The influence of urban development dynamics on community resilience practice in New York City after Superstorm Sandy: Experiences from the Lower East Side and the Rockaways

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A B S T R A C T

While (urban) resilience has become an increasingly popular concept, especially in the areas of disaster risk reduction (DRR) and climate change adaptation (CCA), it is often still used as an abstract metaphor, with much debate centered on definitions, differences in approaches, and epistemological considerations. Empirical studies examining how community-based organizations (CBOs) "practice" resilience on the ground and what enables these CBOs to organize and mobilize around resilience are lacking. Moreover, in the growing context of competitive and entrepreneurial urbanism and conflicting priorities about urban (re)development, it is unclear how urban development dynamics influence community-based resilience actions. Through empirical research conducted on the Lower East Side, a gentrifying neighborhood in Manhattan, and in Rockaway, a socio-spatially isolated neighborhood in Queens, we investigate community organizing of low-income residents for (climate) resilience in a post-disaster context. Results show that both the operationalization of resilience – how resilience is "practiced" – and the community capacity to organize for the improved resilience of low-income residents are strongly influenced by pre-existing urban development dynamics and civic infrastructure – the socio-spatial networks of community-based organizations – in each neighborhood. The Lower East Side, with its long history of community activism and awareness of gentrification threats, was better able to mobilize broadly and collectively around resilience needs while the more socio-spatially isolated neighborhoods on the Rockaway peninsula were more constrained.

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1. Introduction

When Superstorm Sandy hit New York City on October 29th, 2012, 44 people lost their lives, thousands of people were displaced, and an estimated $19 billion was lost in damages and economic activity (NYC, 2015). Sandy highlighted the vulnerabilities to climate impacts of low-income communities in New York City and gave rise to a visible resilience agenda in NYC (Rosenzweig and Solecki, 2014). Public housing residents were among the populations disproportionately affected by the storm. Many buildings owned by the New York City Housing Authority (NYCHA)

lost electricity, heating or hot water for weeks due to the flooding of basement-level heating and electrical systems. NYCHA and other governmental agencies were unable to provide timely and adequate aid to many stranded residents, which prompted a large-scale community-based disaster relief effort (Jaleel, 2013; Schmeltz et al., 2013). After the emergency relief ended, many community-based organizations continued their mobilization and organizing around resilience.

Calls for more climate resilient cities have intensified over the last couple of years (Godschalk, 2003; Leichenko, 2011; Pickett et al., 2004; Rosenzweig et al., 2011). While a growing body of literature has pointed at the inequitable impacts of climate change in urban populations (e.g. Dodman and Satterthwaite, 2008; Hardoy and Pandiella, 2009; Paavola and Adger, 2006), at triggers and incentives for urban climate adaptation (e.g. Adger et al., 2005a; Amundsen et al., 2010b), and assessed municipal

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approaches to adaptation planning (e.g. Anguelovski et al., 2014; Carmin et al., 2012b), more research is needed on the critical dimensions of adaptation interventions (Shi et al., 2016), especially interventions planned and implemented under the new buzzword of (urban) resilience. How do urban community-based organizations respond to municipal actions on resilience, "practice" resilience on the ground, and balance complex – and at times conflicting – priorities to increase the resilience of low-income communities? What factors enable and constrain these community-based organizations to organize for resilience?

This paper attempts to fill this gap through the qualitative analysis of community responses to Hurricane Sandy in two flood-prone, environmentally vulnerable neighborhoods in NYC – The Rockaways in Queens and the Lower East Side in Manhattan (See Fig. A1 in Appendix). These two waterfront districts differ substantially in experiencing the forces of gentrification that characterized New York City development since 2000 (NYU Furman Center, 2016) and in their proximity to the central business district of Manhattan. Results show that both the operationalization of resilience – how resilience is "practiced" – and the community capacity to organize for the improved resilience of low-income and minority residents are strongly influenced by pre-existing urban development dynamics and degrees of what community development scholars call neighborhood "civic infrastructure" (Lang and Hornburg, 1998). Neighborhoods with a long history of broad-based community activism and experience with gentrification's impacts seem better able to mobilize broadly and collectively around resilience, while more socio-spatially isolated neighborhoods lack the civic infrastructure and collective ability to pursue resilience efforts.

The next section briefly summarizes current debates around (urban) resilience. Section 3 describes the research design of this paper. In Sections 4 and 5, we discuss the context of resilience work and interventions in NYC and analyze our results using a narrative approach. Section 6 presents some discussion and concluding remarks.

2. (Urban) resilience: current debates and missing links

Although in recent years the concept of (urban) resilience has attracted significant attention, much of the resilience literature is still centered on definitional debates, differences in approaches, and epistemological discussions (Cutter et al., 2014). Consequently, the concept is often used as an abstract metaphor or a buzzword that hides political struggles or socio-spatial tensions (Davoudi et al., 2012; Stumpp, 2013).

Recent definitions of resilience have broadened from their roots in engineering and ecology (Holling, 1996) to include the opportunities that open up after disturbances in complex systems (Folke et al., 2005) and to incorporate ideas of adaptation, learning, and self-organization. Resilience reflects the degree to which a complex, adaptive system is capable of self-organization and can build capacity for learning and adaptation (Adger et al., 2005b; Olsson et al., 2004; Smit and Wandel, 2006). It includes "*persistence, recovery and the adaptive and transformative capacities of interlinked social and ecological systems and subsystems*" (Elmqvist et al., 2013).

Resilience is often considered as the flipside of vulnerability, as improving the resilience of populations, ecosystems, and infrastructure could contribute to reductions in specific vulnerabilities. (For an historical overview of the concept of vulnerability see Adger (2006). Yet, while some overlap exists between the two concepts (Cutter et al., 2014; Gallopín, 2006; Miller et al., 2010b; Turner, 2010), simplifying them as oppositional states (Chelleri et al., 2015) overlooks the importance of a system's capacity to self-organize and adapt to emerging and unpredictable circumstances (Folke,

2006). In the context of climate change and extreme weather events, resilience is often seen as related to Disaster Risk Reduction (DRR) and Climate Change Adaptation (CCA), especially so in urban areas. Today, increasing climate impacts are indeed demonstrating the need for cities to effectively adapt to shifting climate conditions and be proactive at multiple scales while, at the same time, providing basic urban infrastructure and service providing functions (Amundsen et al., 2010a).

Many cities are exploring options and paths to best prepare for climate impacts and risks (Carmin et al., 2012a; Romero-Lankao and Dodman, 2011). While hazard-based approaches focus on applying climate change projections to the local scale in order to identify hazard impacts (Füssel, 2007), vulnerability approaches tend to examine the socio-economic factors that determine the sensitivity and coping capacity of urban systems and societies (Miller et al., 2010a). To an extent, the latter approach sees future climatic conditions as too uncertain to warrant interventions tied to particular climatic regimes.

In order to operationalize climate adaptation, many municipalities around the world develop citywide integrated assessments, with focuses on developing general climate or adaptation plans, and then subsequently delegate mainstreaming and implementation responsibilities to municipal departments (Carmin et al., 2012a). Along the process of climate adaptation, civic participation and partnership building are seen as critical to the accountability and effectiveness of urban adaptation planning (Anguelovski and Carmin, 2011; Aylett, 2010; Carmin et al., 2012a; Chu et al., 2015b; Kithiia and Dowling, 2010; Rosenzweig and Solecki, 2010).

Due to the relative novelty and uncertainties associated with different climate adaptation planning methodologies, experimentation and creativity characterize the ways in which municipalities engage in adaptation on the ground (Anguelovski and Carmin, 2011). In practice, they adapt sectoral and land use policies, infrastructure systems, and urban designs to projected climate impacts (Anguelovski and Carmin, 2011; Anguelovski et al., 2014; Bulkeley and Castán Broto, 2013; Chu et al., 2015a). Cities prepare adaptation interventions, such as flood-protection systems or wetland restoration projects, within broader economic or social resilience strategies (Carmin et al., 2013). Second, they update their building codes, zoning ordinances, land use plans, and capital investment policies to avoid development in risk-prone areas or to raise standards for construction (Cutter et al., 2014). Third, they tend to assess the ability of water or transport infrastructures to withstand impacts and make "climate proofing" investments that attempt to provide "win-win" benefits regardless of climate uncertainties (While and Whitehead, 2013). Following this strategy, some cities are designing mega-projects involving hard (such as dikes) or soft (such as green belts) infrastructures (Sovacool, 2011).

The omission of social, political and cultural dynamics is an important shortcoming of much resilience thinking (Brown, 2014; Davoudi et al., 2012). The question of "resilience for whom" and "for whose interests" is rarely addressed (Cote and Nightingale, 2012; Martin-Breen and Anderies, 2011). As a result, emphasizing "climate proofing" and "win-win" solutions without considering the distributional impacts of such strategies can reinforce short-term solutions and patterns of unsustainable and inequitable development (Anguelovski et al., 2016; Pelling et al., 2014). Additionally, increasing the resilience of a system at one scale or in one time period can decrease the resilience at other scales or time periods or systems (Walker et al., 2004).

There is also a risk that resilience interventions become privileged and private goods, resulting in exclusionary outcomes and (environmental) gentrification in urban distressed neighborhoods (Checker, 2011; Curran and Hamilton, 2012; Dale and Newman, 2009; Shi et al., 2016), which, in turn, can reduce

community-level resilience (Pearsall, 2012). Many urban resilience interventions are indeed inevitably embedded in a context of competitive and entrepreneurial urbanism and conflicting priorities and needs about urban (re)development (Brenner, 2009; Brownlow, 2006; Harvey, 1989; Peck and Tickell, 2002; While et al., 2004) For instance, in view of climate risks and impacts, some adaptation interventions meant to enhance urban resilience protect economically valuable and already privileged areas at the expense of disadvantaged neighborhoods, thus framing adaptation as a private responsibility rather than a public good (Anguelovski et al., 2016). Adaptation and resilience planning can be a dual process of favoring certain privileged groups while simultaneously denying resources and voice to marginalized communities.

The emerging scholarship on climate resilience has begun to highlight equity concerns within and across cities associated with uneven patterns of resilience (Leichenko, 2011). Studies are increasingly revealing that urban economic investors and municipal leaders may be using climate resilience discourse to exacerbate or perpetuate unsustainable, speculative, and exclusionary decisions which might reproduce and exacerbate historic inequities associated with infrastructure and land use development (Anguelovski et al., 2016; Sovacool et al., 2015). These trends reveal how efforts to include adaptation as a new policy arena might uncritically align adaptation with private development interests in ways that undermine the need for deeper reforms and attention to existing inequalities and marginalization trends (Anguelovski et al., 2014; Bulkeley and Tuts, 2013; Preston et al., 2015; Simon and Leck, 2015).

In response, scholars are increasingly arguing that efforts to incrementally adapt and build or design their way out of the climate crisis are insufficient to redress socio-spatial disparities. They are calling for transformative responses to global environmental change (O'Brien, 2012; Pelling et al., 2014) that increase the scale of interventions, address the drivers of socio-spatial vulnerability, and fundamentally change economic growth paradigms and class relations (Kates et al., 2012; Pelling et al., 2014; IPCC, 2014). They are also arguing for urban resilience interventions to incorporate a more critical analysis of inequality and justice (Archer and Dodman, 2015).

Some cities are already adopting bolder approaches to resilience planning and climate adaptation by promoting community-based and pro-poor adaptation actions that tackle underlying drivers of vulnerability, such as poverty, insecurity, insufficient affordable housing, and inadequate access to social welfare services (Anguelovski et al., 2011; Bahadur and Tanner, 2014; Bulkeley et al., 2014; Castán Broto et al., 2013). Yet, to date, resilience research and practice often lack a consideration of agency, privileging structural change/stability rather than the behavior of actors within a changing system (Brown and Westaway, 2011; Matyas and Pelling, 2015).

As a result, it is currently unclear how (urban) resilience is adopted and "practiced" by the community organizations, groups and leaders affected by climate impacts. While scholarship on community-based adaptation (CBA) is offering new insights on community engagement in and contribution to adaptation planning, studies are mostly focused on residents and practices in low and middle-income countries (e.g. Ayers and Forsyth, 2009; Chu et al., 2015a; Dodman and Mitlin, 2013). On the other hand, few adaptation or resilience studies pay attention to the broader dynamics of unequal urban development and real-estate investment when assessing resilience interventions in global cities – and how those impact the behavior of impacted residents and community groups around them. As such, there is an urgent need for critical studies on community-based resilience work in marginalized neighborhoods, and for understanding how

community groups respond to municipal practices of resilience, take into consideration existing patterns of urban development and growth dynamics into their resilience organizing, and navigate the multiple (and often conflicting) needs for long-term environmental and social resilience. This study attempts to address these gaps and contribute to the growing field of critical adaptation and resilience studies.

3. Methods

3.1. Case study design

This paper presents the findings of a comparative case study of two critical neighborhoods in New York City with high percentages of low-income residents (earning less than $20,000 annually) that were hit by an extreme weather event, Superstorm Sandy: the Lower East Side and the Rockaways. We selected neighborhoods on different urban redevelopment paths in order to analyze the influence of urban development dynamics on post-disaster resiliency efforts directed at low-income residents and on their ability to contribute to long-term community resilience in the context of climate risks. We examined community organizing efforts and experiences in Rockaway, a socio-spatially isolated neighborhood in the outer borough of Queens, versus the Lower East Side, a gentrified neighborhood in downtown Manhattan (See Fig. A1).

The Lower East Side (LES) is a densely populated, multiracial neighborhood in Lower Manhattan that has experienced several waves of intense gentrification (Smith and DeFilippis, 1999). The Lower East Side, along with the East Village and parts of Chinatown, comprise Manhattan Community District 3 (CB3), one of 59 community planning districts in NYC, which provide advisory resident input on planning and land use via appointed Community Boards in each district. The Lower East Side is the third most dense district in the city, with good access to the central business district (CBD) and jobs for those that have them, with a below average unemployment rate (see Fig. 1 below for select neighborhood indicators). The LES has a rich history as an immigrant destination in NYC. Although census tracts suggest micro-patterns of segregation, the district is one of the most racially and economically diverse in New York City. More than one in three residents on the LES are foreign-born. The neighborhood has a wealth of community organizations serving diverse, low-income populations, frequently in the face of fierce economic pressures.

From a housing access standpoint, the LES has low home ownership, few family households, and high rents for newcomers, among the highest in the city: the median listing price for new rentals is around $3000/month (NYU Furman Center, 2015). It also hosts 26 public housing developments with more than 30,000 residents. As a result, its median income is fairly low and its poverty rate fairly high. As Manhattan gets richer, so does the LES, albeit unevenly.

	LES	Rockaway (East End)
Population	166,335	117,505
White (%)	32%	36% (22%)
Black (%)	7%	36% (46%)
Latino (%)	26%	22% (26%)
Asian (%)	35%	4% (3%)
Rental units that are income-restricted (public housing) (%)	30% (23%)	34% (17%)
Renters paying <$1,000/m (%)	52%	50%

Fig. 1. Select Demographic and Housing Indicators, LES & Rockaway.
Sources: American Community Survey, 2009–2013, NYC Planning Commission, NYU Furman Center 2014 State of the City's Housing & Neighborhoods.

In contrast, as one of the least populated and dense districts in NYC, the Rockaways is far from the central business district and "suburban," reflecting its porous eastern border with neighboring Long Island towns. "The Rockaways" (a.k.a. "Rockaway") is a collection of neighborhoods situated on a peninsula in Southern Queens between Jamaica Bay and the Atlantic Ocean. Along with Broad Channel, a small community built over Jamaica Bay, Rockaway constitutes Queens Community Board 14. Its beloved boardwalk on one of the nation's largest public beaches was severely damaged by Sandy. Rockaway has endured substantial economic stagnation since the late 20th century as its tourism sector declined; however a so-called "hipster economy" was emerging prior to Sandy following the legalization of surfing in NYC. Sandy has further rejuvenated local economic development, with new retail and nightlife options, bringing increased attention to the district (see, for example, Higgins, 2016).

Like the LES, the Rockaways has high racial and economic diversity at the district level. Yet, patterns of racial/ethnic and economic segregation in Rockaway are more geographically pronounced than in the LES. The peninsula's "West End" houses mostly white (78%) homeowners (58%) in single-family homes. By contrast are the multi-racial demographics of the "East End," where three-quarters of the district lives, mostly in large multi-family buildings (See East End indicators in Fig. 1).

During the 20th century, its abundance of inexpensive land and relatively low population density led the city to site a disproportionate share of institutional properties in Rockaway, including the vast majority of Queens' public housing. Today, the Rockaways has 6 public housing developments, all on the East End. The East End's "urban" challenges of low homeownership (27%) and higher poverty, unemployment and lack of access to opportunity are obscured by the dominance of older, white, single-family homeowners from the West End in Community Board 14 activism and recovery politics.

Rockaway and the LES are among the most flood prone districts in NYC, with 84% and 33% of housing units, respectively, in the FEMA flood plain. Both districts were hit by storm surges from Sandy in excess of 10 feet. Throughout the city, 80,000 NYCHA residents – many of those in the Rockaways and the Lower East Side – lost essential services, with more than 400 different buildings losing heat and/or (hot) water (NYCHA, 2013; NYU Furman Center, 2013). For some buildings it took up to 12 weeks to have basic services running again, and some developments are currently still running on temporarily boilers.

Both areas received significant media, organizational, and volunteer attention in the aftermath of Sandy. In 2014, Mayor Bill de Blasio took office with housing recovery programs stalled after a year of missteps and endless frustration for Sandy-affected homeowners. He also faced a restive and anguished public housing population in the Rockaway and LES, living in buildings powered by temporary boilers with major backlogs of repairs, sporadic heat and hot water, and growing mold and mildew problems. Yet, since Sandy, this population together with its organizational allies city-wide have articulated a common post-Sandy struggle against NYCHA and the City for recovery assistance (Weathering the Storm, 2013).

3.2. Data collection and analysis

This research is based on intensive fieldwork from January 2013 through June 2015, with participant-observation, in-depth interviews and documentary and archival research occurring in two stages. First, we conducted participant-observation in recovery politics in Rockaway from January 2013 through June 2014, attending community board and other public meetings focused on the planning and reconstruction of the Rockaway Boardwalk, open space, housing, the beach, and local infrastructure. In addition we conducted 48 in-depth, semi-structured interviews with 40

residents and 8 advocates and practitioners across the peninsula, asking about experiences with government recovery programs, and their visions for the peninsula as recovery dollars began to flow into the region. We used a snowball sample originating with Community Board 14 members in order to trace grassroots networks across the district. Our interviews included tenant leadership from five of the six NYCHA developments in Rockaway.

As we began to analyze the data from Rockaway, the influence of the peninsula's segregation and its modest pre-storm economic development on local recovery priorities stood out. We knew from prior research that vulnerable community members are often left worse off in post-disaster redevelopment efforts, and that these efforts often build on pre-disaster development trends (Graham, 2007, 2012a, 2012b). We recognized that Sandy recovery had accelerated an emerging municipal focus on resilience (Navarro, 2012; A Stronger, More Resilient New York, 2013), influencing rebuilding priorities. Finally, Sandy struck near the end of Mayor Bloomberg's third term, an era spanning the 2000s and one characterized by substantial gentrification (NYU Furman Center, 2016) and widening income inequality – trends often viewed as linked to Bloomberg's commitments to urban sustainability (Flegenheimer, 2015) and rebuilding NYC as an international destination after 9/11 (Greenberg, 2008). As Mayor de Blasio took over recovery efforts, we recognized an opportunity to investigate how different low-income Sandy-affected communities in neighborhoods on two different urban development paths were responding to this pivot from urban sustainability to resilience (see Section 4.1) in a city patterned by divergent but widespread experiences with gentrification.

Therefore, we conducted a second round of interviews and participant-observation on the Lower East Side, given its demographic similarities with Rockaway but its differences due to gentrification, proximity and a stronger civic infrastructure historically and culturally. For this comparative analysis we relied on a sub-sample of interviews (∼28) that included public housing residents, social service providers, and other community leaders focused on the recovery of the Rockaways' East End and its impacts on low-income and public housing tenants. Then, from January through May 2015, we conducted 20 semi-structured interviews in the LES and Rockaway, and with city-wide advocates, and attended 13 community meetings. We selected interviewees to cover the entire range of respondents with a stake in or involved in post-Sandy community organizing. Interview questions were related to community organizing for disaster preparedness and resilience before, during and after Superstorm Sandy, the work that these organizations are currently engaged in, and possible tensions that arise from resilience action. All interviews were analyzed through thematic coding concerning shifts in community-based activity pre- and post-Sandy, rationales behind how resilience is operationalized, and tensions, factors, and dynamics influencing resilience practice.

In both settings, we also tracked planning and redevelopment efforts through agency documents (e.g., NYC Parks & Recreation, NYC Economic Development Corporation, Mayor's Office of Sustainability, Mayor's Office Recovery and Resiliency, NYCHA), key NGO reports and briefs (e.g., Alliance for a Just Rebuilding), and in local media (e.g., The New York Times, Capital New York, DNA Info) to better understand the city-wide context of sustainability and resilience planning.

4. Community organizing for resilience on the Lower East Side and in Rockaway

4.1. Municipal and state resilience efforts in New York

Urban sustainability was a signature priority of Mayor Bloomberg's three terms in office, enshrined most notably in his

PlaNYC, an environmental sustainability blueprint for New York, and in the Office of Long-Term Planning and Sustainability, a permanent new office charged with its implementation. Bloomberg's commitment to urban sustainability was motivated by population growth projections for NYC. Therefore, a priority in Bloomberg's sustainability agenda was land-use planning, especially by rezoning underutilized land, of which a significant portion was along the city's 502-mile waterfront. (Relevant to this analysis, 58% of Rockaway's land had "unused zoning capacity," versus 25% on the LES, impacting their rezoning potential in Bloomberg's sustainable development efforts (NYU Furman Center, 2015)). As scientists released estimations of the substantial risks to NYC from sea level rise and increased flooding due to climate change, Bloomberg's reliance on waterfront development to meet the demands of population growth in NY ran headlong into smart practices for "sustainable growth" like shoreline retreat in the face of sea level rise.

As such, and particularly after the near-miss in 2011 of Hurricane Irene's potential damage to NYC, the Bloomberg Administration began "pursuing a so-called resilience strategy." This strategy aimed to improve "the city's ability to weather the effects of serious flooding and recover from it" and attempted to address environmental justice activists' concerns about low-income residents' proximity to toxic facilities and land and the Administrations' neglect of "disaster planning" (Navarro, 2012). Hurricane Sandy accelerated the city's modest embrace of the concept of resiliency, with the storm raising "the bar" for NYC beyond the "forward-looking resiliency initiatives" initially laid out in PlaNYC in 2007 (A Stronger, More Resilient New York, 2013). After Sandy, Mayor Bloomberg launched the Special Initiative for Rebuilding and Resiliency (SIRR) to plan "additional protection" from "the impacts of climate change." SIRR utilized a risk-reduction framework that focused on adaptation to climate change and mitigation of its impacts in a coastal city unwilling to retreat from prior commitments to waterfront development.

In 2014, newly elected Mayor De Blasio created the NYC Mayor's Office for Recovery and Resilience (ORR), charged with overseeing and implementing the SIRR report's initiatives, as part of his Administration's overhaul and continuation of Bloomberg's post-Sandy recovery efforts. Today, the Mayor's Office of Long-Term Planning and Sustainability and the ORR co-lead the city's "sustainability and resiliency initiatives" laid out in de Blasio's OneNYC plan, which replaced PlaNYC in 2015 and prioritizes reducing income inequality. In announcing OneNYC, de Blasio emphasized that "environmental sustainability and economic sustainability have to walk hand in hand," a perspective consistent with his campaign promise to fight inequality. Encapsulating a common criticism of Bloomberg's sustainability efforts in a city patterned by rising housing costs and income inequality, de Blasio also remarked, "A beautifully sustainable city that is the playground of the rich doesn't work for us" (Flegenheimer, 2015).

Chronicling disaster recovery efforts is a delicate endeavor, as recovery is a chaotic, uneven process of "money flying in every direction," (Tierney, quoted in Graham, 2007) with community populations unevenly connected to different initiatives. Although it is beyond the scope of this analysis to explore all of NYC and NYS' post-Sandy efforts, we acknowledge several here to contextualize the community resilience work in this analysis. Since 2012, NYC's post-Sandy efforts are nested within a network of federal, state, and philanthropic recovery initiatives, including:

- The "Big U", a large multipurpose grey and green infrastructure project designed to flood-proof the Lower Manhattan waterfront and offer a waterfront recreational park for residents, was a winner of the federally-sponsored "Rebuild by Design"

competition. It brings federal implementation funds to the city for its "East Side Coastal Resiliency" (ESCR) project.
- The Rockaway Boardwalk reconstruction, funded by FEMA and led by the NYC Economic Development Corporation, with beach replenishment led by the U.S. Army Corps of Engineers.
- NYCHA efforts to storm proof 33 developments, paid for by a FEMA grant, including elevating boilers and installing flood barriers and back-up generators.

Indeed, Hurricane Sandy recovery in NYC and New York State enjoyed substantial investment and coordinated public-private support due to the political power, expertise and capacity situated in the city and state (Schuerman and Gurian, 2014). As such, the extent of post-Sandy resilience initiatives were much broader than efforts initiated by ORR, which served to reinforce community-level perspectives that "resilience" was the new governing modus operandi in a post-Sandy era, as evidenced by billions in federal, municipal and philanthropic funds, and by the political priorities of the urban and political elite.

Important geographic, political, and socioeconomic differences in the Lower East Side vs. the Rockaways created diverse experiences with municipal resilience efforts. Post-Sandy recovery efforts in the Rockaways have unfolded in a pre-storm context of federal and municipal agencies working jointly to strengthen the socio-ecological systems of the 10,000-acre Jamaica Bay equitably and sustainably for the working- and middle-class communities that surround it, with an eye towards potential long-term residential development in the region. In contrast, the Lower East Side was swept up in pre- and post-Sandy initiatives to protect the city's business and financial districts after more than a decade of rebuilding Lower Manhattan after the terror attacks of September 11, 2001. The "Big U" offered a win-win in protecting the city's business and financial districts while offering park amenities for residents in gentrifying neighborhoods across Manhattan's midtown and downtown neighborhoods.

In this context, resilience – as a new idea and discourse following a clear sustainability agenda in New York – has been interpreted, adopted, and mobilized in different ways by the residents and activists of LES versus Rockaway.

4.2. The "practice" of resilience after Sandy in a context of acute gentrification: The Lower East Side

In the aftermath of Superstorm Sandy, community groups in LES actively assessed and reflected on the recovery process as it unfolded in NYC, framing demands around a just and equitable rebuilding of the city. The Alliance for A Just Rebuilding (2014), a coalition of CBOs, published "Weathering the Storm Rebuilding a More Resilient New York City Housing Authority Post-Sandy", critiquing NYCHA's abysmal storm response and highlighting the extensive need for building repairs and worsening of pre-existing needs: 55% of surveyed apartments had repair needs before Sandy and 40% had new repair needs after Sandy. 45% of respondents reported visible mold after Sandy, compared to 34% pre-Sandy. Some CBOs went further, proactively operationalizing resilience on the ground.

On the LES, CBOs organized around resilience based on their experiences with emergency relief and disaster recovery, which, as one CBO coordinator explained, involved organizing "response teams [. . .] getting outreach and care to" neighbors stuck in high-rise apartments without electricity or water. Through Sandy it became clear that there was an urgent need for community engagement and organization for resilience and disaster preparedness for low-income residents, despite CBOs' lack of prior experience on these issues. Many CBOs intuitively pursued their own resilience work as they provided emergency relief, quickly

adopting climate adaptation and disaster preparedness agendas. An organizer from *LES Ready!*, a long-term recovery coalition created after Sandy, explains that several LES CBOs are "naturally" adding resilience to traditional community work. As a long-term community leader and organizer from the Lower East Side explains:

"*Many of us have always seen ourselves as an organization that was fighting greedy landlords and luxury developers from taking over our community, we never saw a flood, that we would be fighting the impacts of climate change and sea level rise and storm surges, we never thought that would be something we would also be fighting, but after Sandy, it was clear to us that we couldn't take these things for granted, so we had to adopt it as an issue and work on it in a long term way.*"

These CBOs were able to adopt resilience as an additional "*layer to help the community.*" Since Sandy, CBOs have sustained a resilience focus by emphasizing disaster preparedness and risk reduction and connected it to the ability of residents to remain in their neighborhood.

CBOs on the LES operationalized resilience in three ways after Sandy: Individual disaster preparedness, collective disaster preparedness, and disaster risk reduction (i.e., flood protection in the context of large infrastructure construction). Individual disaster preparedness efforts emphasize training public housing residents in cooperation with the State of New York. Collective disaster preparedness efforts focus on inter-organizational coordination and capacity building for a coordinated community-based disaster response. For instance, in March 2013, the community organization *Good Old Lower East Side* (GOLES) led the collective launch of the Long Term Recovery Group (LTRG) *LES Ready!*, a coalition of almost 40 community groups and organizations which has the goal to "cooperatively coordinate our response, resources, preparedness planning and training in response to Hurricane Sandy and in the event of future disasters" (LES Ready!, n.d.). The coalition is working on a community-based disaster preparedness plan for the LES and has set up inter-organizational emergency communication protocols. In Sandy's aftermath, the need for this inter-organizational coordination and communication became clear from the gaps and overlaps created by ad-hoc, uncoordinated community responses, as an LES community leader recalls:

"*We learned that, when we sent our volunteers to places, sometimes they already had volunteers. There was so much more happening that we didn't really know [. . .] We did a tremendous job, but even with all the work we did, we couldn't reach everyone. [. . .] We would have to start to think about how we prepare as a community for these kind of events. It's bigger than any of us, and there were lots of groups that weren't necessarily effectively communicating with each other. How much more effective could we be if we coordinated?*"

Last, community groups on the LES got involved in government-led infrastructure projects by advocating how the funding can be better allocated to projects that serve and benefit the community itself, and by participating in community outreach. Several *LES Ready!* member organizations were engaged in the community outreach of the 2013 Rebuild by Design (RBD) competition for the Big U proposal. In general, they publicly supported the project, mobilized to get support letters from all their elected officials, and testified during the proposal presentations to the RBD jury. *LES Ready!* remains engaged in community outreach for the East Side Coastal Resiliency (ESCR) project, where several community design workshops have been held over the last couple of months.

Overall, strong development pressures frame the resilience work of community organizations in the LES, with residents concerned about the risk of displacement that resilience measures

might trigger, fearing that they might be pushed out of their neighborhood over the mid and long-term because of new real estate pressures and speculation on the land. Given the changing demographics of the LES as gentrification continues apace, CBOs perceive an acute risk that measures like the ESCR project meant to increase community resilience will ultimately erode the resilience of low-income households, including public housing tenants, to withstand displacement pressures and finally be pushed out of their community, as emergent cases of adaptation measures already reveal in other contexts (Anguelovski et al., 2016). They fear that "beautifying the waterfront" may bring in new development projects for more privileged residents and accelerate gentrification, increasing their risk for displacement. Some community members even believe that the ESCR project is taking place precisely because of the advancing gentrification of the last decades, arguing that before *"nobody wanted to touch the Lower East Side"*. The new infrastructure creates a double-edge sword for residents and activists by bringing more attention and resources to the LES but raising the specter of displacement. In the words of a community leader:

"*They want to protect this neighborhood because there is opportunity for development here. It's not really about us, it's about what's coming.*"

Thus, CBOs are also counter-strategizing around potentially negative consequences of the ESCR project. They are arguing for further "soft" resilience measures (Sovacool, 2011), such as storm water catchment or permeable surfaces, to prevent development that might undermine community resilience. By complementing "hard" infrastructure, with "soft" green infrastructure, the resilience of the neighborhood can further be increased, as a community leader explains:

"*We're trying to figure out other ways to mitigate the unintended impacts and that's why we're looking at things like the land right across the street. Can we turn it to storm water catchment, permeable surfaces? So we can make the argument it's not excess land that can be developed on, but that it has a purpose. Part of the strategy is to use the land to further mitigate against these further challenges, to make the two things reliant on each other*"

Our interviewee at the Mayor's Office of Recovery & Resilience strenuously contested the view that development pressures drive resilience action, arguing instead, as do some community members, that Sandy's scale of devastation warranted such a response. Overall, how the City addresses resilience in the Lower East Side in the context of development pressures is unclear and contested, as is the extent to which resilience interventions will accelerate the already intense gentrification processes on the Lower East Side. Research on environmental gentrification (Checker, 2011; Curran and Hamilton, 2012; Dale and Newman, 2009) suggests that environmental projects – such as the ESCR project – can increase property values over the mid-term and exacerbate pressures on low-income households. However, some community development advocates highlighted that equitable resilience measures can address climate gentrification and potentially exacerbated inequities, if governmental action balances investment in resilience infrastructure with investment in affordable housing and locally-owned businesses.

4.3. Lack of post-Sandy resilience organizing in a context of limited socio-economic opportunities: the Rockaways

Unlike LES organizations' ability to pivot towards resilience organizing, Rockaway community groups were unable to mount a similar response. In Rockaway, underlying pre-storm economic

needs framed most community responses. As several interviewees point out, most community groups focus on present needs and "righting current wrongs" and less on long-term perspectives. As a city-wide advocate on affordable housing explains, *"The Rockaways was in crisis before Sandy hit, it continues to be in crisis, it's an economic crisis. And so the resiliency work doesn't just sort of happen in a vacuum, it sits on top of what's there already in that community".*

In the Rockaways, CBOs are more focused on addressing vulnerabilities to economic crisis, including problems of unaffordable rents, unemployment, drug abuse, and at-risk youth – all factors exacerbated after the storm, according to East End community leaders. Like on the LES, public housing leaders organized disaster preparedness trainings for their residents. CBOs also participated in the planning committees of the state's NY Rising Community Reconstruction (NYRCR) program, which, reflecting the divisions on the peninsula, were organized for Rockaway East and Rockaway West. However, in the Rockaways, there is no collective disaster preparedness or coordination among different community-based organizations in order to prepare for a future disaster. In fact, in our 48 interviews there, resilience was invoked as a recovery topic less than 30% of the time, mainly by organization leaders, elected officials, or city workers. The typical respondent in our Rockaway sample is not taking about resilience, and public housing leadership never mentioned it. In one of the few explicit references to resilience, a Catholic priest ministering to East End residents, including many undocumented Latinos from the region, captured how resilience in Rockaway tends to emphasize socio-economic security, emphasizing *"affordable housing, jobs, better education and youth programs in our community and building a resiliency community. And so that we will have a better family, better environment and better social structure."*

Today, Rockaway Beach boardwalk reconstruction dominates community board meetings and public discussions on the peninsula, as a perceived critical measure for coastal protection, community recreation, and local employment. Public housing residents, community leaders, and CB14 members are pushing to ensure federal local hiring mandates are fulfilled in the boardwalk project. Good paying, career ladder construction jobs on the Rockaway Beach boardwalk project embody the type of social resilience measure residents would like in the community, even if few of them are explicitly framing them that way.

There is a pervasive discourse in Rockaway that disaster risk reduction (DRR) measures such as flood protection are a government responsibility, albeit one that should be influenced by community input on coastal protection measures. This perspective derives from the active presence of government agencies responsible for Rockaway's waterfronts, including the NYC Department of Parks & Recreation that operates Rockaway Beach; the National Park Service that oversees Ft. Tilden, Jacob Riis Park, and the Jamaica Bay Gateway National Wildlife Refuge; the U. S. Army Corps of Engineer's authority for coastal management and beach replenishment; and even U.S. Fish & Wildlife's responsibility for the protected piping plovers that nest on Rockaway Beach dunes every spring. Rockaway residents' lives and relationships to the coastal environment that defines life on a peninsula are structured by an enduring and tense engagement with multiple agencies that govern these coastal assets and threats (such as routine bay flooding and occasional but memorable nor'easters and hurricanes on the peninsula); residents therefore reasonably expect these entities to provide flood protection, despite residents' acute understanding of living in a floodplain.

This emphasis on government responsibility for flood protection and the primacy of the boardwalk as a "hard" protective measure tends to obscure other environmental risks for residents. The president of the community board captures this quandary:

"I actually see the [Jamaica] Bay side as the greater threat and neglected because we know at this point that the ocean side is going to be cared for between Parks and the Army Corps [. . .] on a daily basis the bay is a threat to residents, where the ocean is the threat only in the 100 year storm, but [. . .] anyone that is on the bay, is in jeopardy of flooding [. . .] It's complicated because it's [Department of Environmental Protection], it's [Department of Environmental Conservation], in some cases it's National Park Service. What portions are privately owned? · · ·?A high-tide of a new moon, everyone gets out their hip boots . . . I think it's actually a more complicated situation because of the ecosystem and the marsh. I think people have just come to accept it as their life."

Whereas on the LES, the extent of Sandy's aftermath may have been a wake-up call for residents, in Rockaway a varied but widespread sense of living in delicate balance with the water already imbues respondents' lives. As such, Sandy's impact as a "focusing event" (Birkland, 1997) for climate adaptation is dampened, especially in the face of persistent economic malaise in Far Rockaway.

This impact is further weakened by a lack of cohesive organizational networks in the Rockaways. As one East End non-profit director explained, there are four to five active long-term recovery groups (LTRGs) just in Far Rockaway, reflecting weak coordination and communication capacity and structures complicated by long-standing geographic antipathy:

"there's Rockaway west and east [. . .] they've never got along, but they never really needed a reason to get along. There was nothing we ever worked on [. . . now LTRGs are] still working on their bylaws because there's just so much conflict between all the residents of different groups, and trying to figure out who should have the power . . . "

Community organizations are therefore moving forward independently on addressing residents' socio-economic needs, many of which Sandy exacerbated. For example, at one East End food pantry, monthly clients increased from 400 pre-Sandy to 1800 after the storm. An organizer from Rockaway Wildfire, an organization which grew out of collaboration with Occupy Sandy activists and local residents, highlights the secondary place of disaster resilience demands in their advocacy efforts for a Community Benefits Agreement for Arverne East, a large un-developed site on the peninsula:

"We do have demands in the community benefits agreement [about resilience] [. . .] but for better or worse, they are a lower priority for people on the Rockaways. [. . .] what if before Sandy you were struggling, you had trouble finding a job, you had trouble getting to work. It's just to say, how bad that Sandy was, for many people in New York it's not the worst thing they have experienced"

In summary, in Rockaway, social and economic vulnerabilities take precedent over long-term disaster resilience for community groups working with low-income residents. This is in sharp contrast to the activism of *LES Ready!* and CBOs on the gentrifying LES, where they successfully engaged in new resilience work with and against government-initiated projects.

5. Differentiated sources of community activism for resilience

Essential to our analysis are the different urban growth dynamics historically and currently underway in the two communities, especially the process of gentrification. This section illuminates the presence and absence of gentrification in these two NYC neighborhoods, and the impact of civic infrastructure in shaping opportunities for community-led resilience to climate change after Sandy.

5.1. Dynamics of urban growth and decline: gentrification as fertile soil and mobilizing force for community-led resilience

To understand the difference in neighborhood responses in the aftermath of Sandy, it is necessary to look at the history of urban development in the Rockaways and the Lower East Side. In three earlier phases of gentrification, in the 1970s, 1980s, and 1990s, as LES residential and commercial rents became unaffordable, artists and others moved across the East River to "waterfront" Brooklyn and Queens, and later onward towards "more fringe locations" (Smith and DeFilippis, 1999). To accomplish his goal of producing 170,000 new units of affordable housing and fulfill his "all-out development policy," Mayor Bloomberg rezoned 37% of the city between 2001 and 2013 (Fessenden et al., 2013), with most new housing on the waterfront, including Rockaway. To date, Rockaway is one of the few waterfront neighborhoods not (yet) characterized by intense gentrification, despite real estate boosters' best efforts (Higgins, 2016; see also Logan and Molotch, 1987).

With the transformation of Brooklyn's East River waterfront and Lower Manhattan's Financial District and neighboring Tribeca into affluent residential communities (Graham, 2007), the LES has been surrounded by and consumed in a fourth wave of gentrification (Lees et al., 2008) that captures the luxury development trend of the Bloomberg Era. Furthermore, his rezoning of the city – particularly in the outer boroughs – was designed to "reinforce neighborhood character," thus "codifying the status quo" in many communities (Laskow, 2014), keeping pre-existing political power structures in place and making it harder for newcomers and marginalized residents to find affordable housing or participate in shaping their neighborhoods. For low-income residents of the LES steeped in housing activism, this context has helped preserve their power even as it declines in the face of gentrification pressures; in Rockaway, it has meant the West End's and homeowner's disproportionate power endures at the expense of residents in public housing.

5.1.1. The LES

The Lower East Side has traditionally been a largely working-class, vibrant immigrant neighborhood which has a rich history of housing activism (Abu-Lughod, 1994; Mele, 2000). Many community-based organizations find their origins in the 1970s, when widespread abandonment and disinvestment took place in the Lower East Side, amidst the city's fiscal crisis. Community members organized to fight economic and racial injustices like divestment, red lining, arson by landlords and other civil rights infringements. Although the neighborhood is widely gentrified today, it remains a diverse and socially dynamic neighborhood to this day, facilitating the endurance of a strong civic infrastructure. A wide variety of community-based organizations are still working on tenants' rights, homelessness prevention and gentrification with deep knowledge, capacity and experience in community organizing. In the words of a community organizer we interviewed:

> "*The Lower East Side is more organized, because it's a small-knit community, it's been under attack from gentrification pretty publicly and shamelessly for 20 years. And I think that because of the history of activism and engagement and because of the role that a lot of resident activists and organizers have had here [. . .] people develop and understand the circumstances to why they are vulnerable.*"

Working on similar issues and being forced to cooperate has helped create a vibrant, activist neighborhood in the Lower East Side. Temkin and Rohe (1996, 1998) describe a strong sense of place attachment and positive place identity as essential to community efficacy in responding to neighborhood change. This narrative of "being organized and strong together" on the LES has strengthened community identity and action and allowed groups to have a strong fertile soil to take on additional issues such as disaster resilience, as a community leader of the Lower East Side explains:

> "*I think that at different points in time, we had to be really united and fight a common enemy, other times we fought each other and in that, there is this hustle and bustle, so I think everybody plays a role in contributing to this melting pot, to this idea that we are an organized community*"

5.1.2. The Rockaways

The Rockaways development history has been less robust. The Rockaways' long decline as a vibrant regional summer retreat was punctuated by the closure of Rockaway Playland, an amusement park, in 1982. For many residents, this signaled the demise of the peninsula. As one public housing tenant leader put it:

> "*since they took Playland, Rockaway Playland, it has not been the same. We used to get in groups and walk. We were a lot of people walking on the boardwalk . . . [Now] kids have nothing to do and they can't even walk from 1 corner to the next, somebody's turf· · ·? They were from here, I was from the other side of Rockaway but I knew who they were. We all hung out. They can't do that no more.*

Her sentiment was confirmed across the peninsula, with a white homeowner and beach activist from the West End describing the Playland as 'amazing' and a part of the broader wonder of growing up along the boardwalk; similarly, an African-American renter and Community Board member from the East End described Rockaway Playland as a fixture for visitors to the peninsula, who stopped caring about the place once this destination amusement park was gone.

In contrast to residents' sense of nostalgia for Rockaway Playland is their belief that Rockaway is a "dumping ground" for unwanted public and institutional uses. Public housing on the peninsula arrived as a means to provide housing for the poor displaced by urban renewal by locating it on cheap, underutilized land at the city's edge. A Community Board member and Latino East End resident estimates that in some neighborhoods of the peninsula there is a nursing home every quarter mile. In interviews, residents complained about the "derelict hotels" and "panhandlers" on one of the peninsula's main commercial strips, propped up by city support and funding to irresponsible landlords housing the mentally ill.

This collective identity as the city's "dumping ground," as a place powerless against institutional harm reinforces residents' sense of physical and social isolation from the rest of the city (Kaplan and Kaplan, 2003; Lucev, 2007), a socio-spatial distance exacerbated by anemic economic development well into the 21st century. Residents described Rockaway as "remote" and "the boondocks" of the city, characterized by "low density" – not enough people "to maintain businesses through the winter," further marginalized by the toll bridges separating the peninsula from the rest of the city. The role of government in shaping the peninsula's socio-spatial isolation was frequently invoked. The editor of the local newspaper summed it up:

> "*The fact that so many poor people are out here, they were placed as far out on the city edge. Ironically they were pushed out here and they complicate the resiliency- it's an economic thing.*"

This sense of isolation is complicated by racial and economic segregation. As an African-American homeowner and community activist on the East End explained:

> "*In a community that's indigent especially in the 101 [precinct on the East End] it's totally opposite of the western end [. . .] It's 85% minority over here. The exact opposite over there as far as Caucasian and minorities. It's like night and day, the average dollar*

of the income. You have five public housing developments on this Peninsula. That's big. That's isolation."

This pervasive understanding of Rockaway as an isolated, segregated, left behind district undermined by decades of economic stagnation stymies residents' ability to work together in the face of external challenges, including future disaster planning and risk reduction. It also depresses their ability to collectively influence municipal and institutional actors spearheading Sandy recovery, as Temkin and Rohe (1996, 1998) explain is crucial for efficacious response to neighborhood change. This is in sharp contrast to the LES, where low-income residents' activism since Sandy builds on their social capital born of their strong history of organizing in the face of gentrification and displacement.

5.2. The importance of strong local civic infrastructure for community resilience practice

Social capital emphasizes the development of trust and what sociologists call "collective efficacy" (Sampson et al., 2003) through inter-personal and organizational networks that bond residents to one another and connect them to extra-local resources to foster the development of human, political, and economic capital in marginalized communities. Building social capital to reconstitute frayed civic and social networks emerged as a critical opportunity towards the socioeconomic and political revitalization of low-income urban communities in the 1990s (Keyes et al., 1996; Gittell and Vidal, 1998; de Souza Briggs, 1998). Urban real estate development became a critical source of revenue for cash-strapped cities after two decades of federal devolution (Eisinger, 1998), aiding the growth of a robust non-profit community development sector charged with redeveloping low-income urban neighborhoods (Graham, 2015) and building local organizational capacity and collaboration.

While insightful critiques of the limited utility of social capital as a community development strategy in the face of powerful institutional and economic pressures on vulnerable urban poor communities have since been advanced (See especially DeFilippis, 2001), the concept highlights the importance of strong organizational networks, activism, and external ties to powerful institutions in building community power in local urban development and their influence on a community response's to neighborhood change (DeFilippis, 2001; Temkin and Rohe, 1996; Temkin and Rohe, 1998). Community development scholars Lang and Hornburg (1998) defined the component for operationalizing the trust, cohesion and connections that constitute neighborhood social capital as "civic infrastructure," which is "*the network that exists among local community groups such as community development corporations (CDCs), foundations, other non-profits, local governments, public housing authorities, businesses, and voluntary associations*" (p5). Their conception builds on a civic affairs framework of civic infrastructure as the "invisible informal and formal networks and processes through which community problem-solving and decision-making is carried out" (Parr 1993). Civic infrastructure shapes the capacities and opportunities of a community to respond, organize and prepare collectively, such as whether people on the ground are able to recover quickly after a disaster, put together a community-based response, and prepare collectively for future events.

Urban development scholars have subsequently demonstrated that civic infrastructure can be activated by an external crisis or opportunity (Benjamin-Alvarado et al., 2009), but that it is difficult to build and sustain through top-down or outside efforts (Gittell and Vidal, 1998; Traynor, 2007). Traynor argues that civic infrastructure can take decades to develop organically, and is increasingly difficult to foster in an era of political polarization and

disengagement. This echoes Lang and Hornburg's critical caveat to social capital in community development (1998): "It is far easier to promote grassroots action in neighborhoods that are already close than in places where widespread alienation exists." (p. 7). They show that race and ethnicity matter, with immigrant and ethno-racial communities correlating with positive factors like multi-generational kin networks and high rates of homeownership as well as negative influences like racism, insularity and exclusion.

In the Lower East Side, a strong local civic infrastructure aided the community and organizational response after Sandy: As several interviewees point out, the neighborhood is an area rich in community activity and non-profit work and hence has assembled wide circles of volunteers in post-Sandy work and beyond. In contrast, in the Rockaways, the lack of strong social and geographic connections impeded the access of local residents to much-needed goods and services, prompting several outside organizations and networks to move in and provide assistance. As an independent Occupy Sandy activist recalls:

"*I understood intuitively and across the next weeks, how the patterns of relief were basically following the patterns of access in different neighborhoods and communities. And so, there was this perverse effect, whereby people who needed relief the most, seemed to be getting it the least and so what we did with Occupy Sandy, we actively tried to combat this, by setting up shop in this areas, which had less access to relief*."

Due to a strong civic infrastructure, the Lower East Side was able to engage in long-term community-based disaster preparedness planning and take on additional resilience issues. Mutual trust and pre-existing connections helped in establishing an effective disaster preparedness network in the Lower East Side. The coalition *LES Ready!* was successful in doing so through the pre-existing connections between organizations on the ground, as a member of *LES Ready!* explains:

"*It was just natural for us to band together. [. . .] I know what everybody does, because of our previous work, our previous relationships, and I think that's what makes LES Ready! so successful, because we have these great relationships, with one another and we support one another*"

In contrast, in Rockaway, interview data reveals that it has been very difficult to initiate and sustain a similar effort. Instead, existing community organizations reverted to their traditional and historical work on socio-economic vulnerability. The limited capacity for an organic community response such as the one that occurred on the Lower East Side is due in part to the different civic infrastructure of the East End community on the peninsula where poverty, public housing, crime and unemployment are clustered. Our snowball sampling approach with peninsula community leaders, which traced civic networks, revealed that East End respondents were likely to be leaders of faith-based social service organizations and community development entities and unlikely to live on the peninsula. This was in contrast to leaders on the more affluent West End, where civic leaders sat on Community Board 14, ran local homeowner and resident associations, and generally drew on their experiences as residents to guide their post-disaster civic engagement. Although such activists were present on the Rockaways East End, they kept company in guiding the affairs on the East End with faith-based, development, and social service practitioners who served a clientele on the East End rather than lived among them.

Even within the Rockaways, a "polarity" exists between the more affluent western and much poorer eastern ends of the peninsula. As a result, there is a lack of trust and collaboration between community-based organizations of the Rockaways, as a member from a local community-based organization testifies:

"There's a history of crabs-in-a-barrel type of stuff that happened in the Rockaways, with people fighting for resources and fighting for power and not trusting one another and resentment from one end of the peninsula to the other."

As previously described, multiple Long Term Recovery Groups (LTRGs) formed in the Rockaways in the post-Sandy recovery phase dispersed after internal conflicts in which power dynamics and issues of mistrust prevent them from working together effectively.

6. Conclusion

Due to a lack of empirical studies on community-based resilience work, including how resilience is operationalized on the ground, this study sought to investigate how community-based organizations (CBOs) working for low-income, vulnerable communities "practice" resilience in a post-disaster context; what social, political, and cultural factors enable and constrain these CBOs to organize around resilience; and how these practices are influenced by urban development dynamics. Our comparative analysis of the Lower East Side and Rockaway reveals that both the operationalization of resilience and the community capacity to organize for resilience are strongly influenced by pre-existing urban development constraints, conditions, and by the presence or absence of a strong civic infrastructure in each neighborhood.

The case of a gentrified and further gentrifying neighborhood such as the Lower East Side shows the competing, and often conflicting, priorities inherently present in resilience interventions and how these are embedded in the competitive context of urban (re)development. In the Lower East Side, resilience is framed by strong development pressures and the fear of displacement. CBOs on the LES operationalized resilience through disaster preparedness and disaster risk reduction strategies and were able to engage in additional and new resilience work through the network *LES Ready!* and active civic engagement with government-initiated projects. In contrast, Rockaway CBOs work to decrease the socio-economic vulnerabilities of their community by contesting pre-existing socio-spatial inequities and working on long-standing economic needs. These present neighborhood conditions not only restructure resilience conversations but also influence action on the ground, and hence point to the essential role political and social factors play in the ways resilience gets operationalized.

Our study reveals the presence of a dialectical relationship between urban development dynamics and social capital factors like civic infrastructure. Civic infrastructure enabled the CBOs of a diverse, economically dynamic, and socially organized neighborhood such as the LES to engage in long-term community-based disaster preparedness planning and take on additional resilience issues, whereas in the Rockaways, the lack of a strong civic infrastructure hindered such a coordinated community response. The urban development dynamics and pressures present in the two neighborhoods influenced to a large extent the evolution of the civic infrastructure in the Lower East Side and Rockaway, and further influenced the capacity of these communities to organize and mobilize around resilience.

Organizations are key actors in accessing and controlling capital in communities (DeFilippis, 2001); any discussion of civic infrastructure as a factor of community social capital cannot be divorced from the reality that "communities are outcomes of a complex set of power-laden relations" and that "certain social networks are in greater positions of power than others and they can yield much more substantial returns to their members when those networks are engaged in social or political conflict." (p. 791). Furthermore, these networks "operate in the competitive realm of market relations" (p. 793). The socio-spatial position of the LES versus Rockaway is dramatically different in NYC's hyper speculative real estate market, creating spatially and temporally divergent experiences with gentrification and urban development.

As the LES case illustrates, a long history of organizing against gentrification, and the organizational capacity, trust, networks and institutional access borne from that fight makes local CBOs key stakeholders and drivers of the local resilience response after Sandy, as the geographically central and economically vibrant neighborhood undergoes the latest round of gentrification as well as grand scale resilience infrastructure efforts. The history of the Lower East Side is thus complicated for community activists in the context of climate-related disaster events, as historical struggles and threats helped organize a community that is now building on these tensions of resilience.

In contrast, Rockaway is characterized by economic malaise, socio-spatial isolation from municipal political and economic power structures, and weak organizational capacity and networks among a racially and economically stratified community with a profound sense of powerless in the face of institutional threat. Many residents hope Sandy has finally put Rockaway "on the map," with recovery monies reinvigorating the modest economic development underway in the peninsula prior to Sandy, with some indication that this is happening. Yet, given the institutional and urban development dynamics described at length in this analysis, the framework of and mobilization around resiliency lags in Rockaway, as residents struggle with more pressing socio-economic concerns exacerbated by Sandy's devastating storm surge.

As the concept of (urban) resilience continues to gain popularity and more municipalities are engaging in urban resilience interventions and adaptation planning, further research is needed to assess how community-based organizations can be supported in resilience efforts and how unintended consequences of resilience interventions might exacerbate or create new socio-spatial inequities. The respective cases of community resilience work on the Lower East Side and in Rockaway offer several insights to guide future inquiries. First, we illustrate how community-based organizations try to balance the trade-offs of urban resilience interventions in the face of development pressures and gentrification, navigating the tensions that arise from participating in government-initiated resilience work. Alternatively, community-based organizations may lack the "benefit" of gentrification pressure to develop the capacity and power to shape the resiliency of their communities in a world transformed by climate change. We encourage research on other post-Sandy initiatives to test our findings on community resilience practices. Finally, scholars and policymakers have much more to learn about the long-term growth and perseverance of strong community resilience networks and their role as meaningful stakeholders in building resilient communities, especially if gentrification patterns displace long-standing residents or prevent future generations from building on their legacy of community activism.

Acknowledgements

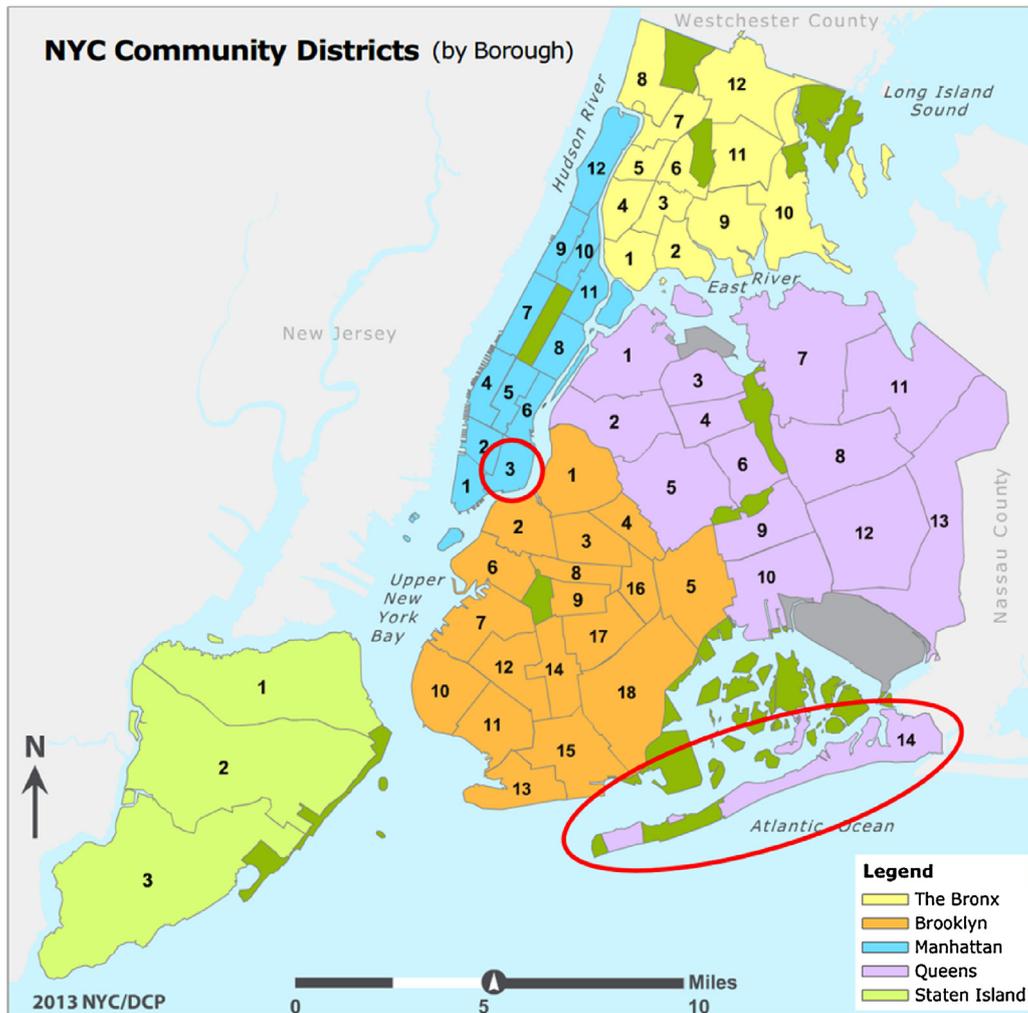**Appendix A.**

See Fig. A1.

Fig. A1. Map of NYC Community Districts.
Source: NYC Department of City Planning. Manhattan Community District 3 (blue) includes the Lower East Side. Queens Community District 14 (purple) includes Rockaway. (The green in CD14 is national parkland.).

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