prevails and being able to embed the object of the analysis, in this case the neighborhood, becomes more important than finding a method of representation. Therefore, differences are flattened in order to be able to include them in the model. The city might be homogenized and constrained into a standard idea of a single neighborhood concept, represented by a set of indicators (Sawicki and Flynn, 1996). This image can, then, become a taxidermied version of the city set by those who wield the tools of power; the map (Harley, 1989).

Deciding Neighborhoods: from the map to the plan

The challenges of operationalizing and mapping neighborhoods come together when attempting to plan for them. Creating a proxy of the concept loses its purpose if it cannot be translated to the ground through policy. However, addressing the concept of neighborhoods in city planning is, as planners conveyed in their interviews, a sensitive issue. The operationalization of the concept neighborhood, as we have seen, has changed through time, but the mechanisms to plan for neighborhoods have also not been the same.

The plans were analyzed using the deductive/inductive framework (see methodology) to catalogue the different approaches to planning for neighborhoods. Throughout the time period, we can detect three main phases (Figure 04). An inductive approach was used in the earlier plans, when planners would start analyzing specific neighborhoods through case studies and creating a model for the analysis to be replicated either by community organizations or the city through community applications - Plan for New York City: A Proposal (1973), Neighborhood Preservation in New York City (1977), Open Space and the Future of New York (1988). In the latest plans, the approach is mainly deductive, when areas are compared through parameters obtained from citywide data - PlaNYC (2007) and OneNYC (2015). Through this comparative, areas are ranked or those that present themselves as significant are selected to study more in depth. There is an inbetween phase, where both inductive and deductive methods are used to address neighborhood planning - Shaping the City’s Future (1992), Recreation and Open Space in New York (1997). This period of time, especially during Mayor Giuliani's administration, shows a transition moment, when a generational shift in planners and the introduction of new practices and technologies takes place, transforming the city in not only a subject of planning but also a site of managing and

speculation. The city is developed, grown, and measured, and new devices, such as the NTAS, need to be put in place to be able to do that.

The different planning approaches to neighborhoods also align with how they have been mapped. Inductive approaches to neighborhood planning are temporally connected with maps displaying highlighted areas of neighborhoods. Deductive planning, on the other end, have comprehensive mapping approaches (Figure 04).

The planning for non-neighborhood areas also reveals this dichotomy between deductive and inductive, area based or comprehensive. If the operationalization of neighborhoods evolves through time, what can be considered one and how areas that are not also changes. While initial plans qualify areas by different adjectives that might imply their consideration as a non-neighborhood, such as business districts/centers or industrial areas/parks, it is not until PlaNYC that it is detected as an issue that needs to be addressed. A great part of the goals connected with neighborhoods that are described in the plan are either “creating new neighborhoods”, “transforming non-neighborhoods into neighborhoods” or “connecting neighborhoods” by developing the areas in between, talking about “reknitting the city’s neighborhoods together”.

This shift on how decisions are made in neighborhood planning, which is connected with how they are visualized and operationalized, reflects a transition that can be illustrated through a clear turning point: in 2010, the map of New York neighborhoods becomes a shapefile through the creation of the NTAs. In this way, neighborhood maps are spatialized through a vectorial dataset, which embeds a transition from mapping to data visualization. This evolution reflects a higher reliance on data analysis as the hard core of decision making within urban planning practices in the city.

Neighborhood Tabulation Areas creation, in 2010, are at the center of this change. As Guest & Lee (1984) suggested, they transform the phenomenological neighborhood into an abstracted administrative unit. Although their metadata explains their general purpose and process of creation, a more in detail explanation was crucial to understand the full implications of their generation and application in planning.

A planner from the population division involved in their creation stated that their main goal was “making them reliable for projecting the population but, as a secondary thing we also wanted them to match neighborhoods”. In order to achieve that, they had several constraints implemented. They had to be multiples of Census Tracts and they had to be divisions of PUMAs. In addition, to guarantee the stability necessary to make projections, they set up a maximum of 1,500 people by NTA. He highlighted that, initially, they were never intended to be used as a proxy of neighborhoods, being called “Projection Areas”, the neighborhood part of the name was added at a later time. He stated that, when an interest was expressed to make them match with current neighborhoods, they addressed Borough planners in order to find the appropriate names and boundaries.

When speaking with a planner involved in this process from the side of the Department of City Planning (DCP), he provided more information on how neighborhood boundaries were delimited, stating that they “cut them down based on their own perception of neighborhoods” but that “it was tricky because people know where the center of the neighborhood is but not the perimeter”. He also connected the creation of NTAs with the goal of making an inventory of potential development areas and tabulating the amount of development for those boundaries.

Consequently, NTAs reflect this shift towards technocratic data based practices by being created, originally, as a tool for measuring and speculating to plan the future. However, in being used as a tool to plan the growth they were forecasting, they became a type of self-fulfilling prophecies. Maps used for planning are, in fact, plans and, therefore, are not only a prediction of future possibilities but a planning device to redirect these options into outcomes. Plans encourage the fulfilling of agendas and, therefore, the maps used are not only analytical devices but direct plans for the future of the city.

Chapter 5. Conclusion

Mapping as an act - and an act with agency

The deconstruction of the three steps described, operationalizing, mapping, and planning neighborhoods, has uncovered trends and changes across time and the different administrations studied. Nevertheless, this comparison also reveals connections between the three steps.

Community driven planning practices are temporally connected with maps that highlight the areas studied and inductive approaches to planning neighborhoods. When neighborhoods are valued by their diversity, character and public space dynamicity, maps attempt to grasp the different characteristics of them through collecting data in the ground on the different experiences of their inhabitants. In addition, this focus on differences is reinforced by a case study based approach to planning practices, where creating neighborhood profiles aims at finding out the specificities of each neighborhood, what makes them unique, to be able to value and plan for it.

On the other side of the spectrum, when administration goals are focused on growth, there is a trend to value neighborhoods by their capacity of development. In order to do so, techniques that allow for comparison need to be deployed. Technocratic data-driven approaches are the best fitting ones to obtain the analytics necessary to quantify this expansion potential. Maps, therefore, are at the service of comparison, not attempting to find the uniqueness of each place but indicators that can be used across the city.

In the case of neighborhoods, the introduction of the dataset Neighborhood Tabulation Areas is particularly revealing of these connections. If we bring together the observations of operationalization, mapping and planning of PlaNYC we can uncover the connecting threads. With an administration agenda focused on growth, the planning practices deployed acquire a

technocratic approach. There is a need of deploying an analysis that allows to measure future growth and spatially allocate the development.

Neighborhood Tabulation Areas were initially created to project population in the future, which would allow the first step of the analysis. Their initial constraints and size was a at the service of that objective. In addition, NTAs are a dataset that includes the whole city as part of the analysis and divides it in similar portions. However, they were also identified with the underlying neighborhoods. Planners have stated that real estate development is intimately tied with the use of neighborhood names to identify areas. These characteristics were necessary for the fulfillment of the second objective, spatially allocating development. In order to detect areas with growth potential, a dataset that would allow to compare their characteristics was necessary and this dataset was required to respond to the appropriate size to manage development, the neighborhood.

A third interesting observation is the constant focus on transforming areas that are not neighborhoods into neighborhoods, creating new neighborhoods and connecting them by developing the areas in between. This approach translates a comprehensive idea of the city in which every part becomes a neighborhood, which highly aligns with the characteristics of the maps we can see in PlaNYC. Finally, when the areas are analyzed to uncover their development possibilities by using comprehensive maps that allow for comparison, the appropriate planning tool can be deployed: rezoning can then target the specific locations more easily to efficiently unleash the growth potential of New York City.

Therefore, the goals of the plan impact how neighborhoods are operationalized, which influences how neighborhoods are represented through maps, which also affects how neighborhoods are planned. Neighborhoods are operationalized depending on the potential futures

of the city. Every shift in the goals of the plans has rendered a different ways of mapping neighborhoods, with different types of maps and a different conceptualization of the map as a tool, and different approaches to planning for those neighborhoods. These relationships support the idea that mapping is not a single objective scientific tool to represent the ground but an act with agency heavily intertwined with the planning process.

Mapping, therefore, is revealed to not be an objective, rational and precise depiction of the ground, or merely a scientific tool of analysis. In order to translate the information from the ground to the representational tool, the process of mapping follows a series of abstracting steps, each of them implying a decision: what is included and what is left outside, which categories are being used or which forms of representation.

Maps, then, fall prey to the intrinsic duality of any representational tool; the same abstraction process that allows for representation entails a creation of a particular view of that space. Maps are part of a loop that involves at least two actors, the map maker and the map user, and both have agency in how the map acts as a representational tool of the ground. As a consequence, the spatial conceptualizations resulting from maps generation processes transform them into not only readers but also producers of place and social identities.

In this way, a loop is initiated, where space informs its representation while representation influences space and its inhabitants. Planners, urban designers, architects, and other professionals in the field of urbanism constantly use maps as a tool to spur this feedback loop between the represented and the representation.

While Corner states that "...mapping typically precedes planning because it is assumed that the map will objectively identify and make visible the terms around which a planning project may

then be rationally developed, evaluated and built" (p. 216), this investigation uncovers how different planning goals and diverse operationalizations of the represented also impact the way in which it is mapped. In this way, mapping becomes the inception and the result of planning, accessing a circulatory dynamic in which both processes feed each other. Mapping is recognized as a process in which the "act of mapping" implies agency and goals. Maps, therefore, are not mere objective devices that describe the city but analytical, communication and advocacy tools to represent a city.

The map of neighborhoods in New York City is, therefore, unreachable, as each map created is just a caption of a vision of the city, with underlying objectives, agencies and biases. Mapping is an act, and an act with intention. "Thus, the various cartographic procedures of selection, schematization and synthesis make the map already a project in the making", in fact, "Mapping is perhaps the most formative and creative act of any design process" (Corner, 1999, p. 216). As such, creative researchers and designers should keep a critical perspective on their use and interpretation of maps.

Implications of the act of mapping: the dialogue between theory and practice

The relationship between mapping and planning has been theoretically widely discussed within the field of critical cartography. This work, through a temporal comparison, empirically uncovered the underlying threads that connect them. It created a palimpsest of New York City visions by constructing an inventory of neighborhood maps used for planning the city. In order to deconstruct the cartographies generated, this study explored their context by examining the plans where the maps were included and interviewing the professionals involved in their creation.

Throughout the study, the interrelation between the plan goals, the operationalization of neighborhood, mapping neighborhoods, and planning neighborhoods has been revealed. Therefore, this thesis has shown an instance in which, not only the scientific and cultural context has influenced how the city is conceptualized and represented but also these representation of cities through mapping have influenced the urban practices deployed in it. Therefore, the assumptions of categories of knowledge intrinsic in the analyzed maps are uncovered, while also showing how these have affected the policies that they informed.

At a more abstract level, this research was also capable of showing how maps can act as generators of knowledge and create certain visions of the city that are, subsequently, applied to the ground through policy. For instance, the creation of bounded units brings a radical transformation of the spatial conceptualization of neighborhoods from blurry and dynamic to hard limited and timely fixed, from unique and distinct, to the equal pieces that should conform a city.

However, what are the consequences of these findings for planning practice? What can we learn from this study that we can apply to the everyday challenges of planning for cities? This thesis has used a very specific shift, the transformation of the map of neighborhoods in New York into a vector dataset, to uncover both current directions of the planning practice and their implications, and the connections between mapping and planning and the impact of this relationship for planners.

The work not only reveals these connections but also the implications of them not being acknowledged when planning. “Neither criticism nor abstinence have diminished the acceleration of normative mapping technologies or mitigated the scope of their impact on evolving urbanisms” (Meisterlin, forthcoming, p. 4)

Maps are used across all the plans as a central tools of analysis that highly affect the results of the planning process and the policies deployed in the city. However, even if, in some cases, planners acknowledge their subjectivity and advocacy powers, they are still used to convince other actors involved in the planning process or affected by it of certain actions benefits by utilizing their embedded scientific authority. Maps are wielded as a tool to persuade of the truthfulness of a city vision. If it is rendered in a map, it is true. If the map is a also a plan, it is becomes a new reality. Maps are constantly used but seldom critically examined. Planners, therefore, should acknowledge both the subjectivity and power of maps through their practice, placing the critical approach to mapping in a more central position within the profession.

Alternatives. Mapping as a critical act

In order to guarantee that mapping is treated with the care and respect it deserves within planning, there are several steps to be taken. Firstly, planners should strive for a better understanding of the categories of knowledge and perspectives intrinsic in the maps they are generating or using. Secondly, planners should be more transparent with the subjective nature of maps when using them as communicative or advocacy tools. Finally, planners should be involved in the process of expanding literacy in critical map evaluation. Communities should be aware of the knowledge frameworks implicit in mapping and be able to uncover them more easily, instead of taking them as scientific objective representations of the ground.

Maps have embedded the categories of knowledge used for their generation and, therefore, the goals that might have fostered these understandings. Consequently, mapping can also be used as a tool to uncover underlying power relations and spatial inequalities in the city.

Planners can not only use maps to understand, represent or plan the city, but also, by engaging in critical cartography practices, as instruments of revelation and denounce.

Through this research, we have seen the interrelationship of mapping and planning practices. The clearest connection is when maps become plans that get implemented on the ground. The image of the city depicted in those maps becomes a reality. However, the process of mapping itself is also planning. With each abstraction process of the top part of the feedback loop, a vision is created that will, then, be implemented on the ground through the bottom part of the circle. Who is involved in each of these steps, what are the planning practices behind and the theory supporting them determines how they are going to be carried on and their results. Map making is not a step that precedes planning. Mapping is planning.

In this sense, critical cartography expands from the passive analysis of existent maps to the creation of new ones that reveal, for a larger audience, these underlying assumptions. Critique becomes action through counter mapping. Planners surpass their role of educated users of maps and become actors, using the tool of mapping as yet another way to combat inequality. As Meisterlin describes, “Here, I propose a defiant and willful cartographic action to counter this paralysis: a more pointed persistence aimed at the logics inherent in the already almost-pervasive norms of spatial analysis and exercised upon this site through its native technologies and on it declared terms” (forthcoming, p. 4).

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APPENIDIX A. PLANS AND RELATED DOCUMENTS REVIEWED

John V. Lindsay 1966-1973

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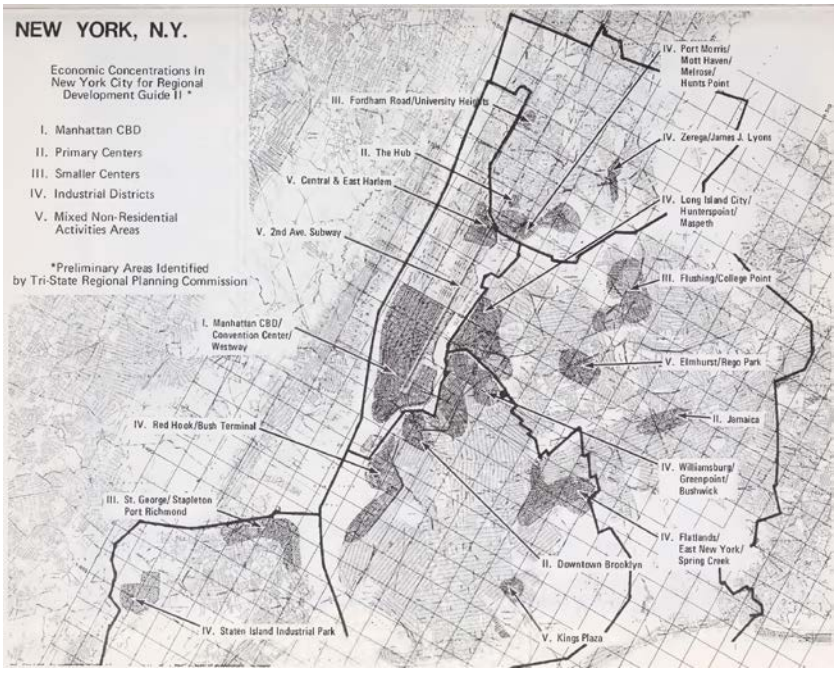
APPENDIX B. REPRESENTATIVE MAPS

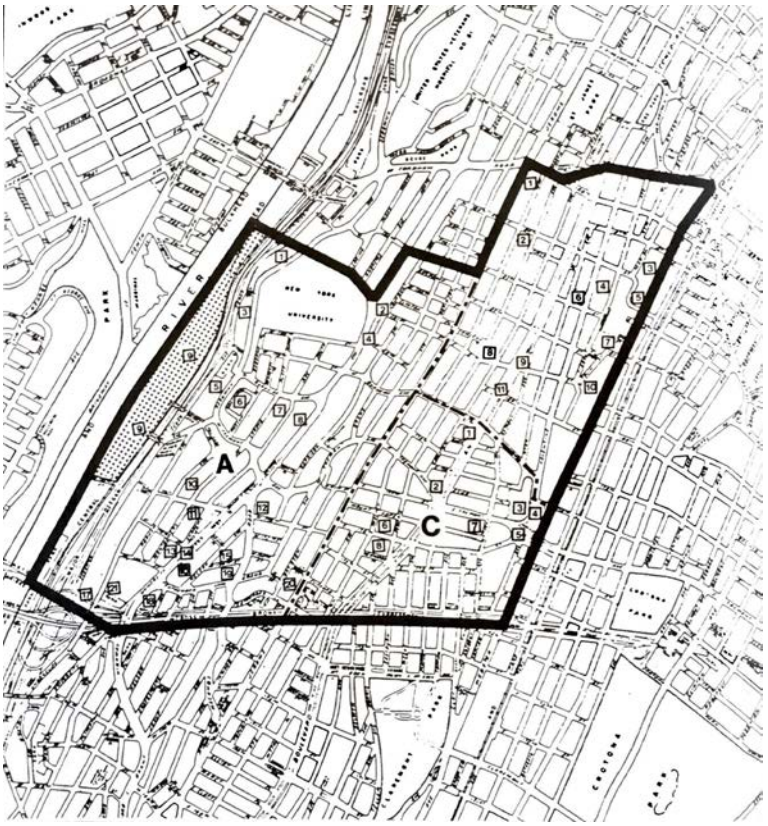
Plan for New York City. A proposal. 1969
+
Neighborhood Preservation in New York City.
1973

Mayor John V. Lindsay

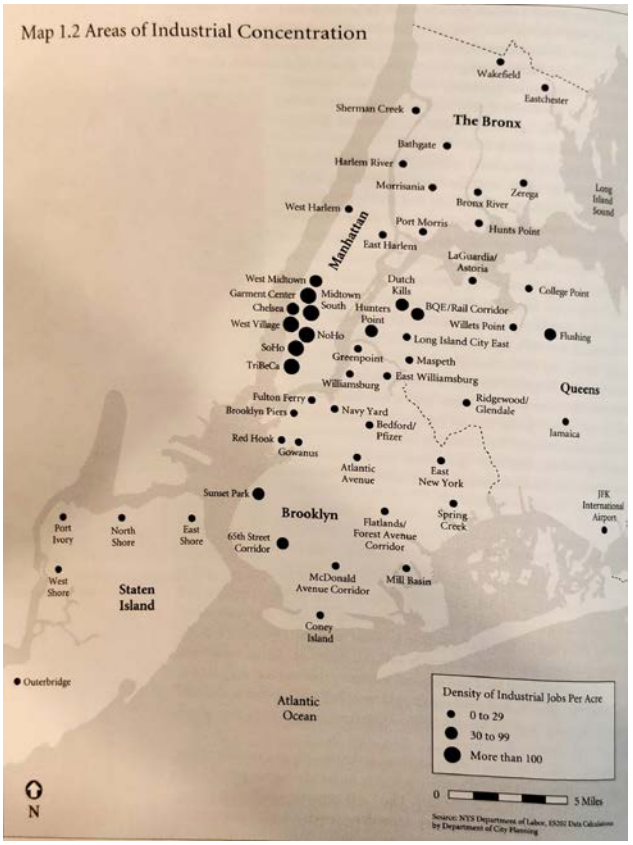
Managing Land Use in New York City. 1977
Mayor Abraham Beame



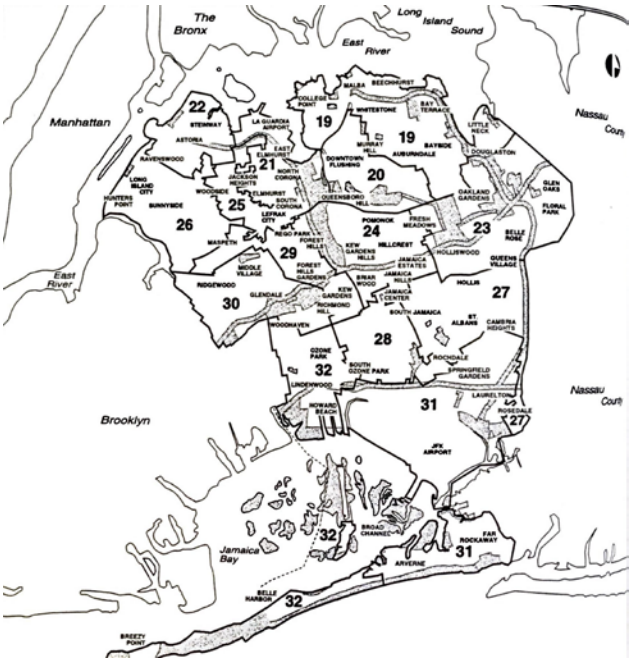
Open Space and the Future of New York
1988
Mayor Edward I. Koch



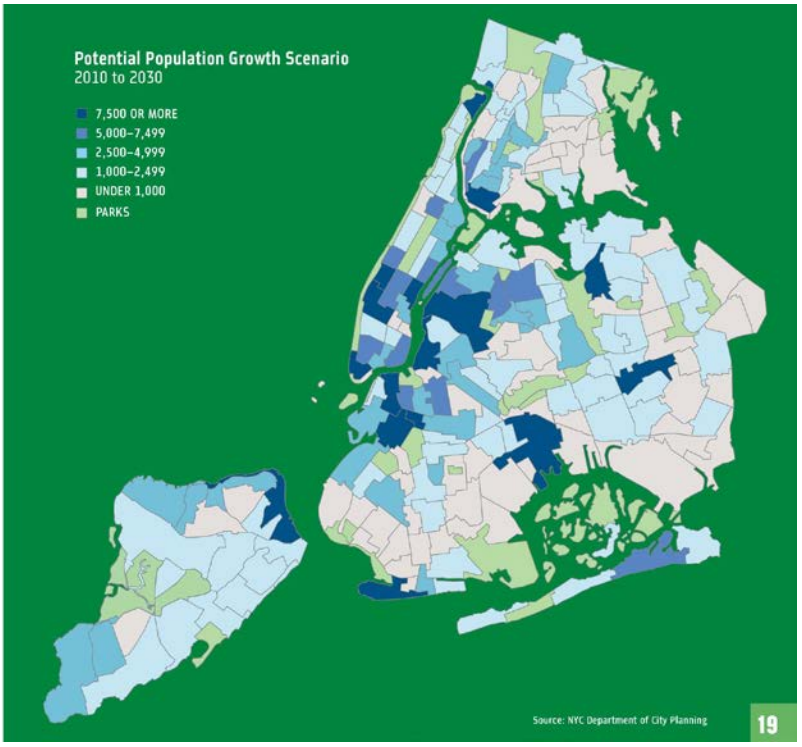
Shaping the city's future : New York City Planning and Zoning report for public discussion
1992
Mayor David Dinkins



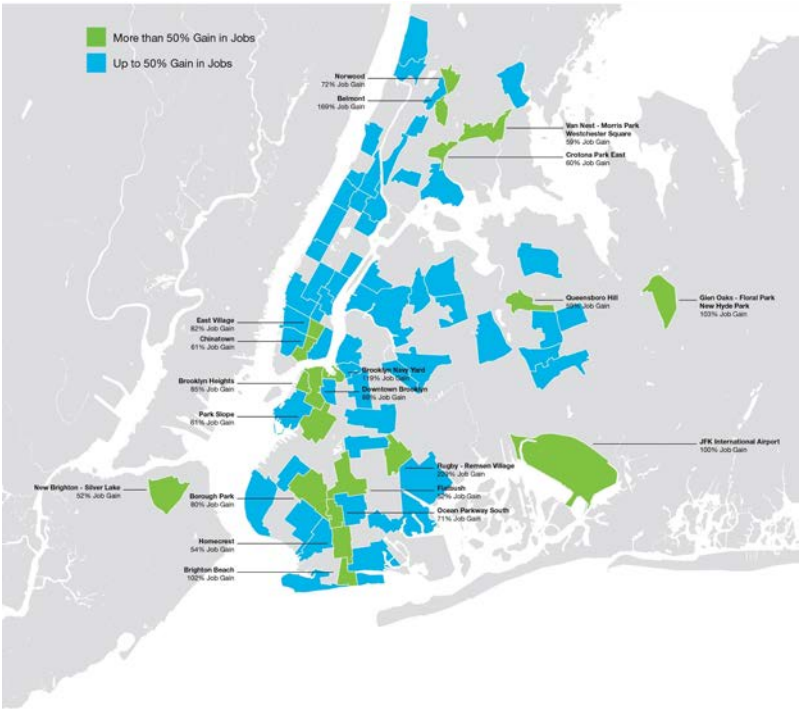
Recreation and Open Space in New York.
1997
Mayor Rudy Giuliani



PlaNYC. Greener Greater New York
2007
Mayor Michael Bloomberg



One NYC. he Plan for a Strong and Just City.
2015
Mayor Bill de Blasio



APPENDIX C: INTERVIEW QUESTIONS

1- How long have you worked in the field of urban planning and when? [If they worked for the city] How much of this time were you working for the city?

2- What was your role within the [name of the plan]? How long were you involved on it?

3- Here are some maps included in the plan, you might remember some of them. Some maps were used as a geographical reference; others were part of the analysis or were used to define the areas to implement specific plans. What would you say was the role or use for each of them in this case?

4- Some of these maps might have been created before, during or after the plan just for communication purposes. Do you know what was the case for each of them? Do you know who made them and how?

5- My research is centered on how the idea of neighborhood is applied in city planning. It might be possible that neighborhoods have been understood and planned in different ways through time. How would you say neighborhoods were considered when the plan was created?

APPENDIX D: COMPARATIVE SUMMARY TABLE

PLAN	Mayor	Year	Goals	Operationalization	Mapping	Map Example	Planning
Plan for New York City. A proposal + Neighborhood Preservation in New York City.	John V. Lindsay	1969-1973	Keep residents in the city. First attempts of **community driven** planning and creation of bottom-up structures. **Process based.**	Rehabilitation, maintenance, **preservation.** Renewal and improvement Distinctive neighborhoods.	**Area Highlights** City wide maps depicting the "areas of interest" when talking about neighborhoods and their preservation. These areas are highlighted with a hatch or lined boundaries.		**Inductive.** From the case-study to the city
Managing Land Use in New York City.	Abraham Beame	1977	Attempt to **attract federal funding.** Recovery of neighborhood scale	Not very representative as what was included in the plan responded uniquely to federal requirements. Housing policies at the neighborhood level	**Area Highlights."** Least representative. In the plan, the maps included were those demanded by the Federal Government. Maps still display areas of interest with hatches. Government. Neighborhoods maps were also used in the process.		
Open Space and the Future of New York	Edward I. Koch	1988	Tension between developers wanting to extract value of emptying lots and organizations attempting to recover them as open space. **Process driven.** Code for the city to plan for neighborhoods. **Community driven planning**. Attempt to do neighborhood level planning.	**Concept:** character, identity, distinctive. Elements that conform the city	**Area Highlights.** Maps used as an analytical and community engagement tool to capture neighborhood character. Used to collect data in situ. To be iterated when the process is repeated for other neighborhoods.		**Inductive. From the case-study to the city** Analysis at the neighborhood level and development of neighborhood profiles.

Shaping the city's future : New York City Planning and Zoning report for public discussion	David Dinkins	1992	Comprehensive plan for the future. **Less community driven** but still laying out **processes for neighborhood level planning.**	**Concept:** Identity, diversity, preservation of character, mixed used, services, retail.	**Area Highlights** Neighborhoods used to identify the location of plans, industrial areas, facilities in the city…Black big dots to give approximate locations. Not all the areas are covered.		**Mostly deductive,** leaves room for case studies but not showed.
Recreation and Open Space in New York.	Rudy Giuliani	1997	Initial attempts to create comprehensive repository of open space. Tension between **systematic technocratic goals** and **community based practice**s.	Neighborhoods as an identity tool to situate readers. Limited operationalization of neighborhood.	**Comprehensive but without boundaries.** Although it attempts to include all neighborhoods, no boundaries, so there is room for areas not being neighborhoods.		**Inductive** process of data collection in situ at neighborhood level. **Deductive** display of information in the plan.
PlaNYC. Greener Greater New York	Michael Bloomberg	2007	Manage growth and development in a "smart" and sustainable way. **Data-driven evidence based, technocratic**	The **city as a continuum of neighborhoods,** transforming non-neighborhood areas into neighborhoods. Neighborhoods analyzed through their development potential.	**Comprehensive and continuous** All areas of the city are considered a neighborhoods with specific boundaries		**Deductive.** From the city to the neighborhoods.
One NYC	Bill de Blasio	2015	Resiliency, affordability, equity. **Data-driven evidence based, technocratic**	Neighborhoods as where can afford to live and have the fundamental services.	**Comprehensive and continuous in the unit used but not in the final maps.** All areas of the city are considered a neighborhoods with specific boundaries. However, the final maps only show the boundaries of the areas studied.		**Deductive.** From the city to the neighborhoods.