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Resilience and the Cultural Landscape: The Case of the Lower Ninth Ward after Hurricane Katrina

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Resilience and the Cultural Landscape: The Case of the Lower Ninth Ward after Hurricane Katrina

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Abstract

The purpose of this research is to determine the importance of using the cultural landscape in evaluating the resilience of an urban community after the occurrence of a natural disaster. The focus is on the neighborhood of the Lower Ninth Ward after Hurricane Katrina in 2005 in the city of New Orleans. Natural disasters are gaining significance and magnitude when they hit cities, which are becoming more and more populated over the years. The damage these disasters cause is colossal. It is very costly for cities to undergo major disasters and sometimes, large sections of cities need to be entirely rebuilt. The costliest price is the human life, and as history marks it, too many lives have perished due to disasters. While rebuilding is a challenging task, yet feasible, rebuilding a community is not as tangible as rebuilding the infrastructure. This research focuses on the many intangible aspects, like place attachment and social networks, a community needs to rebuild itself in a sound and resilient way.

The concept of resilience is very contested in the literature and many have attempted to measure it. This research takes a step back and scrutinizes the concept of resilience from a holistic perspective, which highlights its complexity. This leads to questioning the importance of measuring the concept, especially that it changes with time and with the different scales of geography. In addition, a relationship between the cultural landscape and resilience is established, which allows for a better understanding of this complexity.

Taking a little from multiple disciplines (Landscape Architecture, Urban Planning, and Sociology), this research resorts to a methodology that reflects its multidisciplinary aspect. The methodology is the mixed methods research design, which allows the collection of quantitative and qualitative data. The focus is to gather census data, newspaper articles, and observations to give a general perspective on the post-Katrina situation. Interviews are collected from residents and from professionals so as to tackle the research from different angles. This allows reaching results at the case study level as well as the theoretical level.

This research validates the importance of using the cultural landscape in post-disaster situations as planners and government officials overlook it. Some of the elements that constitute it like place attachment and social networks motivate people to return to their original neighbourhoods and rebuild their homes and community. These elements, however, cannot by themselves give people back what they lost in the disaster. By relating the cultural landscape to the concept of resilience, it implies that resilience is a social construction.

Keywords: Resilience, cultural landscape, 'home', social construction, natural disasters, urban communities, mixed-methods research design, Lower Ninth Ward, New Orleans.

Résumé

Le but de cette recherche est d'évaluer l'importance du paysage culturel dans la résilience des communautés urbaines post-catastrophes. Ce travail se concentre sur le quartier du Lower Ninth Ward dans la ville de La Nouvelle-Orléans (États-Unis) après le passage de l'ouragan Katrina en 2005. Les catastrophes naturelles prennent une envergure et causent des dommages considérables lorsqu'elles touchent des villes. La reconstruction post -désastre est donc très dispendieuse pour les villes et les gouvernements, d'autant que certaines régions sont dévastées au point qu'elles doivent être reconstruites au complet. Cependant, le coût le plus lourd à assumer reste celui en vies humaines et si rebâtir les éléments concrets d'une ville est une tâche difficile à entreprendre, reconstruire une communauté est considérablement plus complexe. Dans le but de comprendre une telle démarche, cette recherche se concentre sur les éléments intangibles, comme l'attachement au lieu et les réseaux sociaux, dont une communauté a besoin pour se reconstituer de façon durable et résiliente.

Le concept de résilience est très contesté dans la littérature et plusieurs chercheurs se sont essayés à le mesurer. Cette recherche adopte une perspective critique sur le concept et le revisite d'un point de vue holistique pour mettre en lumière sa complexité. Cette démarche permet de remettre en question l'importance de mesurer un concept finalement en perpétuelle redéfinition dans le temps et selon les échelles géographiques. De plus, en établissant une relation entre résilience et paysage culturel, il a été possible de mieux comprendre la complexité de la résilience.

Touchant à plusieurs disciplines (architecture de paysage, urbanisme et sociologie), cette recherche utilise une méthodologie qui reflète son aspect multidisciplinaire : les méthodes mixtes. Ces dernières permettent la collecte de données quantitatives et qualitatives qui produisent une vue globale de la situation post-Katrina à travers le regroupement de recensions statistiques,

d'observations de terrain et d'articles de journaux. Parallèlement, des entretiens ont été réalisés avec des résidents du quartier ainsi qu'avec des professionnels pour mieux comprendre les différents points de vue. Cette méthodologie a permis de produire des résultats au niveau du cas d'étude autant qu'au niveau théorique.

La recherche valide l'importance de prendre en compte le paysage culturel dans les situations post-catastrophes, en particulier dans la mesure où il s'agit d'un élément souvent négligé par les urbanistes et les acteurs locaux. En effet, les éléments constitutifs du paysage culturel tels que l'attachement au lieu et les réseaux sociaux, participent d'un sentiment d'appartenance « *home* » et d'une volonté, pour les résidents, de reconstruire leurs habitations, leur communauté ainsi que leur quartier. Toutefois, il faut reconnaître que ces éléments ne suffisent pas à retrouver ce qu'ils ont perdu. Ainsi, l'étude du paysage culturel permet non seulement de mieux comprendre la complexité de la résilience, mais démontre également que cette dernière est une construction sociale.

Mots-clés: résilience, paysage culturel, catastrophes naturelles, construction sociale, communautés urbaines, méthodes mixtes, Lower Ninth Ward, la Nouvelle-Orléans.

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List of Abbreviations

ARG-GIS: Aeronautical Reconnaissance Coverage - Geographic Information System

BNOB: Bring New Orleans Back

CSED: Center for Sustainable Engagement and Development

CVS: Consumer Value Stores

FEMA: Federal Emergency Management Agency

HC: Holy Cross

IRB: Institutional Review Board

IRS: Internal Revenue Service

L9: Lower Nine

LNW: Lower Ninth Ward

MIT: Massachussets Institute of Technology

MLK: Martin Luther King

MR-GO: Mississippi River-Gulf Outlet

NENA: Neighborhood Empowerment Network Association

NOLA: New Orleans Louisiana

NONRP: New Orleans Neighborhoods Rebuilding Plan

NORA: New Orleans Redevelopment Authority

NORTA: New Orleans Regional Transit Authority

NPOs: Non-Profit Organizations

PAR model: Pressure and Release Model

PD8: Planning District 8

QUAL: Qualitative

QUAN: Quantitative

RHP: Road Home Program

RPC: Regional Planning Commission

RSD: Recovery School District

U.S.: United States

UdeM: Université de Montréal

UNO: University of New Orleans

UNOP: Unified Now Orleans Plan

yr: year old

Dedication

This dissertation is dedicated to all the human lives lost in disasters all over the world.

Acknowledgements

When I first stated the Ph.D. in 2007, I thought I was going to save the world, especially that I have chosen a topic related to disasters. Having gone through a couple of wars during my lifetime, and having to make the decision to evacuate had a much bigger impact on my perception of life. Also, 'home' is something we tend to take for granted until it is either taken away from us or we leave it behind for a better world. During the war of 2006 between Lebanon (my home country) and Israel, I chose to evacuate and return to the United States to resume my master's degree, while people chose to go back and rebuild their destroyed homes. In order to complete my master's degree in Landscape Architecture, we had to take an urban design course. We were assigned to propose a rebuilding plan for the Ninth Ward in the city of New Orleans after it endured Hurricane Katrina a year before. Visiting New Orleans and seeing people of the Lower Ninth Ward doing their best to return and rebuild their 'home' in a devastated neighborhood made a lot of sense to me. I do not have this attachment to one specific place because I have lived in too many places all my life. For the people who have lived in one place all their lives then this attachment to 'home' is all they have left. I want to thank the people of Lebanon and of New Orleans to have opened my eyes to something that we take for granted but that is of great importance: HOME. And at the end, it does not matter where we come from (ethnicity, nationality, race, gender, and culture); we are all human beings in the search for a place we can call home.

Going through my doctoral studies has been full of obstacles and opportunities. The obstacles I have faced made me stronger and the opportunities helped me get closer to accomplish my Ph.D. (which seemed an impossibility at one point). This following quote by Nelson Mandela helped me see the finish line; "It always seems impossible until it is done." The years spent on thinking, elaborating, and writing my dissertation were full of contradictions. There were moments of extreme doubts, where I thought of myself as incompetent and incapable of completing this task and of having the capacity of writing a dissertation in its entirety. And there were moments of happiness and confidence, without which I would have never gathered the strength and the courage to

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Chapter 1: Introduction

In the twenty-first century, disasters have drawn a substantial amount of attention from the media, governmental agencies, and researchers. With the growing number of people in urban areas, these unidirectional migrations will only keep growing with a total of 54% of the world's population living in cities in 2014. The drastic increase of inhabitants is not coming to a halt because the projections indicate that, "in 1950, 30 per cent of the world's population was urban, and by 2050, 66 per cent of the world's population is projected to be urban." (United Nations, 2014) The most important distinctive feature of this project is its multi-disciplinary aspect. The main phenomenon of interest is natural disasters, with a special attention to urban communities, and the manner in which place attachment and social networks interact with the post-disaster return and rebuilding process of the affected residents. While focusing on the inhabitants after a calamity, the following elements and concepts have surfaced: resilience, vulnerability, and the cultural landscape. The present work touches multiple disciplines such as Urban Planning, Landscape Architecture, and Sociology, as it appears that urban environments are very complex entities that require several lenses to start understanding them. Moreover, this research seeks a relatively new methodology that emphasizes the collection of qualitative and quantitative data, i.e. mixed methods research design. This study aims at a better comprehension of how urban communities react in a post-disaster situation and the reasons why they choose to return and rebuild their devastated neighborhood while acknowledging their vulnerabilities, as well as the difficulties that could result from the process.

This dissertation focuses on Hurricane Katrina, which hit the city of New Orleans on August 29th 2005. More specifically, the attention is geared to the Lower Ninth Ward (LNW), one of the most devastated neighborhoods in the city. The LNW was chosen as the case study for this research for many reasons: it suffered from unimaginable damage because of the massive water surge resulting from the levees breach; it has largely been unaddressed by the current academic research that it was poor and majority African

American; most importantly, it has a unique cultural identity that led people to overcome the obstacles preventing them from returning home. A year after the Hurricane, very few people have returned and those who have not were doing tremendous efforts to come back. Hence, one year after the storm, the majority of the residents were not able to return and they were still scattered in and out of the city. When asked about their needs and aspirations, the main thing that people wanted to do was to go back "home". Also, the LNW has a unique history and culture and that makes it a unique place to study, and the fact that people have resided in this area for generations makes it a very culturally rich neighborhood.

Being excluded from the rest of the city, especially with the Industrial Canal, the LNW turned inward, which only reinforced and maintained a strong identity and values that were only recognized by the residents. Examining the LNW closely revealed a fascinating story about the neighborhood, the residents, and the local culture. It became clear to the author that in order to understand the intricacies and complexities of this specific community, a historical look is required so as to build a mature and comprehensive perspective about the reality and the state of the neighborhood. Therefore, to evaluate a community's resilience, it is imperative to study its cultural landscape in order to understand the reasons behind the strength of the attachment people have to their home and to their social networks.

1.1. Background and Statement of the Problem

After a calamity takes place, people struggle greatly to put back the pieces of their lives together. The residents of the LNW faced a particularly bleak situation, if only because seven years after Hurricane Katrina, the area had not yet been rebuilt. After all the loss they have endured and the years of struggle, some of the residents gave up, but others were relentless and kept on fighting. They were fighting for their home, their family, and their neighborhood, one which had flooded more than once over the course of history. This is where it becomes pertinent to talk about the resilience of the LNW; but in order to do so, it is fundamental to have a good understanding of the concept of resilience before determining whether or not it applies to this area and its community.

In disaster research, the concepts of resilience and vulnerability have come hand-in-hand. Scholars use them in various fashions. Having been used for quite some time, the concept of vulnerability has been scrutinized a lot by the literature and has been a central component in disaster risk management since the 1980s (Timmerman, 1981). Vulnerability contributed greatly to the disaster literature as researchers used it as a tool to better assess, measure, and map the elements rendering cities fragile in the face of a calamity (Bankoff et al., 2004; Berkes, 2007; Birkmann, 2006; Cutter et al., 2003; Pigeon, 2002; Thomas et al., 2012). When disasters are at stake, it is not only important to look at the existing weaknesses, but also at the elements characterizing a city and community to withstand, rebuild, and return to a functioning state. This is where evaluating the resilience of a city or community becomes a relevant element to look into.

Nowadays, resilience has been turned into a buzzword that goes beyond disaster related topics. The concept is currently used in any context that involves change, and, more specifically, in the case of climate change and adaptation (Blanco et al., 2009; Moser, 2008; Muller, 2007; Prasad, 2008; Vogel et al., 2007). In their book, Lewis et al. (2012) argue that people must strengthen their resilience in order to adapt to change. Resilience is a highly contested concept in disaster literature, and this does not support its purpose. The literature looks at resilience as either being a continuously changing concept, i.e. a 'process'; or as a constant and measurable concept, i.e. an 'outcome' (Cutter et al., 2008). Many researchers have tried to look at resilience from a quantitative perspective by developing a set of indicators in order to measure it (Cutter et al., 2010; Liu, 2008; Liu et al., 2007; Pelling, 2003; Plyer et al., 2013). Therefore, it is important to understand resilience in order to comprehend its place and role in any post-catastrophe situation. When it comes to urban communities, the literature does not focus on such issues or on a qualitative way of looking and evaluating resilience. In this research, community resilience is an important aspect as it focuses on the community at stake and at the intangible elements that are part of it: cultural values, place attachment, and social networks. In addition, in the case of a calamity, the various scales of geography are affected by the destructive phenomenon, and resilience should be scrutinized at each different level: the individual, the household, the neighborhood, the city, and the country.

As it turns out, the intangible elements affecting resilience are also part of the cultural landscape. With the coexistence of many points of view in the literature, there is a general consensus about how this landscape is defined (Forman et al., 1986; Naveh, 1995, 1998; Poullaouec-Gonidec et al., 2005). Being the result of a continuous transformation of the environment, the cultural landscape plays a major role in determining the elements rendering a community unique and having a direct relationship with its living entourage. As a consequence, disaster literature does not bridge between the elements of the cultural landscape and resilience, which is one of the attempts this research is making. The cultural landscape takes a secondary place when disasters strike, and the focus is mainly geared toward risk management and the rebuilding of the economy as well as the infrastructure and the promotion of urban development through land-use planning (Berke et al., 1993; Burby et al., 2000; Chang, 2010; Chernick et al., 2005; Davidson et al., 2007; Keller et al., 1989).

It has been witnessed that urban communities lose a lot and suffer tremendously after the occurrence of a disaster. The loss is not only at the physical level, but also at the community level. People lose their homes, their identity, their belongings, and most importantly their lives. The problem presents itself as such: governments and planners focus on the physical aspect of rebuilding while they disregard the elements that brought and built the community together in the first place. The gap in the knowledge when studying community resilience is the lack of research and literature about the impact of place attachment and social networks on the resilience of a devastated community. In addition, the cultural elements belonging to a certain group of individuals contribute to shaping their cultural landscape and render them unique. As a result, there are no linkages between resilience and these cultural elements in disaster literature. The relationship between the cultural landscape and resilience is taken for granted and left largely unexplored. This dissertation aims at putting the concept of resilience at a new level, one larger than the current literature presented earlier, and resilience should be looked at in a holistic way, an all-encompassing way.

1.2. Purpose and Significance of the Study

The purpose of the study is to focus on the community of the LNW in a post-Katrina environment and on the elements that contributed (or not) to the returning of the residents and the rebuilding of the neighbourhood. Therefore, the focus is on evaluating 'how' and 'why' place attachment and social networks render a community more or less resilient after the occurrence of a catastrophe. This evaluation is done by setting up an in-depth portrait of the concept of resilience, which means analyzing what the literature provides in terms of measuring it. By understanding resilience and by identifying the indicators used to measuring it, it becomes clear that cultural elements—place attachment, identity, cultural traditions, and social networks—have not been sufficiently taken into account by the existing research.

This study relies on a mixed methods research design that identifies the tangible and intangible indicators affecting the resilience of an urban community as devastated as the LNW. The aim in using such a methodology is to use primary and secondary data as well as qualitative and quantitative data to provide answers. Since the literature focuses mainly on tangible indicators to measure resilience, this research cannot disregard this aspect of the concept. Therefore, by adding the qualitative side to the data, the results will be more cumulative than if each type of data were taken separately. The research focuses on collecting data on the multiple levels of geography: at the individual, the household, and the neighbourhood levels, as well as to present a general overlook of the city. Also, it aims at interviewing multiple stakeholders that are related directly or indirectly to the LNW: residents, religious figures, non-profit organization representatives, planners, philanthropists, and city officials.

The reason why this research is important is because it pays a lot of attention to the cultural elements that form the cultural landscape. These elements are taken for granted in post-disaster situations; yet they contribute to the rebuilding process and they help communities gain their strength after losing everything. These intangible elements were built over many decades and centuries, and they took the form and shape of the community at stake. When a disaster strikes, it causes major disruption, it destroys

the physical environment, and it takes lives away; but the only thing that remains untouched is the cultural identity and the attachment people have to their homes. The intention here is to shed light on these elements and their importance so they are not taken for granted by planners, city officials, and governments. By doing so, this study contributes to the literature on resilience by taking into account intangible indicators in the rebuilding process and in bringing back communities together. By sticking together, communities with strong bonds and social networks are stronger if circumstances compel them to live apart. This aspect is neglected in disaster management and is always left to be sorted on its own. Thus, governments and disaster risk managers should take into account the cultural landscape and its value. They should incorporate it into their rebuilding plans.

In consequence, this dissertation is unique in three ways: it tackles the concept of resilience from different angles, it determines the presence of a relationship between resilience and the cultural landscape, and it proposes a mixed methods research design to conduct the study.

Primary Research Questions

In order to determine the problem raised earlier and the approach to tackle it, it took a series of questions that finally led to the main research question. The questions are: What is the relationship between the resilience of a community and its cultural landscape? Why are people incited to returning to their neighborhood after a major devastation while knowing its existing vulnerabilities? Why are they attached to such a place? How can researchers contribute to a more coherent rebuilding process while maintaining the local identity and cultural values? How does the historical evolution of a geographic area affect its vulnerability? How important is it to measure resilience and should disaster researchers re-evaluate the concept?

Main Research Question:

If a relationship is established between the cultural landscape and the concept of resilience, then what is the role of place attachment and social networks in the creation of resilient urban communities in the Lower Ninth Ward after Hurricane Katrina?

1.3. Research Design

Since the literature proposes quantifiable indicators to measure resilience and this research looks at it from a qualitative perspective, with intangible indicators, then the logical choice of methodology is to combine the two. The intention behind using a mixed methods research design is to help answer the main research question, as it involves looking at multiple types of data to reach coherent results. On one hand, it is imperative to collect numbers reflecting on the evolution of the LNW before and after Hurricane Katrina in order to compare the contrast between the two periods. Also, maps need to be collected to show the status of the area with regards to flood levels and rebuilding progress. On the other hand, interviews have to be conducted in order to have the perspectives of the different stakeholders involved in the LNW. The questions were designed to answer to the following:

- Identify the cultural landscape,
- Compare what the residents have now and what they had before the storm,
- Identify their social networks and find out if they have changed after the storm,
- How they perceive themselves and how they are perceived from others,
- And how they look at the future.

All interviews lasted an hour or more on occasions, and the researcher explained the research intentions as well as the scope so as the interviewees know how they contribute to the research. Each participant was asked to sign a consent form that explained to them the research and if they felt like withdrawing from the study, then they were free to do so. The questions were pre-determined and validated by the research committee and the ethical board of the Université de Montréal and the University of New Orleans. Finally, a total of 28 interviews were conducted over the period of three months.

Assumptions and Limitations

As a starter, the main element this research is based on is the idea of 'topophilia'. It is a fact that people are attached to their home, and that it is the first thing they want to return to after the occurrence of a disaster. This love of place is called 'topophilia' (Tuan, 1990), and each community defines its topophilia differently because of cultural differences. In order to understand this topophilia, it is of great pertinence to study and question the community at hand. In the case of the LNW, the assumption was to interview the residents and understand, through their experiences and perspectives, the reasons of this strong attachment to their home and neighborhood, even with all the vulnerabilities and obstacles they face. It seemed obvious that the residents' strong will to return and rebuild their neighborhood, in addition to their topophilia and intertwined social networks, would make them more resilient. But soon enough, the research started revealing a more complicated reality, especially when resilience is a much-contested concept in the literature.

The limitations of this research were mainly at the case study level. After scrutinizing the literature and determining the research problem, the data collection exposed a much more disturbing reality. Due to much media attention, the LNW proved to be a fertile ground for new and upcoming research projects, and many took the chance to interview residents and ask for their time to participate in their research while giving nothing in return, except fake promises to improve their living conditions. Their struggles remained the same and they were not being helped to rebuild their homes. Therefore, seven years after the catastrophe, people were suffering from 'interview fatigue' and they were not interested in being taken advantage of by another researcher. Getting interviews from residents took some time and became possible insofar as the researcher was able to establish a strong and trusting relationship with the residents. In addition, it was deemed very pertinent to look outside the neighborhood and question the different stakeholders involved in the LNW. This change in perspective led to a change in strategy and the questionnaires were modified to fit with all the participants. Also, another limitation was the lack of resources to find and interview the residents

who did not return in order to evaluate their level of attachment, how did they rebuild their social networks, and how does that impact their level of resilience.

As this dissertation is being finished, the tenth anniversary of Hurricane Katrina took place. The city of New Orleans looked at all the accomplishments that took place in the city and its neighborhoods. And as for the LNW, some improvements have been made, though the neighborhood has not yet returned to its pre-storm state. This research does not criticize that fact, but it just underlines that ten years can be a marking point for some, but not necessarily for others. And as it will be presented in Chapter 6, the LNW has made many improvements and the residents are very hopeful, but does this hopefulness is enough to determine its resilience?

1.4. Dissertation Overview

Aside from the introduction and the conclusion, this dissertation is divided into six main chapters (chapter 2 to 7). Chapter 2 is a review of the literature with an overview of the different definitions of disasters, vulnerability, resilience, and the cultural landscape. The first three are of great importance to this research because they have taken a lot of attention in disaster research, and they are shaping the future of how disaster management and prevention are perceived. As for the cultural landscape, it is primordial to this research because it focuses mainly on the impact a community has on its environment. The aim is to understand how people change their environment to fit their needs and how—in return—the modified landscape acquires its own cultural identity. In the case of disasters, when everything is shattered, it is the cultural identity that remains intact even if the physical environment is gravely destroyed. If resilience implies the return or the bouncing forward, then disaster specialists should take into account the cultural landscape and the importance of place attachment and social networks in the rebuilding process.

Chapter 3 presents the theoretical framework of the research. It is the most important part of this work as it emphasizes on the relationship of resilience with vulnerability, as well as the relationship between resilience and the cultural landscape. Many authors see a strong relationship between vulnerability and resilience, and this

research reinforces this view: where vulnerability is part of the resilience process. However, it also claims that while vulnerability is a state that can be measured, resilience is constantly changing and evolving over time. In order to better understand both concepts, the literature proposes ways to measure them. What seems to be a common shortcoming is that the literature has a more quantitative perspective on measuring them, and this research proposes to look at both qualitative and quantitative perspectives. Since the literature focuses mainly on tangible indicators to measure resilience, this research criticizes the different methods of measuring the concept and proposes intangible indicators that eventually are part of the cultural landscape. By establishing this connection, resilience and the cultural landscape are related and affect one another. Beyond these connections, the chapter finally ascertains that resilience is a complex concept and should be looked at beyond the set of indicators affecting it.

Chapter 4 explains the choice of the methodological approach—mixed methods research design—and its theoretical groundings. As explained earlier, the use of mixed methods is critical to this research project as it helps in looking at the situation from different angles, and the different collected data permitted a validation through the triangulation of the different sources. This research methodology allowed the researcher to not only answer the research question, but also to provide a new perspective on a highly studied case study: the LNW after Hurricane Katrina. The combination of the case study with the methodology took the concept of resilience to a new theoretical level.

Chapter 5 gives an overview of the historical evolution of the LNW as well as the city of New Orleans. It is very relevant to this research to look back at the evolution and the transformation of the neighborhood because they led to determine the uniqueness of the area, its cultural values and identity, and the different decisions that led to its current state. Looking at the decisions that were made in the past and the physical evolution of the area can explain much of the devastation that occurred during Hurricane Katrina. Also, this chapter focuses on the evolution of the social networks that took form over the years and it highlights the cultural elements that made people attached to their neighborhood.

Chapter 6 presents four sets of results of the data collected, as well as the analysis. First, the data permitted the understanding of the reasons behind the late rebuilding process from the perspective of the residents as well as the professionals. Second, the data revealed two distinct and non-matching perceptions of the LNW, one belonging to the residents and the other belonging to the professionals. Third, comparing the indicators, tangible and intangible, lead to different conclusions about the resilience of the neighborhood and the community, which leads to examining the importance of measuring resilience. And fourth, a new element surfaced from the interviews. The stakeholders expressed hope and a positive outlook at the future of the LNW and the city of New Orleans.

Last but not least, Chapter 7 is an interpretation of the data, as well as the research. It shows how the research problem and question are addressed and it opens towards looking at the concept of resilience at the theoretical level. The case study of the LNW played the dual role of a research study, as well as a filter through which resilience was scrutinized. The new proposed resilience model suggests that in order to evaluate resilience, researchers must take into account tangible and intangible elements when it comes to urban communities. Furthermore, when the model was applied to a case study as complex as the LNW, it led to determine that when the cultural landscape is used as a tool to evaluate community resilience, the concept of resilience becomes a social construction.

Summary

The intent of this introduction is to present the main highlights of the dissertation by exposing the research problem, question, and research statement. In the process, an overview of the work is presented to give a cumulative perspective on the direction the research has taken. Disaster research is still in its infancy, with researchers, planners, and governments having a lot to learn in order to better mitigate, prevent, and manage devastating situations. Most importantly, it is crucial to better plan the rebuilding process in order to be efficient and sustainable for future generations. This research aims at portraying an element that is taken for granted: the cultural landscape. The key

concepts tackled in this dissertation are vulnerability, resilience, and the cultural landscape and they will be presented in the following section, Chapter 2, where the link between them will be explained further.

Chapter 2: : Literature Review

2.1. Overview

A resilient community rebuilding is very important after the occurrence of a disaster. This being said, a resilient rebuilding stands for: an understanding of the calamity's consequences on a community as well as its vulnerabilities in order to improve its adaptability when facing a life-altering event. When disasters are the subject of a study, two main concepts appear to the surface: vulnerability and resilience. These concepts are relatively recent in the field of urban studies and are highly contested, especially 'resilience' (which will be explained further). Over the last few decades, these terms took a lot of attention from researchers studying the different fields related to disaster management, risk prevention and mitigation, and various others. Nowadays, the concept of resilience is being used in reference to any context that is undergoing change, whether slow or abrupt. This is especially applicable to the climate change and its impact on the living environment, and more specifically at the community level. This research focuses mainly on the changes caused by disasters, though the triggering reasons of the disasters are not relevant to this research. The focus is on what happens after the disaster has passed and when people return and rebuild. In this chapter, the aim is to present the relevant conceptual elements this research is built upon: the concept of resilience and how it affects the cultural landscape. Although these two concepts are of importance, yet it is very necessary to talk about the elements that affect both concepts. When discussing resilience, elements like natural disasters, vulnerability, and risk come to the surface. And when it comes to the cultural landscape, elements like place attachment, memory, and social networks are important to highlight. At first, these components seem unrelated and distinct, but when it comes to urban communities and their resilience, this research unveils a close relationship. This new finding is meant to help future planners, disaster managers, and governments in proposing better, more efficient, and sustainable rebuilding solutions.

2.2. The Concept of Resilience and its Constituting Elements

2.2.1. Natural Disasters and Disaster Discourse

The disaster discourse changed over the last few decades; more specifically natural disasters. What is misleading in natural disasters is the word 'natural'. While the sources of the calamity may originate from natural causes, the consequences tend to be aggravated by the increased and concentrated presence of human beings in urbanized areas. According to the World Urbanization Prospects, 50% of the earth population was located in cities in 2014, and the predictions indicate to higher concentrations by 2025 (United Nations, 2014). Many reasons lead to this aggravated situation: 1) cities have and continue to attract more and more people, 2) changing and modifying the environment to expand and grow cities, 3) climate change, 4) social and economic inequalities, and many more. This research focuses mainly on natural disasters or hybrid disasters, i.e. those that can percolate from natural causes, but whose consequences are the result of human error[1].

Dauphiné et al. (2013) argue that risks and catastrophes are notions that cover diverse realities. They can refer to the possibility, as well as the effectiveness, of an event, but they can also refer to the damage caused. In this case, they either point at 'risk-damage' or 'catastrophe-damage'. These terms are usually used at the human or material levels, but they can also be used at the economic, financial, natural, cultural heritage, or ecosystem levels. Depending on the event itself, if it is probable or a potential, then it is considered a risk; and if it is actual and effective, then it is considered a perturbation, an accident, a crisis, a disaster, or a catastrophe. The latter can then be given a name, a date, duration, and it is to be found in a specific geographic space with a distinct intensity.

[1] There are three classes when disasters are at stake (Orleans, 2013): 'natural disasters', 'man-made disasters', and 'hybrid disasters' as follows,
"Natural disasters generally are beyond the ability of man to produce, influence or prevent […]. The scale of loss of life from natural disasters can range from a few individuals to several million.
Man-made disasters are the disasters that are of anthropogenic origin. […] The associated loss of life due to this type of disaster seldom exceeds several hundred.
Hybrid disasters arise from a concatenation of anthropogenic (man-made and natural events. Man and his associated activities can produce natural disasters that would not otherwise occur, or significantly aggravate the effects of a natural disaster. […] The loss of life due to this type of disaster can be, and usually is, extremely large."

Therefore, time plays an important role to differentiate the risk from the catastrophe. Risk starts well before the catastrophe and can outlast it; the catastrophe is a specific event that starts and finishes at a distinct time. Also, both act on the physical space differently. Whereas the space affected by a risk is more areolar, the space affected by a catastrophe is more factual. This leads to the fact that risks are probable phenomena, whereas catastrophes or disasters are real events (Dauphiné et al., 2013).

In his book *Risk Society*, Beck (2013 [1992]) puts wealth in direct relation to risks and they are both social productions. He states that historically, "the concepts of 'industrial' or 'class society', in the broadest sense of Marx or Weber, revolved around the issue of how socially produced wealth could be distributed in a socially unequal and *also* 'legitimate' way." (Beck, 2013 [1992], p. 19) This unequal distribution leads to having socially unjust societies, especially when facing risks and hazards. This is the case in the LNW before Hurricane Katrina, where people have had less resources to rebuild their torn neighborhood when compared to other neighborhoods. Toueir (2015) talks about the historical facts that lead to the social inequalities that currently exist in the LNW: these were socially and historically produced over time, and were the result of the decisions taken over the centuries.

Defining disasters is necessary because they are more than simple events that just take place at a specific time and place. They affect urban communities and they expose the weaknesses or the urban fabric as well as the community. According to the Hyogo Framework, "Disaster risk arises when hazards interact with physical, social, economic and environmental vulnerabilities." (UNISDR, 2005)

Along these lines, Keller et al. (1989, p. 3) define a disaster as "an event which afflicts a community the consequences of which are beyond the immediate financial, material or emotional resources of the community." Disasters are not only events that are triggered by the natural environment, but also by the social, political, and economic environments. It is therefore important to avoid separating the 'natural' and 'human' dimensions of any studied disaster (Wisner et al., 2004 [1994]). Because if these two aspects are separated from each other, it "invites a failure to understand the additional

burden of natural hazards, and it is unhelpful in both understanding disasters and doing something to prevent or mitigate them." (Wisner et al., 2004 [1994], p. 5)

In his book *What is a Disaster?* Quarantelli (1998) asks multiple social scientists to define what a disaster is. Although they look at the term in its broadest meaning, the general consensus is that the consequences of disasters are of socio-economic nature. One of the authors states,

> disaster is no longer experienced as a reaction; it can be seen as an action, a result, and, more precisely, as a social consequence. The new approach provides the basis for moving from disaster as an effect to disaster as a result of the underlying logic of the community. […]Therefore, the conceptual framework of disaster is neither one of conflict, nor of defense against external attacks, but is the result of the upsetting of human relations. (Gilbert, 1998, p. 6)

This is also valid in the French literature. Pigeon (2005) states that hazards are not only natural, since they have become a hybrid of natural and anthropogenic components. Dauphiné et al. (2013, p. 25) propose the hazard "*anthropisé*"[2], which is a phenomenon that is triggered by natural causes but its evolution is directly linked to human actions.

With these definitions of disasters, the phenomenon takes on a social qualification that directly makes it responsible for affecting human lives in a disruptive and negative way. The natural disasters of interest to this research are those that are triggered by natural events. Yet, when they hit problematic areas inhabited by humans, they become a complex combination of natural hazards and human action. Therefore, to open up to the next section, the following must be taken into account,

> to understand disasters we must not only know about the types of hazards that might affect people, but also the different levels of vulnerability of different

[2] The word "*anthropisé*" is a French word and since a translation of this term in English does not exist, the author chose to maintain the original word so as to preserve its meaning. The original quote in French is "On parle alors d'aléa anthropisé. Cet aléa anthropisé est un phénomène dont le déclenchement est naturel mais dont l'évolution est liée à l'action humaine, notamment aux modalités d'occupation du sol."

> groups of people. This vulnerability is determined by social systems and power, not by natural forces. (Wisner et al., 2004 [1994], p. 7)

Thus, it is of great importance to portray the concept of vulnerability as it helps understand the weaknesses faced by a community, especially when they are the result of the human impact on the physical, social, economic, cultural, and political environments.

2.2.2. Vulnerability in the Literature

Vulnerability has been of interest in disaster research for some time and many authors have tried to define it and to measure it. Dauphiné et al. (2013) identify three approaches to vulnerability: the first analyzes vulnerability from the level of potential or real damage caused by the disaster; the second looks at vulnerability as the capacity of a society to respond when facing a perturbation; the third puts more emphasis on the territorial issues. The first approach falls under biophysical vulnerability and results from the impact of the hazard on the system, while the second and third fall under social and territorial vulnerability and can be evaluated independently from the hazard.

Toueir (2015) presents the concept of vulnerability and how it leads to social vulnerability. The concept of vulnerability has been defined in different ways and researchers have tried to measure it, but what is lacking is a more historical perspective. In this regard, the importance of tracking down the decision making process that lead to the current state cannot be underestimated. The author states, “a historical look at the evolution of a city and the community and the reasons for their particular evolution before a calamity is crucial to understanding their combined vulnerabilities.” (Toueir, 2015, p. 222) In the case of the LNW, it is very important to look at the historical evolution of the city as well as the series of decisions that were made over the course of time. Chapter 5 of this dissertation portrays in detail the events that formed the neighborhood and contributed to its transformation. Also, the evolution of the LNW is put in context with the evolution of the city of New Orleans as it reflects how the area was negatively perceived by the city. In the LNW, it was particularly relevant to look at the events that took place before Hurricane Katrina, since it sheds light on the reasons

rendering the neighborhood vulnerable in the face of a storm as devastating as Hurricane Katrina.

In their book 'Natural Disasters: Protecting Vulnerable Communities', Merriman et al. (1993) acknowledge the importance of assessing the vulnerability of a community in the case of a disaster, and the authors point out that most of the literature is geared toward a quantitative assessment. They also highlight the lack in the literature in terms of qualitatively measuring vulnerability. The reasons this is happening is "due to the fact that physical damage such as buildings, infrastructure, land, agriculture etc. are relatively easier to quantify than developing indicators for social, political or household economic vulnerabilities." (Merriman et al., 1993, p. 1) In addition, in their article Cutter et al. (2003) acknowledge the fact that measuring social vulnerability is done quantitatively: "socially created vulnerabilities are largely ignored, mainly due to the difficulty in quantifying them, which also explains why social losses are normally absent in after-disaster cost/loss estimation reports." (Cutter et al., 2003, p. 243) This will be elaborated later in Chapter 3, where the different ways of measuring both concepts, vulnerability, and resilience will be discussed. In the meantime, it is essential to expose how the literature perceives this concept, as the social and cultural aspects seem to always be absent in evaluating vulnerability.

According to Wisner et al. (2004 [1994]), "the social production of vulnerability" should be as equally important as the natural hazard when it comes to evaluating risk. They argue that the risk percolating from a disaster is a result of the natural hazard and the degrees of vulnerability relative to the hazard. They argue that "disasters are a result of the interaction of both; there cannot be a disaster there are hazards but vulnerability is (theoretically) nil, or if there is a vulnerable population but no hazard event."(Wisner et al., 2004 [1994], p. 49) And they propose the following equation:

"Risk = Hazard x Vulnerability"

There are many ways to look at the term 'vulnerability'. Manyena (2006) presents a table with many definitions of the concept. In this chapter, these definitions are laid out in table 2.1, and some new ones have been added so as to show the growing number of

definitions. Vulnerability is even used in the context of climate change and adaptation; where climate change has a direct impact on the criteria used in evaluating vulnerability and it is used to identify the weakness or fragility of any system (Adger et al., 2007; Adger et al., 2009; Brooks, 2003; Dessai et al., 2009). Some researchers conducted studies on the influence of climate change on social and territorial vulnerability (Thomas et al., 2012).

In the literature, vulnerability is looked at with multiple lenses where: 1) some define it as the capacity of a 'system' to absorb and cope with the event of a disaster, thus the ability of people to protect themselves, 2) some try to quantify vulnerability in order to use it as a planning tool and this will be presented in more details in the next chapter, 3) some who are more interested in objectifying vulnerability with the use of statistics and probability, and 4) some who focus on a more cultural and psychosocial aspect of vulnerability where the attention is geared toward the individual, the household, and the community (Bankoff et al., 2004; Barroca et al., 2013; Beck, 2006; Berkes, 2007; Birkmann, 2006; Brooks, 2003; Cannon, 1994; Chardon et al., 1994; Cutter et al., 2003; D'Ercole et al., 2009; Gallopin, 2006; Gotham et al., 2011; Laska et al., 2006; Merriman et al., 1993; Morrow, 1999; Oliver-Smith, 1996; Paton et al., 2001; Pelling, 2003; Pigeon, 2002). In disaster research, the most cited definition of vulnerability is the following:

> By 'vulnerability' we mean the characteristics of a person or group in terms of their capacity to anticipate, cope with, resist, and recover from the impact of a natural hazard. It involves a combination of factors that determine the degree to which someone's life and livelihoods are put at risk by a discrete and identifiable event in nature or in society. (Wisner et al., 2004 [1994], p. 11)

The same authors argue that disasters take place when a large number of vulnerable people are exposed to a hazard that causes a major damage and disruption to their lives (Wisner et al., 2004 [1994]).

Table 2.1: A portray of the many definitions of vulnerability (inspired by Manyena (2006) and compiled by the author)

Author	Definitions
Timmerman (1981)	Vulnerability is the degree to which a system acts adversely to the occurrence of a hazardous event. The degree and quality of the adverse reaction are conditioned by a system's resilience (a

	measure of the system's capacity to absorb and recover from the event).
Pijawaka et al. (1985)	Vulnerability is the threat or interaction between risk and preparedness. It is the degree to which hazardous materials threaten a particular population (risk) and the capacity of the community to reduce the risk or adverse consequences of hazardous material releases.
Dow (1992)	Vulnerability is the differential capacity of groups and individuals to deal with hazards, based on their positions within physical and social worlds.
Watts et al. (1993)	Vulnerability is defined in terms of exposure, capacity and potentiality. Accordingly, the perspective and normative response to vulnerability is to reduce exposure, enhance coping capacity, strengthen recovery potential and bolster damage control (i.e., minimize destructive consequences) via private and public means.
Wisner et al. (2004 [1994])	By vulnerability we mean the characteristics of a person or a group in terms of their capacity to anticipate, cope with, resist and recover from the impact of a natural hazard. It involves a combination of factors that determine the degree to which someone's life and livelihood are put at risk by a discrete and identifiable event in nature or in society.
Green et al. (1994)	Vulnerability to flood disruption is a product of dependence (the degree to which an activity requires a particular good as an input to function normally), transferability (the ability of an activity to respond to a disruptive threat by overcoming dependence either by deferring the activity in time, or by relocation, or by using substitutes), and susceptibility (the probability and extend to which the physical presence of flood water will affect inputs or outputs of an activity).
Watts et al. (1993)	Vulnerability is best defined as an aggregate measure of human welfare that integrates environmental, social, economic and political exposure to a range of potential harmful perturbations. Vulnerability is a multilayered and multidimensional social space defined by the determinate, political, economic and institutional capabilities or people in specific places at specific times.
Weichselgartner (2001)	By vulnerability, we mean the condition of a given area with respect to hazard, exposure, preparedness, prevention, and response characteristics to cope with specific natural hazards. It is a measure of the capability of this set of elements to withstand events of a certain physical character.
Pelling (2003)	*Vulnerability:* Denotes exposure to risk and an inability to avoid or absorb potential harm.
Cutter et al. (2003)	Social vulnerability is partially the product of social inequalities—those social factors that influence or shape the susceptibility of various groups to harm and that also govern their ability to respond. However, it also includes place inequalities—those characteristics of communities and the built environment, such as the level of urbanization, growth rates, and economic vitality, that contribute to the social vulnerability of places.
Maret and Cadoul (2008)	To be vulnerable is to be physically exposed to a hazard, to display certain fragility in the occurrence of a calamity. It is also the ability to foresee and consider, or not, the available means to face the crisis[3]
Gotham et al. (2011)	We view vulnerability as a condition that encompasses the features of exposure, susceptibility, and coping capacity. Power relations, socio-cultural processes, and political economy shape and influence the variability of these features, making some groups more susceptible to stress and trauma than others.

The reasons for outlining the different definitions of the concept of vulnerability are to show the array of points of view that date from the 1980s, and to establish a connection between the concept of resilience and the way it is defined. In this research,

[3] Être vulnérable, c'est être physiquement exposé à un aléa, c'est présenter une certaine fragilité face au sinistre qui pourrait survenir et c'est aussi ne pas envisager, ou mal envisager, les moyens disponibles pour faire face à la crise.

the concept of vulnerability is not evaluated, but it is pertinent to understand its evolution in the literature in order to comprehend how it relates to resilience. Disaster researchers started with vulnerability and only later did they bridge it with resilience. Wisner et al. (2004 [1994]) were among the first to establish a relation between social vulnerability and resilience. And since this work focuses mainly on resilience, and more specifically on understanding the concept, it was deemed logical to start the study with vulnerability so as to recognize the connection between the two. In this research, the attention is geared strictly towards the residents of the LNW after Hurricane Katrina, and in order to evaluate the resilience of its community, it was imperative to present its vulnerabilities.

2.2.3. How are Disasters and Vulnerability Social Constructions?

What is the definition of a 'social construction'? According to *The Dictionary of Human Geography*, it is:

> The idea that the social context of individuals and groups constructs the reality that they know, rather than an independent material world. Knowledge is always relative to the social setting of the inquirers, the outcome of an ongoing, dynamic process of fabrication. Further, social construction applies as much to forms of specialized understanding (e.g. high-energy physics) as it does to everyday, taken-for-granted knowledge. (Gregory et al., 2009, p. 690)

As previously discussed, disaster research has evolved remarkably over the last three decades. This is due mainly to the incessant migration of people to urbanized areas, which are becoming more and more concentrated in dense centers. In the present work, natural disasters refer to "*anthropisés*" as they stand for disasters that are triggered by natural causes, followed by human-made consequences. This research adheres to the following statement, "if workers in the area do not even agree on whether a "disaster" is fundamentally a social construction or a physical happening, clearly the field has intellectual problems." (Quarantelli, 1998, p. xiv) Disaster scholars should come to a consensus that when disasters become "*anthropisés*", they become social constructions. By acknowledging that fact, disasters can be looked at from the same angle and research

can contribute to improving the quality of lives of the growing number of people who are, and continue to be, exposed to risks. Natural hazards have become a result of the intricate interaction between humans and their environment. Thus, the modified environment is considered a social construction as well. Also, Hoffman et al. (2002) state in their book *Catastrophe and Culture*, "Eminently social, disasters are worked out in complex interactions and discourses in which the needs and interest of many involved individuals, groups, and organizations are articulated and negotiated over the often extended duration of the entire phenomenon." (p. 12) In addition, Toueir (2015, p. 231) states,

> Since disasters have consequences that are socially constructed, and cities are complex social, economic, political, and physical constructions, disasters become very complex events. These calamities cause the destruction/disruption of a complex system, the urban fabric, making disasters complex events with socially constructed consequences.

In their book *The Social Construction of Reality*, Berger et al. (1991) highlight the terms *reality* and *knowledge*. Whereas the first stands for a phenomenon that is recognized as being independent and not controlled by humans, the second ascertains the reality of the phenomenon with the specific characteristics it has. This can easily be applied to disasters, which are realities, and thus phenomena on which the knowledge has often been taken for granted. Toueir (2015) makes the connection between '*sociology of knowledge*' and disasters, "knowledge should be built on an understanding of the different processes that make reality a complex process because it is a social construction." (Toueir, 2015, p. 226)

As for vulnerability, the focus in this research is on the vulnerability of the residents of the LNW, and as it is discussed in Toueir (2015) and in Chapter 4, vulnerability has been constructed historically and socially. Morrow (1999, p. 1) says that "disaster vulnerability is socially constructed, i.e., it arises out of the social and economic circumstances of everyday living." As stated by Beck (2013 [1992]) and by

Hoffman et al. (2002), it is the uneven distribution of wealth and power that renders a society vulnerable.

> Inequalities in class and risk society can therefore overlap and condition one another; the latter can produce the former. The unequal distribution of social wealth offers almost impregnable defensive walls and justifications for the production of risks. (Beck, 2013 [1992], p. 44)

Additionally, the author argues that low-income groups located in cheaper residential areas that are exposed to risks, and unlike the wealthy, they do not have the financial means to purchase their safety. That was especially true in post-Katrina New Orleans and the LNW.

Vulnerability is also a political construction, as it can result from the series of decisions that were made over the course of history. Toueir (2015, p. 238) states that researchers should "understand the vulnerabilities and how they were constructed over the course of history" so as to increase knowledge and learn from old experiences. Also, the acquired knowledge should be spread, "knowledge gains a new political significance. Accordingly the political potential of the risk society must be elaborated and analyzed in a sociological theory of the origin and diffusion of knowledge about risks." (Beck, 2013 [1992], pp. 23-24). Also Gotham et al. (2011) view vulnerability "as an a priori social condition and examines the social and political construction of vulnerability assessments, interpretations, and perceptions."

Therefore, when it comes to understanding the vulnerabilities of an urban community, it is important to grasp the extent to which natural disasters and the concept of vulnerability are socially constructed. This is how studying the vulnerability of a community, a neighborhood, or a city can lead to sustainable solutions. By determining that vulnerability is a social construction, then researchers can track down, through a historical study, the elements and the decisions that led to a fragile state that cannot withstand a certain disaster. And by doing so, planners and governments can learn from previous mistakes in order to provide a better and more sustainable future. By ascertaining that vulnerability is a social construction, the responsibility is turned

toward decision-makers. And then, maybe, the way cities are planned can be looked at from a different perspective.

2.2.4. Resilience in the Literature

Just as vulnerability illustrates how a city and its people are at risk, resilience shows how a city and its people can overcome the disaster and its impacts. As mentioned earlier, it was the concept of vulnerability that was first scrutinized and researched on. Vulnerability is an a priori concept that helped understand the weaknesses of a system before the occurrence of a calamity. But while most vulnerability studies were done after the occurrence of a disaster for long, recent studies started aiming at evaluating the vulnerability of a geographic area or of a community before the disaster takes place. Therefore, it was not until recently that studying the vulnerability of a system could be part of disaster prevention. This can be shown in the work of many scholars (Bankoff et al., 2004; Birkmann, 2006; Chardon et al., 1994; D'Ercole et al., 1994; Morrow, 1999; Pigeon, 2002; Thomas et al., 2012). This scholarship demonstrated that vulnerability must be looked at with a special attention to the physical/infrastructure, economic, political, social, cultural, and historical levels.

Evaluating resilience can only take place once the disaster happens; thus it is done a posteriori. This does not mean that researchers and planners must wait for the occurrence of the event in order to react. On the contrary, this is where both concepts—vulnerability and resilience—contribute to disaster research. Here is a suggestion on how to best utilize both concepts in regards to the different possible scenarios:

- Pre-disaster scenario: evaluate the possible vulnerabilities of a geographic area while taking into account physical/infrastructure, economic, political, social, cultural, and historical factors. Pinpoint the potential threats or hazards that could cause a crisis in order to be prepared, and if possible, list the hazards according to frequency and priority. Enumerate the available resources for disaster mitigation and management. Set a plan of action for immediate intervention, and a recovery plan with the different phases that could take place while taking into account the population's needs and access to resources.

Depending on the vulnerabilities, prioritize the most important ones and tackle them before the occurrence of a disaster in order to minimize the potential damage.

- Post-disaster scenario: evaluate the vulnerabilities of the affected geographic area in order to track down the source of the weaknesses and the reasons why the system did not withstand the calamity. The evaluation must take into account physical/infrastructure, economic, political, social, cultural, and historical factors. Depending on the date the disaster occurred, the system's resilience should be examined carefully. The resilience of a city or community changes from the occurrence of the disaster to the moment when the dust settles, and then from the cleaning and recovery parts to when the systems reaches a functional status. Therefore, there are multiple states of resilience and this will be explained further.

Resilience has been taking a lot of attention in disaster research, although it originated in physics, psychology, and ecology. Resilience started as an evaluation of the level of shock absorption in physics and psychology, and then it found its way into social sciences by making a detour in ecology (Dauphiné et al., 2013; Klein et al., 2003; Maret & Cadoul, 2008). A preliminary and simplistic way of presenting resilience is talking about the three states at which this concept can be found. In a post-disaster situation, if resilience is considered the return to normalcy or to a previous state, then three scenarios are present: 1) the return to a situation worse than the previous one, 2) the return to a situation similar to the previous one, and 3) the return to an improved situation, better and more sustainable than the previous. It is important to have a pre-determined opinion on how resilience is perceived in disaster research, because it leads the way to framing the concept. Therefore, in post-disaster situations, there should ideally be a consensus between researchers, planners, and decision-makers about the level of resilience that needs to be achieved. The first and second propositions mentioned do not reflect the resilience of a city or community, but the third does: the return to an improved situation. Yet, this statement is very broad and can lead in many directions. This is the reason why scrutinizing the concept of resilience is the main focus

of this research. The aim is to look at the concept from different perspectives and try, as much as possible, to present resilience as holistically as possible. The different levels of resilience and how it is influenced by time and space is discussed further in Chapter 3.

In disaster research, many authors define resilience (refer to table 2.2) and all these definitions seem to have a common denominator: 'Resilience' is the 'ability' or the 'capacity' to 'cope' and 'absorb' the impacts of disasters (Berke et al., 2006; Cardona, 2003; Comfort, 1999; Holling, 1973; Holling et al., 1995; Horne, 1998; Kendra et al., 2003; Mallak, 1998; Maret & Cadoul, 2008; Mileti, 1999; Paton et al., 2000; Pelling, 2003; UNISDR, 2005; Wildavsky, 1991). Manyena (2006) presents a very cumulative list of the different definitions of resilience in his article, and he points out that it is a highly contested concept in the literature. In this research, it was imperative to look at the different definitions to better understand how the literature is positioned in terms of all the different perspectives.

Table 2.2: A portray of the many definitions of resilience (inspired by Manyena (2006) and compiled by the author)

Author	**Definition**
Holling (1973)	Resilience determines the persistence of relationships within a system and is a measure of the ability of these systems to absorb changes of state variables, driving variables, and parameters, and still persist. In this definition resilience is the property of the system and persistence or probability of extinction is the result.
Wildavsky (1991)	Resilience is the capacity to cope with unanticipated dangers after they have become manifest, learning to bounce back.
Holling et al. (1995)	It is the buffer capacity or the ability of a system to absorb perturbation, or the magnitude of disturbance that can be absorbed before a system changes its structure by changing the variables.
Horne (1998)	Resilience is a fundamental quality of individuals, groups and organizations, and systems as a whole to respond productively to significant change that disrupts the expected pattern of events without engaging in an extended period of regressive behavior.
Mallak (1998)	Resilience is the ability of an individual or organization to expeditiously design and implement positive adaptive behaviors matched to the immediate situation, while enduring minimal stress.
Mileti (1999)	Local resilience with regard to disasters means that a locale is able to withstand an extreme natural event without suffering devastating losses, damage, diminished productivity, or quality of life without a large amount of assistance from outside the community.

Paton et al. (2000)	Resilience describes an active process of self-righting, learned resourcefulness and growth—the ability to function psychologically at a level far greater than expected given the individual's capabilities and previous experiences.
Kendra et al. (2003)	The ability to respond to singular or unique events.
Cardona (2003)	The capacity of the damaged ecosystem or community to absorb negative impacts and recover from these.
Pelling (2003)	The ability of an actor to cope with or adapt to hazard stress. The capacity to adjust to threats and mitigate or avoid harm. Resilience can be found in hazard-resistant buildings or adaptive social systems.
Resilience Alliance (2005)	Ecosystem resilience is the capacity of an ecosystem to tolerate disturbance without collapsing into a qualitatively different state that is controlled by a different set of processes. A resilient ecosystem can withstand shocks and rebuild itself when necessary. Resilience in social systems has the added capacity of humans to anticipate and plan for the future.
UNISDR (2005)	The capacity of a system, community or society potentially exposed to hazards to adapt, by resisting or changing in order to reach and maintain an acceptable level of functioning and structure. This determined by the degree to which the social system is capable of organizing itself to increase this capacity for learning from past disasters for better future protection and to improve risk reduction measures.
Vale et al. (2005)	The term *resilient city* implies finality, but it is always coupled with an ongoing recovery process that, for many people, will never quite end. […] the goal should be productive openness, ability to structure and confront the contradictory impulses inherent in the contested processes of recovery and remembrance. […] We don't always get over traumatic events, but we do get through them.
Maret and Cadoul (2008)	Resilience, an after crisis phenomenon, only takes place if the community is prepared to undergo the catastrophe: by doing that, the community positions itself ahead of crisis management. Resilience is the capacity to overcome a catastrophe, while adopting a sustainable configuration.[4]
Ungar et al. (2008)	Resilience is the capacity of individuals to navigate their way to resources that sustain well-being; second, resilience is the capacity of individuals' physical and social ecologies to provide these resources; and third, resilience is the capacity of individuals and their families and communities to negotiate culturally meaningful ways for resources to be shared.
Cutter et al. (2008)	A system's capacity to absorb disturbance and re-organize into a fully functioning system. It includes not only a system's capacity to return to the state (or multiple states) that existed before the disturbance, but also to advance the state through learning and adaptation.
Gotham et al. (2011)	We view resilience as incorporating three factors: the ability to absorb shocks and trauma, the ability to bounce back and recover, and the ability to learn, adapt, and innovate.

[4] Free translation by the author, the original statement is : "la résilience est alors la capacité ou l'acte de retrouver un fonctionnement normal après le désastre. […] la résilience prend aussi le sens de capacité à se remettre d'une catastrophe, mais en adoptant une configuration plus durable." The translated version is : « Resilience is the capacity to overcome a catastrophe, while adopting a sustainable configuration."

Manyena (2011)	Disaster resilience could be viewed as the intrinsic capacity of a system, community or society predisposed to a shock or stress to "bounce forward" and adapt in order to survive by changing its non-essential attributes and rebuilding itself.
Oliver et al. (2014)	We argue that resilience does not necessarily mean returning to an original state but may in fact mean moving towards a more viable state.

The selection of the definitions that are presented in this section is pertinent to this research as they allow a more holistic view on the concept. This permits for a wide-eyed perspective, which matter insofar as the aim is to scrutinize the concept. The definition presented by Holling (1973) is the most cited in disaster research. Although the author refers to ecosystems, it was nonetheless the pioneering definition when it comes to post-disaster resilience. Over the following few decades, more definitions appeared, as researchers paid more and more attention to disaster prevention, mitigation, and management. Maret and Cadoul (2008, p. 114) define it as the: 'capacity or ability to return to a normal functioning, but with a more sustainable configuration'. The authors base their definition on Pelling (2003), and this only shows how the definitions are all related somehow.

In his dissertation and in a more recent editorial, Manyena (2009, 2011) presents resilience with a new perspective. He states that "Like most social science constructs, there is some confusion over the definition of resilience." (Manyena, 2011, p. 418) He argues that disasters lead to change and the notion of bouncing back leads to the return to a previous state; therefore, that notion lacks in precision because returning to the original state does not mean change. The author states that this could mean "a return to vulnerability and bouncing back to the conditions that caused the disaster in the first place; they may re-create and strengthen the pre-disaster structures and institutions." (Manyena, 2011, p. 419) In this case, resilience does not contribute to improving the pre-existing conditions but it helps re-instate a vulnerable state. Thus, he proposes that resilience should be looked at as a "bouncing forward" concept in order to surpass the disaster. This is relevant to this research project because it proposes to look at resilience

through time and at the different geographic scales, which will be discussed in more details in Chapter 3.

The definitions that are pertinent to this research are the ones that highlight the element of time, and more specifically Cutter et al. (2008); Gotham et al. (2011); Manyena (2011); Maret and Cadoul (2008); Oliver et al. (2014); Ungar et al. (2008). All look at resilience not only as a return to a normal equilibrium and the ability of people to adjust to the harshness of the event, but also as means to create more sustainable urban fabrics with communities that can withstand and overcome future disasters. Therefore, the aim of this study is not to define the concepts of 'vulnerability' and 'resilience', but to adopt the definitions stated in the already existing literature. The chosen definitions are the ones that look at these concepts from a social perspective, but also those that view resilience as a return to a more sustainable, improved, and durable state which will lead to better planning strategies in the future.

However, in all the definitions stated above, the role of culture on the resilience of a community is nowhere to be found, even though each community in every city in the world has its own cultural identity and social structures. Therefore, why is culture not present in any resilience-related research? This research relies primarily on the impact cultural identity and values have on a community. With respect to disasters, the focus is to look at these elements and how they contribute, or not, to the resilience of a devastated community. The focus has always been and still is on rebuilding the infrastructure and physical environment, which is crucial in post-disaster reconstruction, but the cultural element seems to always linger in the background instead of being as important as restoring the infrastructure and the economy. A vital part of rebuilding a community is the residents' need to return home and build back their houses and their networks, but it seems to fall behind on the priority list when it comes to reality. This research assumes that place attachment and social networks play an important role when it comes to community resilience. Hence, it uses the case of the LNW after Hurricane Katrina to evaluate whether or not these elements contribute to the resilience of the neighborhood.

In order to conduct such as study, it is important to find the source of place attachment, cultural identity, and social networks when addressing an urban community. All these highlighted elements fall under the definition of the 'cultural landscape', which is detailed in the following section. It is vital to define the relationship between resilience and the cultural landscape, as it is the key to looking and evaluating the concept of resilience from a new perspective. The contribution to the literature on resilience and disasters is at the cultural landscape level.

2.3. The Cultural Landscape

2.3.1. Definition of the Cultural Landscape

As mentioned earlier, the focus of this work is on how to foster resilient urban communities. These communities exist in a very specific context and thrive on very complex social structures that give them their own identity. This identity is engraved in people's memory and is reflected in their cultural values and traditions. Over time, people have deeper and deeper roots with the surrounding environment, along with a strong attachment to their home, their neighborhood, and their community. The combination of place attachment, identity, cultural values, social networks, and memory forms the 'cultural landscape', which is unique to each city, and sometimes to every neighborhood. In this section, the cultural landscape will be explored and defined to have a better understanding of how and why this landscape is important in post-disaster situations, and how understanding it can affect community resilience.

Being the essence of the inception of the cultural landscape, 'Cultural Geography' is a sub-field of 'Human Geography', with the American geographer Carl O. Sauer as the initiator. In his article, *The Morphology of Landscape*, he defines it as follows,

> The cultural landscape is fashioned out of a natural landscape by a culture group. Culture is the agent, the natural areas is the medium, the cultural landscape the result. Under the influence of a given culture, itself changing through phases, and probably reaching ultimately the end of its cycle of development. With the introduction if a different, that is, alien culture, a rejuvenation of the cultural

> landscape sets in, or a new landscape is superimposed on remnants of a an older one. The natural landscape is of course of fundamental importance, for it supplies the materials out of which the cultural landscape is formed. The shaping force, however, lies in the culture itself. (Sauer, 2007 [1925], p. 46)

In the quote above, the author puts the main emphasis on culture as the shaping force and the agent responsible for transforming a landscape into a cultural landscape. Another author who marked the field greatly, is the Chinese geographer Yi-Fu Tuan. According to him, he looks at the landscape from a sensorial perspective where,

> Landscape, like culture, is elusive and difficult to describe in a phrase. What is culture how does one delimit a culture area? The contents of culture can be itemized, although if one is meticulous the list threatens to grow to interminable length. Culture is not such a list. Landscape, likewise, is not to be defined by itemizing its parts. The parts are subsidiary clues to an integrated image. Landscape is such an image, a construct of the mind and of feeling. (Tuan, 1979, p. 89)

While cultural geography gave a unique perspective on defining the cultural landscape, other disciplines started showing interest. For the purpose of this research, the definition of the cultural landscape combines all three fields: 'Cultural Geography', 'Landscape Ecology', and 'Historical Ecology'.

At first, Landscape Ecology was first initiated by Carl Troll in 1971 (Forman et al., 1986; Naveh et al., 1984). Then, in the 1980s, it diverged in two directions: the European and the North American. The European was led by Naveh and Lieberman, and the North American was led by Forman and Godron. Naveh et al. (1984, p. 3) define Landscape Ecology as,

> a young branch of modern ecology that deals with the interrelationship between man and his open and built-up landscapes. […] landscape ecology evolved in central Europe as a result of the holistic approach adopted by geographers, ecologists, landscape planners, designers, and managers in their attempt to bridge the gap between natural, agricultural, human, and urban systems.

For these two authors, landscape is a 'Gestalt' system where the sum of its parts is more than the whole. According to this approach, the cultural landscape is defined as follows: "We can consider all human inhabited, influenced or modified landscapes as the tangible product of interactions between nature and culture." (Naveh, 1995, p. 46)

The North American approach presented by Forman and Godron (1986) is slightly different. The first looks at the landscape from a more objective look, they define the 'landscape' and 'landscape ecology' as follows: "We now see the landscape as a distinct, measurable unite defined by its recognizable and spatially repetitive cluster of interacting ecosystems, geomorphology, and disturbance regimes." (Forman et al., 1986, p. 11) They geared their attention on the relationships between the different elements constituting the landscape, and they do not put a lot of emphasis on the human contribution to the landscape.

Following the European approach in landscape ecology, Tress et al. (2001, p. 151) believe that "people play a dual role in the people-landscape interaction". According to them, humans influence the landscape, and, in turn, the landscape influences them, be it at the visual, but also at the mental and physical levels. The diagram in Figure 2.1 illustrates this interaction.

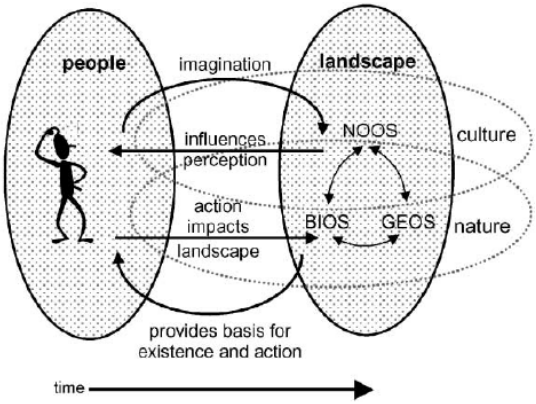

Figure 2.1: The people-landscape interaction model. (source: Tress and Tress, 2001)

Adding to the definition proposed by Tress and Tress (2001), Ruiz et al. (2005, p. 69) put forth that "all landscape dimensions are relevant and need to be treated with the same consideration, as are the interactions between them". They put an emphasis on the

impact humans have on landscapes, and how they play a major role in their transformation. They portray their landscape model in Figure 2.2, where they show that the landscape is made of the land, the individual, and the interactions between them. Also, they say that the landscape is the result of the interactions of humans with the land, and the land is affected by how people perceive it.

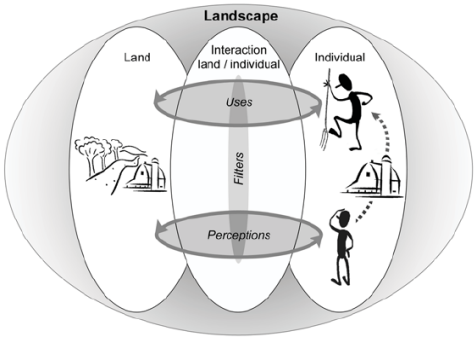

Figure 2.2: Generic landscape model (adapted and modified from Tress and Tress 2001), (source: Ruiz and Domon, 2005)

2.3.2. Landscape Ecology versus Historical Ecology

Since these two fields are more recent, this dissertation will focus on them and not on Cultural Geography. This is due to the fact that the latter took a turn toward focusing on culture alone, and this research looks at elements beyond culture alone. Historical ecology started in the late 1990s and has been explored primarily by William Balée (2002, 2006). Although historical ecology is much younger than landscape ecology, it too focuses on the important relationship between nature and culture, thus between humans and the biosphere. Moreover, it puts the emphasis on the historical aspect that humans play on transforming the landscape. Balée (2006, p. 76) defines historical ecology as a program that focuses on the relationships formed over time "between societies and environments and the consequences of these interactions for understanding the formation of contemporary and past cultures and landscapes", because defining these 'interactions' helps in the understanding of the local culture and traditions. In a later text, Balée et al. (2006, p. 1) use the following definition:

Historical ecology is an interdisciplinary approach. It focuses on the historical landscape, a multidimensional physical entity that has both spatial and temporal characteristics and has been modified by human activity such that human intentions and actions can be inferred, if not read as material culture, from it.

For Balée et al. (2006), landscape is an inaccessible text. It is written in a manner which is not readable, but consists nonetheless in acquired human actions and behaviors—'culture'. For them "[c]ulture is physically embedded and inscribed in the landscape as nonrandom patterning, often a palimpsest of continuous and discontinuous inhabitation by past and present people" (Balée et al., 2006, p. 2). Therefore, in historical ecology, the focal element of interest is the 'landscape', and the landscape is the "product of the collision between nature and culture" (Balée et al., 2006, p. 2) regardless of where this 'collision' takes place. The figure below (Figure 2.3) proposes the following diagram as the definition of the 'landscape'.

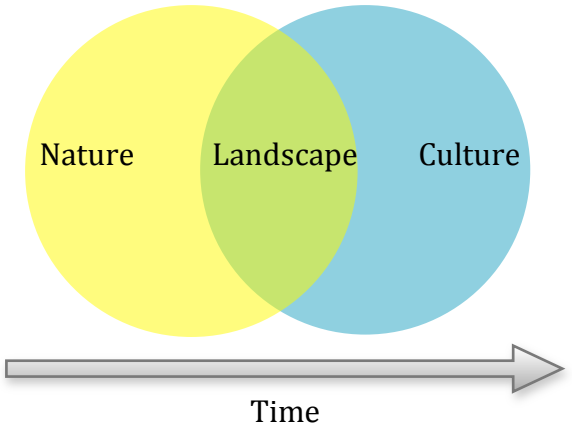

Figure 2.3: The 'landscape' viewed as a 'collision' in historical ecology. (source: author)

In conclusion, the two approaches are relevant to this research, and their definitions of the 'landscape' or the 'cultural landscape' are very similar. But, the fields of landscape ecology focuses more on ecosystems and the impact humans have on the state. It also emphasizes the richness of the ecological biodiversity in natural ecosystems.

Historical ecology puts more emphasis on the role humans have in transforming the landscape over time. Such a role is not necessarily perceived as a nuisance like it is seen in landscape ecology. Figure 2.4, a comparison of both fields is put forth to explain the choice made in this research, which clarifies and summarizes the views proposed by both fields. Therefore, the definition adopted in this research is the historical ecology one.

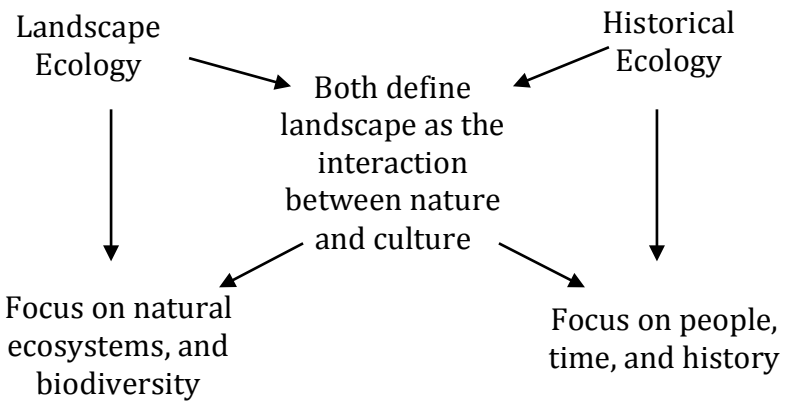

Figure 2.4: Comparison of landscape's definitions in 'Landscape Ecology' and 'Historical Ecology'. (source: author)

Now that a definition of the landscape has been drawn, mostly from historical ecology, the concept of 'cultural landscape' used in this research can be detailed further. Over time, people change the landscape to fit their needs; in return, the landscape affects the people that inhabit it. It is an interactive relationship that evolves and changes over time. The very result of this relationship is the 'cultural landscape'. In Figure 2.5, the diagram shows that the cultural landscape is the result of an interactive relationship between people and the landscape; when people inhabit a landscape, they cause direct changes to make it fit their needs, and the modified landscape indirectly causes changes to the generations of people living in it over time. Culture and traditions give a place its identity, and without an identity there is no past or future. But the cultural landscape is always changing and evolving over time. Also, looking at the landscape as the interaction between people and nature is very broad, this research will thus look at it with more depth.

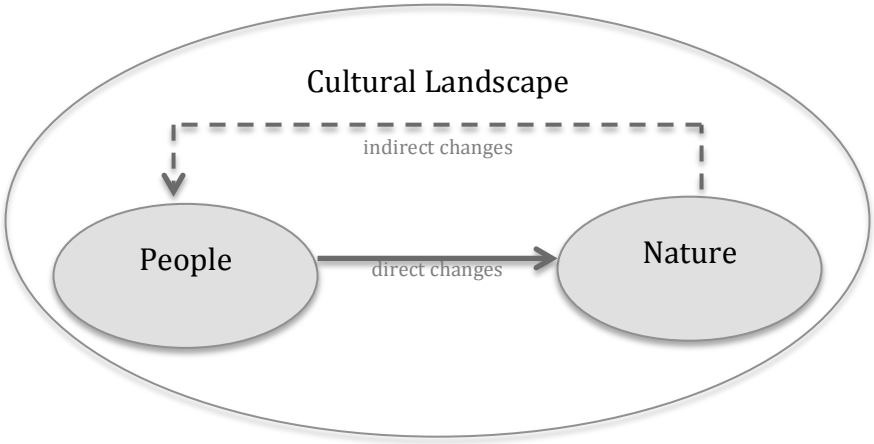

Figure 2.5: The interactive relationship between people and nature. People directly change nature to fit their needs, and the cultural landscape indirectly changes people to adate to its configuration. (source: author)

As mentioned previously, cultural landscapes are the result of an interactive relationship between people and their surrounding landscape, and this relationship is at risk when a disaster takes place. But what happens to the cultural landscape after a disaster? How does the cultural landscape affect community resilience? Do the cultural elements help, or not, in rebuilding a community devastated by a disaster? What about the case of the LNW after Hurricane Katrina?

2.3.3. Elements of the Cultural Landscape

Place Attachment and Social Networks

When talking about the attachment people have to their environment, one should keep in mind the community at hand, the identity of the place in question, and the social networks present in that specific place as they contribute directly to the 'sense of place'.

Human relations vary and they follow two major trends, one defined as community and the other as society. Tonnies (1957) puts forth a differentiation whence community (*Gemeinschaft*) is the result of "real and organic life", and society (*Gesellschaft*) is the result of "imaginary and mechanical structure". The author states,

> All intimate, private, and exclusive living together, so we discover, is understood as life in Gemeinschaft (community). Gesellschaft (society) is public life—it is the world itself. In Gemeinschaft with one's family, one lives from birth on, bound to it in weal and woe. One goes into Gesellschaft as one goes into a strange society. (Tonnies, 1957, pp. 33-34)

According to Gans (1962, p. 105), "the specific institutions that constitute the community are the church; the parochial school; formal social, civic, and political organizations, some of them church-related; and some commercial establishments." In the context of this research, this last statement is particularly pertinent where the focus is on the community of the LNW, which is very attached to its churches, schools, and local businesses.

Home and place attachment become crucial when a region is hit by a disaster. A home reflects upon the identity of the people inhabiting it, thus whom they are and what their traditions are. Falk et al. (2006, p. 116) define 'place' as "a geographical unit in which identity is grounded […] place is viewed as an important aspect of the self that is simultaneously a physical setting outside of the person and a symbolic presence within the person", and for them 'home' is not where people have lived for a certain number of years, but rather where they came from. When a home is destroyed by a disaster, the identity of the home is compromised; all the memories that took place under this roof are erased; sometimes lives are lost "if you have organized your lives around the shape of that house. To lose it is to lose a part of you"(Convery et al., 2008, p. 101). This is applicable at the level of a home, a neighborhood, or a city, all things to which people can develop an attachment to. This attachment is a reflection of the identity of the people and their environment. Tuan (1990) refers to this attachment as *Topophilia* and he defines it as "the affective bond between people and place or setting" (p. 4). For the author, topophilia is the result of humans' perception of their environment and that two people or two social groups will not look at the environment in the same way, it is culture-bound. In his opinion,

> the word "topophilia" is a neologism, useful in that it can be defined broadly to include all of the human being's affective ties with the material environment. These differ greatly in intensity, subtlety, and mode of expression. […] More permanent and less easy to express are feelings that one had toward a place because it is home, the locus of memories, and the means of gaining a livelihood. (Tuan, 1990, p. 93)

After a disaster takes place, the people who decide to stay and rebuild their homes find themselves facing two major obstacles: the first is to overcome psychologically the experience they have endured, and the second is to live with all the complications of rebuilding (Colten et al., 2009; Convery et al., 2008). Therefore, these people need '*strong* ties' which will "enhance collective capacities endeavors. The absence of strong ties increases uncertainty between networked actors"(Nicholls, 2008, p. 4). Furthermore, government support and aid in pre and post-disaster situations is very important, for without it, people would not return to their homes, and bonds with their environments would be broken, if only because the city or homes they once lived in are not just a set of buildings or simple structures, but rather are series of complex relationships between 'human lives' and 'social networks' that give a place its identity and bring it to life (Berke et al., 2006; Vale et al., 2005).

An important element to be considered when talking about disasters and post-disaster situations is the presence of social networks as they help in the creation of a stronger attachment to place. Topophilia and social networks—whether formal or informal—go hand in hand when defining the identity of a place. The presence of strong social networks generates an attachment to a home, a community, and a neighborhood. According to Falk et al. (2006, pp. 116-117),

> one's sense of place is grounded heavily in interpersonal social relations, especially those involving family and community. […] a person's social and existential identity is, to some degree, a by-product of where they live. They are in part who they are because of where they are. When families and communities exist in one area for generations, their sense of place may be very strong—

keeping them there in good times and bad, and drawing them back after they have moved away.

This is a crucial point after the occurrence of a disaster. Paton et al. (2001) state that 'sense of community' helps people get more involved in the rebuilding of their homes and their community, and this is more challenging if there were not any strong social networks. Also, they believe that the lack of such networks will render a community more vulnerable after a disaster and will encourage the feeling of helplessness and isolation. Furthermore, coping is an important element to foster after a life-altering event. Therefore, "the more people who are involved in community activities that engender a sense of community, efficacy and problem solving, the greater will be their resilience to adversity" (Paton et al., 2001, p. 274). One more element to look for is 'community empowerment'; it becomes fundamental in the decision-making process and "the key elements in this community empowerment model can be summarized in terms of the efficacy, coping, sense of community and support constructs" (Paton et al., 2001, p. 274).

Another form of social networks that is not often discussed is the 'informal social network'. Informal social networks are important in any urban community. They consist in the things taking place regardless of the formal social networks and organizations. They are the relationships between neighbors, the gatherings in religious events, and any sorts of informal gatherings that are specific to urban communities belonging to certain cultures. Sopher (1979, p. 137) states,

> The primary content of home, from what people say, is not material landscape but people. When one is absent, recollection of home is primarily of the human beings there. Without the continuing presence of the sustaining group, the place would no longer be home. It is one's relations with this nurturing and sheltering group as they are associated with the landscape that give it meaning as the landscape of home.

These informal social networks go unnoticed in post-disaster situations, since they only exist in action and are passed on from generation to generation due to

traditions, forming the cultural identity of a community. When a disaster takes place, these informal networks are the ones that help people heal and come back together to form the 'formal social networks'. Only they create local organizations and grassroots movements in order to promote the emotional and physical rebuilding of a community. In the course of this research, these informal social networks will be a key source, as they will help understand the attachment people have with their neighborhood regardless of its vulnerabilities. And they will show how the cultural landscape is formed (pre-disaster) and continues to evolve (post-disaster).

In his dissertation, Haynes (2013, p. xv) "explores sports form a cultural perspective to understand the perceived social values provided to the host community." His research shows how Hurricane Katrina changed the collective identity of the city of New Orleans, and how sports, identity, and ritual contributed to the creation of a civic religion (Haynes, 2013). The New Orleans' football team, the Saints, as well as the Superdome are part of the cultural identity of the city. When the Saints won the Super Bowl, they restored a lost identity that was washed away by the storm; winning the championship gave people their city back as well as their cultural identity (Haynes, 2013). Therefore, when talking about culture in New Orleans and in its entire neighborhoods, more specifically the LNW, it becomes an integral part of people's identity and it explains why the residents are attached to their city.

When a disaster occurs, cultural identity is not an element that is taken into account; the main priority goes to rebuilding infrastrure. Managing the crisis at hand preoccupies planners and decision makers, who are caught up in restoring the order. This state of emergency often makes many things slip away from their attention, especially culture. This is unfortunate, since the residents' primary incentives for returning are the attachment they have formed with their environment, and the networks they are a part of. If decision makers do not prioritize these aspects of rebuilding, then how can people restore their lives and move on? Seven years after Hurricane Katrina, the LNW is not yet rebuilt, while residents are still struggling to

return. What are the reasons behind this late rebuilding process? And why are residents attached to such a vulnerable neighborhood?

Memory

In the case of recurrent disasters, memory is noteworthy, as it becomes what people use to fall back on when experience and lessons learned are at stake. People reminisce to what they had before, and they use those memories as the grounds to rebuild what existed before. Individuals use their memory to remember loved ones they lost during the calamity, as well as to help them heal and move forward.

There are different kinds of memory, and Halbwachs (1992) states them as follows: 'collective memory', 'individual memory', and 'historical memory'. He focuses on 'collective memory' and the important role that time and place play in the shaping of this memory. According to the same author, all memories are the result of people's interactions with each other, for "it is in society that people normally acquire their memories. It is also in society that they recall, recognize, and localize their memories" (Halbwachs, 1992, p. 38). He gives a specific example of the memory of a trip he took to London, from which his recollections of the city are demarcated by the people he met, whether it was an architect, a historian, or an artist. His memories of the city of London are in direct relation with the expertise of the people he interacted with, and without their comments and remarks he would not have had this specific memory,

> There is thus no point in seeking where … [memories] are preserved in my brain or in some nook of my mind to which I alone have access: for they are recalled by me externally, and the groups of which I am a part at any given time give me the means to reconstruct them (Halbwachs, 1992, p. 38).

Following into Halbwachs footsteps, Olick (1999, p. 335) states "[m]emories […] are as much the products of the symbols and narratives available publicly—and of the social means for storing and transmitting them—as they are the possessions of individuals."

Another perspective on the relation between memory and history is given by the French historian Pierre Nora. According to him, "we speak so much of memory because there is so little of it left" (Nora, 1989, p. 7). His focus is primarily on French history, memory, and identity; yet his writings are applicable at the international level. When he refers to memory and history, he mentions 'sites of memory' (*lieux de mémoire*) and he states:

> Lieux de mémoire where memory crystallized and secretes itself has occurred at a particular historical moment, a turning point where consciousness of a break with the past is bound up with the sense that memory has been torn [...] There are lieux de mémoire, sites of memory, because there are no longer milieux de memoire, real environments of memory. (Nora, 1989, p. 7)

For the author, if people can relive a memory, then they wouldn't have dedicated the *lieux de memoire* to perpetuate the memories; whether in the form of a statue, a memorial, or any other form of remembrance. Yet when it comes to memory and history, Nora believes that they are opposite terms and according to him, memory is 'life'. It is in continuous evolution where it is "open to the dialectic of remembering and forgetting"; it is vulnerable as it can be manipulated, and it can go from the state of being dormant to revived, depending on the circumstances. Memory is "a bond tying us to the eternal present [...], is blind to all but the group it blinds" and finally he ends with "memory is absolute" (Nora, 1989, pp. 8-9). On the other hand, history is a problematic reconstruction and representation of the past, it is open to criticism, and it can "only conceive the relative". He believes that history "belongs to everyone and to no one, whence its claim to universal authority" (Nora, 1989, p. 7).

When it comes to resilience, memory or 'social memory' becomes a key issue to help people recover after a disaster. Resilience "resides, in part, in the ability to draw on past experiences and is inherently historical—both in formal and informal terms" (Colten et al., 2009, p. 357). The authors recommend that specialists should take people's memory of past events very seriously and include it in proper pre-disaster preparation and post-disaster mitigation to create more resilient cities in the future (Colten et al.,

2009). Relying on people's memory of old or current disasters can help increase resilience when facing disasters in the future, and if this memory is not taken into consideration, the population becomes more vulnerable. In the case of New Orleans, since many people left between hurricanes Betsy and Katrina "with decreased participation, social memory diminishes and it becomes impossible to draw on past knowledge in the face of a calamity" (Colten et al., 2009, p. 356).

Also, Dauphiné et al. (2007) argue that it is hard to predict people's reactions when a disaster strikes, hence the great value of some preventive measures to reinforce social resilience, and to avoid raising a panic that might cause more casualties. They propose that these preventive measures should be based on people's recollection of past events to draw useful lessons from recurring events aiming at educating the local community in order to increase social resilience.

2.3.4. The Cultural Landscape a Social Construction

As already seen, the cultural landscape consists of elements that are originally socially constructed. Humans have constructed the idea of home, community, place attachment or topophilia, and social networks. Cosgrove (1998) says that the landscape is a cultural concept and he states, "in seeking the material foundations for the landscape idea the obvious point of departure is the human use of the earth, the relationships between society and the land." (Cosgrove, 1998, p. 2) Also Cannon (1994) states,

> Conventional analysis of the relationship between humankind and the environment has tended to emphasize nature as a set of determinants, without adequately integrating nature with social and economic systems. I argue that in effect the environment is itself a social construction. (Cannon, 1994, p. 14).

In addition, Greider et al. (1994, p. 2) state, "through sociocultural phenomena, the physical environment is transformed into landscapes that are the reflections of how we define ourselves." Landscape or the cultural landscape — as it is referred to in this research — is the result of the interaction between people and nature. It is a social

construction. Figure 2.6 illustrates the cultural landscape as well as the elements that constitute it.

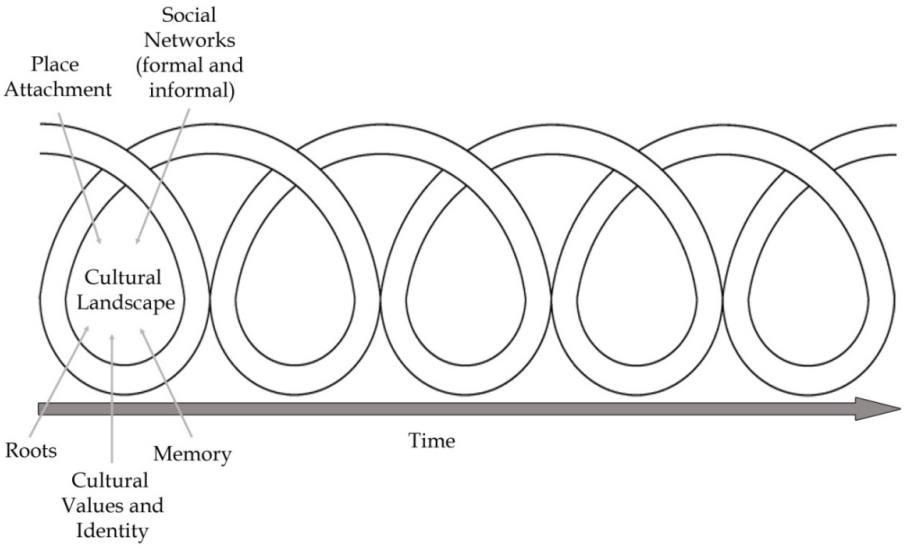

Figure 2.6: The continuously evolving cultural landscape in time. (source: author)

This phenomenon is continuously evolving as culture constantly changes with the people inhabiting the space. The cultural landscape is not static. It can be looked at, at a specific point in time and space, but it is constantly changing. As time goes by, the people forging the landscape change constantly with the different generations inhabiting it. And with the multiple technological advances that humans have witnessed and will continue to witness in the future, this evolution is inevitable.

When a disaster strikes, it interrupts the course of life and everything that it touches, particularly the cultural landscape. It certainly affects the physical environment as well, but it essentially changes the relationship people have with their environment—especially in the case of the LNW post Hurricane Katrina—from a social and cultural perspectives. Thus, the question remains: what happens to this cultural landscape? How is it transformed? Figure 2.7 shows this disruption to the landscape. This is where this research intervenes; where it explores how the cultural landscape is transformed and what it becomes in the aftermath of a calamity.

This is pertinent to this research, as it will be portrayed in Chapter 3 that resilience too, is a continuously evolving concept and its relationship with the cultural

landscape is an important one. The elements constituting the cultural landscape are shown to have an impact on resilience of the community of the LNW (refer to section 3.1.3).

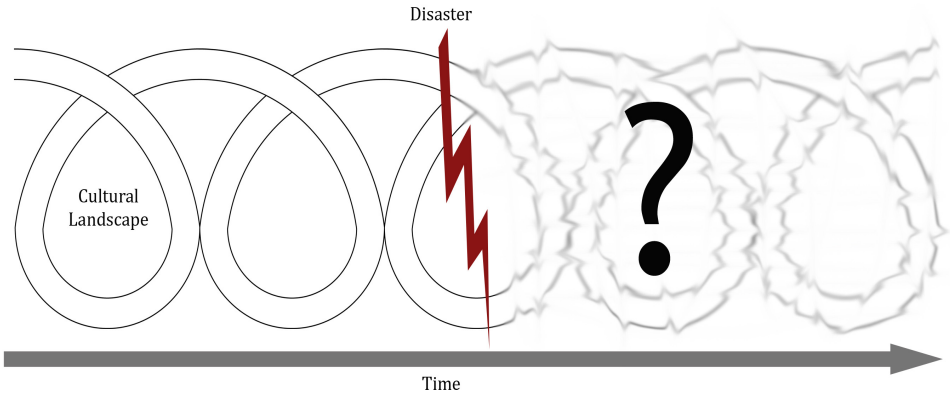

Figure 2.7: What happens to cultural landscape after a disaster hits? (source: author)

2.4. Elements to Retain

This chapter's intention is to give an overview on the literature on disasters, vulnerability, resilience, and cultural landscape. It is opportune to explain the key components of resilience. It involves disasters and vulnerability, which is particularly important in disaster research since resilience would be irrelevant if it were not for these life-altering and disrupting phenomena. Since urban areas are the targeted areas, we should look at disasters and how they affect these human-clustered spaces. Also, the built environment is composed of vulnerable human-built structures, which are shaped by decisions that were made over the course of history, often with a clear lack of knowledge and expertise. Disasters striking in areas weakened by vulnerabilities due to human intervention and decision-making are social constructions. Similarly constructed is the cultural landscape, which is strictly the result of human intervention on the environment. Humans have always modified their surroundings to fit and to accommodate their needs, and each community and society has done it differently. The resulting cultural landscape contributes to creating attachment and topophilia, as well as unique cultural values that stand out when a community is being studied. All these contribute to making this unique landscape a social construction.

Disasters are becoming more and more costly for governments; they do the most damage when they hit human-inhabited areas, especially since more than half of the earth's population is congregated in these complex webs called cities. If researchers spend more time understanding the elements constituting these webs and how they are formed, then lessons can be learned and repeating the same mistakes can be prevented.

Chapter 3: Theoretical Framework

3.1. Overview

In chapter 2, the focus was on presenting the concept of resilience, how it relates to natural disasters and vulnerability, and its many definitions. Also, the cultural landscape was presented, for it plays an important role in contributing to the resilience of a community. The problem is that the literature does not link post-disaster resilience to the cultural landscape, as well as its constituting elements, notably place attachment, social networks, memory, and cultural identity.

In this chapter, the intention is to scrutinize the concept of resilience by talking about: 1) the methods proposed in the literature of measuring resilience and vulnerability, 2) the indicators that affect them (tangible and intangible), and 3) the existing relationship between resilience and vulnerability, and between resilience and cultural landscape. The aim of this section is to present the various existing methods and show that they are not all-encompassing. The intention of this research is to present a new perspective on how to perceive and measure resilience, along with a new model. This dissertation also compiles the existing indicators (tangible) used to measure resilience and shows that they do not suffice, and therefore new intangible indicators are presented. These intangible indicators reflect the cultural landscape. It is by understanding how resilience is perceived in the literature that it becomes possible to look at it in a non-quantitative fashion. It is important to explore the ways of measuring the concept in order to locate the lacking elements and question how the literature looks at it. And by adding the cultural aspect to evaluating community resilience, this research aims at showing that by ignoring culture, post-disaster rebuilding lacks in substance.

While exploring the different aspects of resilience, elements like time and space appear. Both play a major role in determining the resilience of a community. This leads to questioning whether it is relevant to only rely on measuring the concept. In general, this line of thinking points out to one direction: resilience is more than the sum of its indicators and, therefore, is a complex concept.

3.2. The Relationship between Resilience and Vulnerability

3.2.1. Measuring Resilience and Vulnerability in the Literature

This section will shed the light on the different vulnerability and resilience models. It will put forth a new resilience model that compliments the others while adding to them. The models presented below present a cumulative look on measuring resilience and vulnerability but none of them takes culture into account.

Measuring Vulnerability

Aside from their definition of vulnerability from a social perspective, Wisner et al. (2004 [1994]) propose two disaster models that help in better understanding risk when it comes to vulnerability analysis. The first model is the Pressure and Release model (PAR model), it is a tool that shows "how disasters occur when natural hazards affect vulnerable people." (Wisner et al., 2004 [1994], p. 50) They characterize vulnerability as deeply anchored in social processes with sources unrelated to the disaster itself. The PAR model is shown below in Figure 3.1. According to the authors,

> The basis for the PAR idea is that a disaster is the intersection of two opposing forces: those processes generating vulnerability on one side, and the natural hazard event (or sometimes a slowly unfolding natural process) on the other. (Wisner et al., 2004 [1994], p. 50)

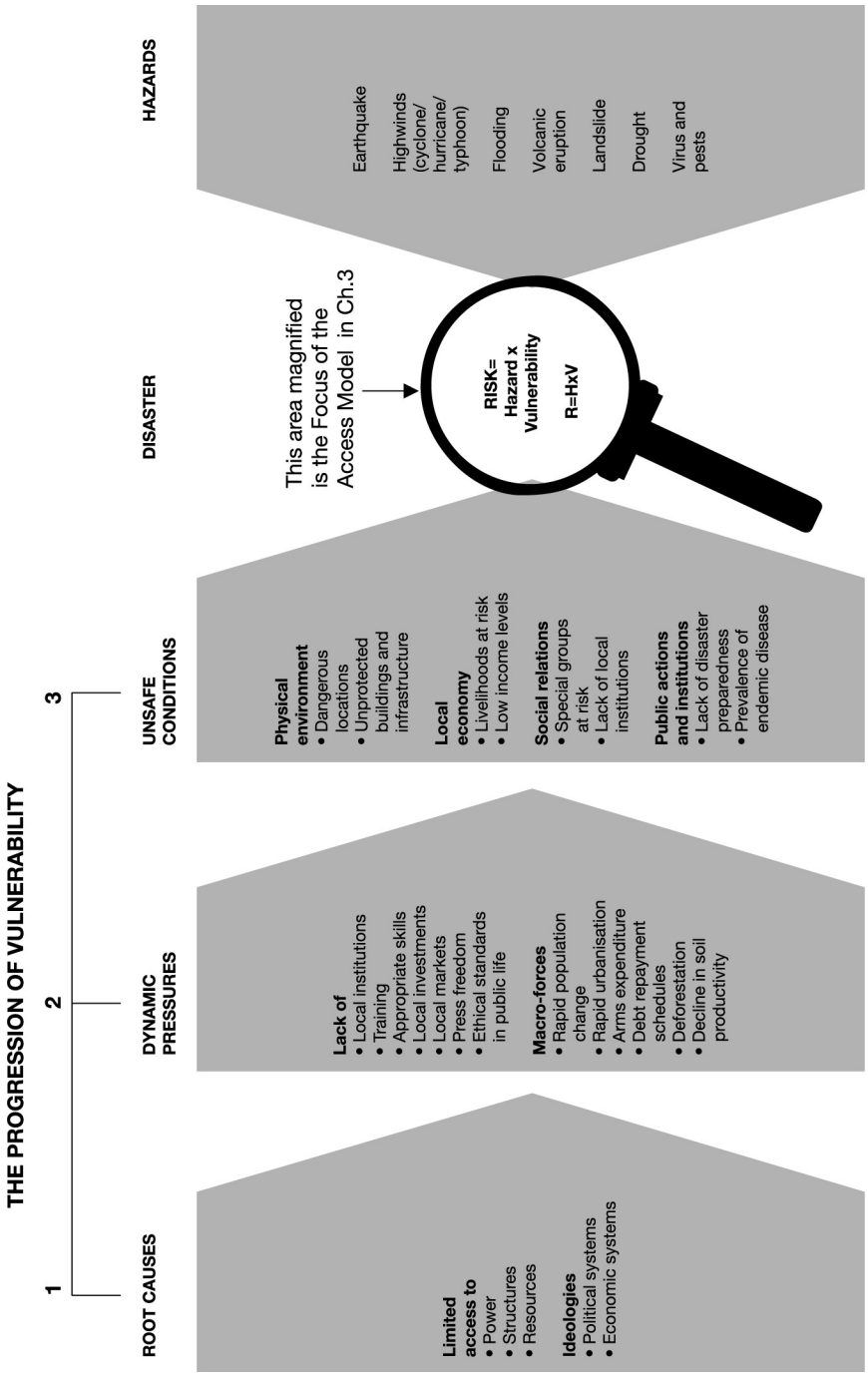

Figure 3.1: Pressure and Release (PAR) model: the progression of vulnerability. (source: Wisner et al., 2004 [1994])

The second model proposed by Wisner et al. (2004 [1994])—that complements the PAR model—is called the Access model. According to the authors, this second model "is an expanded analysis of the principal factors in the PAR model that relate to human vulnerability and exposure to physical hazard, and focuses on the *process* by which the

natural event impacts upon people and their responses." (Wisner et al., 2004 [1994], p. 50) Figure 3.2 is an outline of the Access model with eight boxed that represent "a set of closely related ideas, an event or distinct process." (Wisner et al., 2004 [1994], p. 89) The purpose of the model is to help understand a wide range of social and environmental events, as well as long-term processes that could be associated with a disaster.

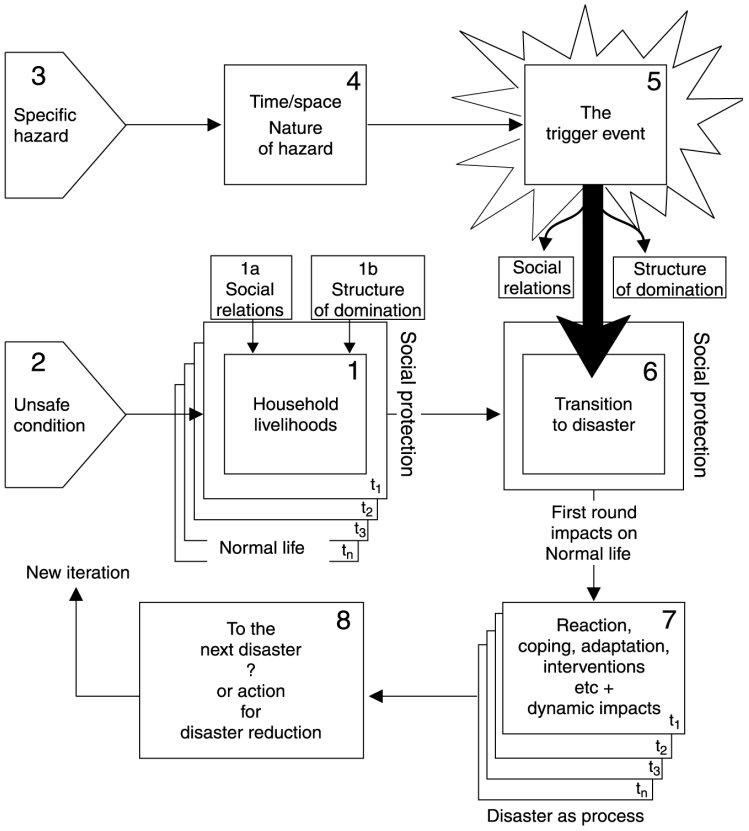

Figure 3.2: The Access model in outline. (source: Wisner et al., 2004[1994])

From another perspective, the model presented by Cutter et al. (2003) is a model that aims at measuring vulnerability with the use of tangible indicators. They present a set of 'concepts and metrics' to define social vulnerability wherein each of these concepts either increases or decreases social vulnerability. They call it the "Social Vulnerability Index" (SoVI). They state that "socially created vulnerabilities are largely ignored, mainly due to the difficulty in quantifying them, which also explains why social losses are normally absent in after-disaster cost-loss estimation reports" (Cutter et al., 2003, p. 243). This method was used on a specific geographic location, targeting mainly the

southeast coast of the United States. The authors compiled indicators and indices that contribute to either increasing or decreasing vulnerability. Although the SOVI method may be a very useful tool, it lacks in data on previous disasters. The authors acknowledge that their model is far from perfect (Cutter et al., 2003). Also, this method is a quantitative one and does not consider intangible elements like place attachment, social networks, cultural identity, and knowledge of previous disasters in their study, even though these elements can contribute to a better understanding of the vulnerability of a community.

Thomas et al. (2012) developed another method to map vulnerability through the use of indicators and indices as well. While the authors based their research on the Cutter et al. (2003) model, their objective is to understand the total vulnerability of the study area. This involved evaluating the risk of flooding due to climate change on the northern shore of the Island of Montreal, the Rivière des Prairies, in Canada. The authors present an approach that focuses on prevention, adaptation, and reinforcing resilience. The process was divided into four steps: 1) provide a historical assessment of previous inundations on the Island of Montreal, 2) develop a model of the level of water reached while the river flooded, 3) analyze the maximum vulnerability of the flooded area with the use of indices, and 4) map the different typologies of vulnerability according to the different flood levels. By using the Cutter et al. (2003) method, a set of initial results stemmed, which led to setting up workshops with the different stakeholders (risk emergency representatives, urban planners, and other people involved in the planning process). A set of indicators were compiled and weighted according to relevance, and to the stakeholders who are familiar with the area and its problems. Relying on an iterative design, the task was to validate the set of indicators put forth by the Cutter et al. (2003) analysis. The results concluded that the iterative method was very similar to the Cutter et al. (2003) method, and it validated the indicators chosen for the study. The most important difference is the implication of the stakeholders; this process made them directly involved, and the maps are used as a reference by the city of Montreal. This iterative planning process and method is helpful to understand the vulnerability and the adaptive capacity of the area to present long-term and efficient solutions. It is also

relevant in terms of mapping vulnerability, and can be a very constructive tool for decision-makers. Although the authors showed initiative in conducting interviews with the stakeholders, they did not take into account the intangible elements mentioned earlier (place attachment, social networks, cultural identity, and knowledge), nor did they conduct interviews with residents in order to assess the vulnerability of the studied community. Also, the methods presented thus far did not consider the historical evolution of social vulnerability and the different decisions that were taken over the course of time; the decisions that shaped the city and are believed to either contribute to the vulnerability of a geographic area or not.

Measuring Resilience

This approach, the first to measure resilience, is presented by Cutter et al. (2010). Their work has been cited 314 times in the literature[5]. They propose a set of 'indicators' to measure resilience, and they adopt the Disaster Resilience of Place method (DROP) from Cutter et al. (2008) for their conceptual framework. The DROP model presents resilience,

> As a dynamic process dependent on antecedent conditions, the disaster's severity, time between hazard events, and influences from exogenous factors. Although conceptually dynamic, immediately preceding the disaster, the degree of recovery leads to the static depiction of the antecedent conditions. (Cutter et al., 2008, p. 604)

The model has multiple advantages as it focuses on the resilience of communities and takes into account scale and temporality; and it aims at natural hazards, resilience at the community level, and the social resilience of place (Cutter et al., 2008). The chosen indicators are divided into subcomponents: social resilience, economic resilience, institutional resilience, infrastructural resilience, and community capital. Each of the subcomponents has variables as to how they affect resilience (positively or negatively).

[5] This information is taken from a search on Google Scholar on April 18th, 2016. According to this search engine, this article has been cited greatly by scholars, thus adding to its relevance.

The authors did not include ecological resilience, as it caused the results to be inconsistent due to the large area of study (Cutter et al., 2010). This method is valuable as one can look at the subcomponents individually or all together, and determine if the study area is resilient, be it only at the level of each subcomponent, or overall. By looking at resilience through the subcomponents, it will be easier for decision-makers to propose the right plan for the affected area and involve the community in increasing resilience where needed. Some subcomponents might show a higher resilience than others, decision-makers can then target these individually and propose a plan to increase their resilience, which saves money and time. Also, the DROP model proved four points: 1) getting all the relevant data can be a challenge and applying the model to all levels of the geography is questionable; 2) the authors mention elements like 'place attachment', 'empowerment', and 'social learning', but yet did not measure them or they propose a superficial way of doing so; 3) they do not take into account the qualitative aspect of measuring resilience by conducting interviews with residents, stakeholders, and local officials; and 4) Cutter et al. (2008, p. 2) argue that "vulnerability and resilience are dynamic processes, but for measurement purposes are often viewed as static phenomena". This leads to a conflicting perspective: if the concept of resilience is perceived as a process, then how can it be static?

A New Resilience Model

Table 3.1 summarizes the approaches presented in this section with the different elements and methods used. All the models presented above have one thing in common: they rely on measurable indicators, along with a quantitative method, to assess the vulnerability or the resilience of a geographic area. The indicators hint towards the state of the community or city at a specific point in time. Hence, they can be used as a preliminary tool to assess the resilience of a community, though they are not sufficient to draw firm conclusions. Another task is to look at how vulnerability and resilience are measured, as both have overlapping indicators. In New Orleans, and more specifically in the LNW, people suffered from "survivor fatigue" and people were no longer interested in sitting-in for an interview. As a result, the attention changed from the residents to the

various stakeholders involved in the neighborhood: planners, city official, NPO representatives, and the residents. This change in perspective helped get a larger look at the reality of the situation. The proposed model (Table 3.1) will rely on the indicators mentioned in the following two sections and by comparing numbers between the years 2000 and 2010, and then propose indicators that are non-measurable, and from which questionnaires will be designed to interview different actors.

Table 3.1: Summary of the different models measuring vulnerability and resilience with the type of indicators and methods. (source: author)

	Models measuring vulnerability or resilience				**Proposed model**
	Wisner et al. (2004) [1994]	Cutter et al. (2003)	Thomas et al. (2012)	Cutter et al. (2010)	Toueir (2015)
Vulnerability	✓	✓	✓	✗	✗
Resilience	✗	✗	✗	✓	✓
Tangible indicators	✓	✓	✓	✓	✓
Intangible indicators	✓	✗	✗	✗	✓
Quantitative method	✓	✓	✓	✓	✓
Qualitative method	✓	✗	✗	✗	✓
Maps	✗	✗	✓	✗	✓

The work conducted in the course of this research aims at contributing to post-disaster research as well as being replicable and applicable to other case studies. By replicating the results onto other communities, this research will help people recover faster, better, and with a more sustainable configuration. The objective is to prove the importance of using cultural elements to the whole process of rebuilding, using tangible and intangible indicators, and involving the community in the decision-making process after a disaster.

3.2.2. A Preliminary Assessment of Resilience with Tangible Indicators

When looking over the different methods of measuring resilience and vulnerability, all the authors mentioned in section 3.2.1 used a series of indicators and indices to break down the different elements they needed to measure. This section focuses on compiling all the indicators that influence resilience (whether negatively or

positively). However, there are different indicators that influence the resilience of a community at a more intangible level which are more difficult to measure quantitatively, and they will be discussed in the next section.

Table 3.2 is the result of the extensive literature review, undertaken in the course of this study, of the indicators affecting resilience. It sums up the indicators proposed by multiple authors, and then categorizes them into four sections: the governance/ institutional level, the social level, the economic level, and the physical level. Many authors scrutinize the indicators that can affect resilience: Pelling (2003), Manyena (2006), Cutter et al. (2003), Wisner et al. (2004 [1994]), Birkmann (2006), Gotham et al. (2011), Gotham (2007b), Gotham (2007a), Dauphiné et al. (2007), Chamlee-Wright et al. (2009). These indicators are of interest for this research. Not only do they contribute to better understanding a city's capacity to withstand and overcome disasters, but they also provide an insight into the different elements that are part of a resilient urban community. These indicators are important at all the aforementioned levels; for instance, according to Pelling (2003) and Cutter et al. (2003); Cutter et al. (2010), the presence of a strong political power increases the resilience of a community because it proves that the government officials are supportive and ready to take charge of the situation. A quick recovery permits for a return to a functional life faster than a slow recovery. Having educated people with higher income and living in structures that are built to withstand certain natural disasters can increase people's resilience, and so on. However, the way these indicators impact recovery may vary, and things can get more complicated depending on the disaster and the context. Therefore, each of these indicators affects resilience differently, some increase (+) it and others decrease (-) it.

Table 3.2: Compilation of tangible indicators that help in an initial evaluation of resilience (source: author)

Indicator	**Source**	**Increases (+) or Decreases (-) Resilience**
Governance/Institutional		
Political Power	Pelling (2003) Cutter et al. (2003) (2010)	(+)
Recovery	Pelling (2003) Cutter et al. (2010) Manyena (2006)	(+)
Coping	Blaikie et al. (1994)	(+)

Indicator	Source	Increases (+) or Decreases (-) Resilience
Preparedness	Pelling (2003)	(+)
Adaptive Potential	Pelling (2003)	(+)
Uncertainty	Pelling (2003)	(-)
Cooperation	Pelling (2003)	(+)
Trust	Pelling (2003)	(+)
Medical Capacity	Cutter et al. (2003) Cutter et al. (2010)	(+)
Participatory Development	Pelling (2003)	(+)
Local Organization	Pelling (2003)	(+)
Prevention	Blaikie et al. (1994) Pelling (2003)	(+)
Auto-organization	Dauphiné and Provitolo (2007)	(+)
Social		
Diversity	Blaikie et al. (1994) Dauphiné and Provitolo (2007) Reghezza-Zitt et al. (2012)	(+)
Coping	Blaikie et al. (1994)	(+)
Social Structures	Pelling (2003) Cutter et al. (2003) Gotham and Campanella (2011) Manyena (2006)	(+)
Livelihood	Pelling (2003) Manyena (2006)	(+)
Gender	Pelling (2003) Cutter et al. (2003) (2010)	Men (+)
Age	Pelling (2003) Cutter et al. (2003) (2010)	Non-elderly (+)
Physical and Psychological health	Pelling (2003) Cutter et al. (2010)	(+)
Place Attachment	Cutter et al. (2010) (Gotham, 2007a, 2007b) Chamlee-Wright and Storr (2009) Vale and Campanella (2005) Falk et al. (2006)	(+)
Cultural Values/ Traditions	Cutter et al. (2003) Manyena (2006)	(+)
Adaptation/ Adaptability	Pelling (2003) Manyena (2006) Gotham et al. (2011) Cutter et al. (2008) Reghezza-Zitt et al. (2012)	(+)
Education/ Knowledge	Dauphiné and Provitolo (2007) Pelling (2003) Blaikie et al. (1994) Cutter et al. (2003) (2010) Manyena (2006) Reghezza-Zitt et al. (2012)	(+)
Social Networks	Blaikie et al. (1994) Berke et al. (1993) Pelling (2003) Cutter et al. (2010) Paton and Johnston (2001)	(+)
Economic		
Income	Cutter et al. (2003)	High income (+) Low income (-)

Indicator	Source	Increases (+) or Decreases (-) Resilience
Wealth	Cutter et al. (2008) Beck (2013 [1992])	(+)
Technology/ Innovation	Cutter et al. (2010)	(+)
Insurance	Pelling (2003) Cutter et al. (2003) (2010)	(+)
Economic Stability	Pelling (2003)	(+)
Household Asset	Pelling (2003) Cutter el al. (2010)	(+)
Employment	Pelling (2003) Cutter et al (2003) (2010)	(+)
Land Tenure	Pelling (2003)	(+)
Susceptibility	Birkmann (2006)	(-)
Poverty	Pelling (2003)	(-)
Physical		
Exposure	Pelling (2003)	(-)
Recurrence	Pelling (2003)	(-)
Resistance	Pelling (2003)	(+)
Security	Pelling (2003)	(+)

Compiling these indicators will eventually allow, through the method proposed later in Chapter 4, an initial analysis of the resilience of the neighborhood of interest—the LNW in New Orleans. Comparing quantitatively (between 2000 and 2010), the gathered indicators with those of the Data Center[6], and more specifically those pertinent to the LNW, will allow for the verification and the confirmation of the applicability of the indicators, while providing a first assessment of the resilience of the neighborhood. This last point will be evaluated again when analyzing the qualitative data.

3.2.3. A Deeper Assessment of Resilience with Intangible Indicators

There are pertinent indicators to resilience that are difficult to quantify, and they can make a community more resilient after a disaster according to some authors (Pelling, 2003; Cutter et al., 2010; Gotham and Campanella, 2011; Gotham, 2007a, Gotham, 2007b, Dauphiné and Provitolo, 2007, Chamlee-Wright and Storr, 2009, Falk et al., 2006, Paton and Johnston, 2001). These indicators are listed in the table below (Table 3.3). These elements are not only part of the cultural landscape (place attachment, roots, identity, social networks, memory), but also they constitute the elements behind an urban

[6] The Data Center: http://www.datacenterresearch.org/

community (auto-organization, social learning/knowledge, empowerment, and diversity). After Hurricane Katrina, people expressed a great need to return and rebuild their homes instead of moving elsewhere, and this took place in the Ninth Ward in New Orleans:

> Sense of place was an important motivator for early returnees. The data also suggests that after suffering an abrupt and often prolonged evacuation experience following Hurricane Katrina, this sense of place was transformed from background context into an important cultural resource. (Chamlee-Wright et al., 2009, p. 615)

From most of the published work on the LNW, only Chamlee-Wright and Storr (2009) use place attachment and identity in a qualitative study to understand the reasons for people coming back to New Orleans after Katrina. Consequently, this is why this research focuses on place attachment, as it plays a primordial role in people's return. In what way, or ways, and what effect does place attachment have on the resilience of a community?

Cutter et al. (2010) quantify the indicators they used to measure resilience. One of these is 'place attachment', and it stands for the "net international migration" and the "percentage population born in a state that still resides in that state". Yet, there is more to place attachment than people migrating from place to place or those born and still residing in the same city. These can give an indicative perspective of the state of place attachment, but they cannot give a comprehensive view. Place attachment is something that is constructed over time and accompanied by social networks, whether formal or informal. The latter plays an important role in reinforcing the attachment people have with their home, community, and environment. Place attachment is very closely knit to social networks, to cultural identity, and to memory, and these are difficult concepts to assess quantitatively.

As for the other authors mentioned in Table 3.3, they mention these indicators to reinforce their arguments, but they do not go in depth on how or why they impact

community resilience. Thus, the objective here is to understand the role these indicators play, and whether they increase, or decrease the resilience of a community. It will also be verified if social networks (formal or informal) allow for a faster adaptation and re-bouncing after a disaster disrupts the course of people's lives.

Table 3.3: Intangible indicators that play a role in a better evaluation of the concept of resilience (source: author)

Indicator that affect resilience	Source
Place Attachment	Cutter et al. (2010) Gotham (2007a) Gotham (2007b) Chamlee-Wright and Storr (2009) Vale and Campanella (2005) Falk et al. (2006)
Roots	Chamlee-Wright and Storr (2009)
Identity	Chamlee-Wright and Storr (2009)
Social Networks	Blaikie et al. (1994) Berke et al. (1993) Pelling (2003) Cutter et al. (2010) Paton and Johnston (2001)
Memory	Dauphiné and Provitolo (2007) Colten and Sumpter (2009) Ripley (2008)
Auto-organization	Dauphiné and Provitolo (2007) Dauphiné et al. (2013) Klein et al. (2003)
Social Learning/Knowledge	Cutter et al. (2008) (2003) (2010) Dauphiné and Provitolo (2007) (2013) Gotham et al. (2011) Dauphiné and Provitolo (2007) Pelling (2003) Blaikie et al. (1994) Manyena (2006) Reghezza-Zitt et al. (2012)
Empowerment	Cutter et al. (2010)
Diversity	Blaikie et al. (1994) Dauphiné and Provitolo (2007) (2013) Reghezza-Zitt et al. (2012)

In this research, the combined indicators (tangible and intangible) will be looked at in two different ways: first, by using the indicators proposed by the authors mentioned above and by the Data Center, numbers will be compiled and compared between 2000 and 2010 to give a preliminary assessment of the state of the neighborhood (before and after the devastation). Second, use the intangible indicators mentioned in Table 3.3 to formulate questionnaire interviews with the residents of the LNW, stakeholders, and local officials. This will allow for an evaluation of the resilience

of the neighborhood via intangible indicators in order to compare the two and provide an answer to the research question proposed in this dissertation.

3.2.4. The Relationship between Resilience and Vulnerability

Why is it important to talk about the nature of the relationship between resilience and vulnerability? This relationship is a complex one and has been debated by many. Some argue that they are opposite concepts; others state that they complement each other (Cutter et al., 2008). In this research, the main reason for understanding this relation is related to the fact that before using the term resilience, the term vulnerability was the one that took all the attention. Only in recent studies did resilience take over and became a common buzzword in disaster research. Some researchers have open debates about how the relevancy of the concept. A research group at the Université de Montréal (The Disaster Resilience and Sustainable Reconstruction Research Alliance – Oeuvre Durable; and Information and Research for Reconstruction – I-Rec) posted an online debate with the following question: "Is the concept of resilience useful in the fields of disaster risk reduction and the build environment or is it just another abused and malleable buzzword?" The outcome of the debate can be found on the following link (https://oddebates.wordpress.com/second-debate/). In the debate, people voted either 'yes' or 'no' before and after the debate on whether the concept is useful or not. Initially, the majority of the votes were 'yes', and when the debate was over the results were switched and the majority voted 'no'. With such changing results, most of the comments underline the usefulness of the concept. In conclusion, the moderator, Prof. Lizarralde, closes the debate the following statement, which only shows that the concept is still a topic of interest and that it is still relevant.

> The concept's deeper value seems not to be intrinsic, but the result of contextual, dynamic conditions in the implementation and interpretation of it. Even its originality and metaphorical significance seem to be questioned. Contrary to the

original question proposed in the debate, the results reveal that the concept can be useful even if it has been abused, and even if it is malleable, and slippery.[7]

Also, both concepts—vulnerability and resilience—share common indicators that affect them differently. Therefore, it is important to understand their similarities and differences. The intent here is to grasp the relationship between these two concepts in order to come closer to a better comprehension of the concept of resilience.

Barroca et al. (2013) acknowledge the presence of a relationship between vulnerability and resilience, thus they compile quantitative data with two of the most reputable search engines: Web of Science and Factivia. Web of Science is a research platform that gives access to published articles and usually aims at an academic audience. Factivia is a research tool that gathers data and information from multiples sources (private and public companies) and it targets a wider audience. The data collected focused on figuring out the number of times the concepts of vulnerability and resilience are used in each of these search engines. In addition, the search was narrowed down to the use of these concepts in the specific disciplines of geography and planning. The timeline of the search was from the early 1990s until 2013. The authors show that—in the case of Web of Science—the concept of vulnerability (over 300 times) is used more than resilience (over 50 times) in the literature. But what was noticeable is that both concepts were drastically more used after 2005. This is explained by the fact that disaster research started focusing more on these concepts, therefore publishing more on the topic. As for the other search engine—Factivia—it showed that both concepts are exponentially used more, and vulnerability is used more than resilience up until 2010 (where both concepts were used between 8,000 and 11,000 times), but then it got reversed and resilience is used more. This is explained by the fact that both concepts are of interest to researchers as well as to people outside of the research world. One of the hypothesis that Barroca et al. (2013) raise is: "in order to exist, the concept of resilience

[7] Refer to the following website for the whole debate, votes, and arguments: https://oddebates.wordpress.com/second-debate/

is transformed to be closer to the notion of vulnerability."[8] (p. 5) According to the authors, the concept of resilience takes the place of what vulnerability was a few years ago. Yet they acknowledge the fact that since their respective origins, there has been a noticeable difference between the two. In their opinion, resilience is a quality whereas vulnerability is a state. And the common element between the two definitions is the 'capacity to cope'. In addition, the authors argue that what differentiates resilience from vulnerability are the synonyms of each. Resilience is linked to persistence, resistance, adaptation, flexibility, elasticity, etc.; whereas vulnerability is associated with fragility, sensibility, weakness, deficiency, traumatism, etc. According to the authors, resilience and vulnerability cannot be substituted, as they presume neither the same factors, nor the same etymologic and semantic dimensions (Barroca et al., 2013).

Manyena (2006) presents in his article many authors' perspectives (refer to Tables 2.1 and 2.2 in Chapter 2), and he focuses on defining the term resilience and whether or not it is the opposite of vulnerability. In order to do that, he presents tables summarizing the different definitions of resilience, and he presents vulnerability under two categories: one in relation to disaster resilience, and one that looks at vulnerability from a different perspective, one which is not necessarily in relation with resilience. Also, the author concludes in his article that "two views have emerged: one sees disaster resilience and vulnerability as factors of each other, while the other sees them more as separate entities." (Manyena, 2006, p. 443)

Cutter et al. (2003) talk about social vulnerability and present the different 'factors' that influence this concept. These factors either increase or decrease 'social vulnerability'. Also, Cutter et al. (2008) argue that "resilience and vulnerability as separate but often linked concepts", and they explain in multiple diagrams how the literature looks at the relation between 'vulnerability', 'resilience', and 'adaptive capacity' (Cutter et al., 2008). In a later article, Cutter et al. (2010) present 'indicators' that influence resilience, and some of these indicators are the same. Therefore, if the same

[8] Free translation by the author. Original quote "Pour exister, le concept de résilience s'est transformé pour devenir très proche de la notion de vulnérabilité"

elements that increase resilience also decrease vulnerability, there clearly is an existing relation between the two concepts. But what is the nature of this relation?

Gotham and Campanella (2011) acknowledge the fact that resilience and vulnerability are related concepts and coupled with adaptation and transformation, they all presented opportunities and challenges in the face of the aftermath of Hurricane Katrina. This was especially true when the recession started in 2008, and the British Petroleum (BP) oil spill of 2010 took place. The authors argue, "resilience and vulnerability are not antonyms. Rather urban ecosystems exhibit both vulnerable and resilient qualities that are oftentimes products of past and present cross-scale interactions" (Gotham et al., 2011, p. 4). In sum, the authors believe that a city has both, vulnerable and resilience components. It will be discussed later that time is the main element that determines if an urban community is either vulnerable or resilient.

In conclusion, the respective definitions of these two concepts are highly contested and subjective; it is challenging to find one way that is commonly approved and agreed on. For the purpose of this research, the relationship between resilience and vulnerability is considered an intricate one: they are not separate, they are not opposite, but yet they are linked. The indicators affecting them respectively are reciprocal, but the concepts are not. For instance, if a government has a weak political power, a weak economy, or broken social structures or a combination of these, and is not well prepared, then these indicators reinforce the vulnerability of the area. If it is the opposite—a government with strong political power, is well prepared, with a strong economy, and with strong social structures—these indicators play a positive role in enhancing the area's resilience. Therefore, vulnerability is perceived as a state that can be evaluated and measured by a set of indicators (these indicators can change depending on the type of disaster and where it takes place), whereas resilience is a continuous process that is not necessarily evaluated or measured only by a limited set of indicators; resilience is more than the sum of the indicators affecting it.

This makes resilience an even more complex concept to look at, because time makes it a 'continuously-evolving' concept. In this case, vulnerability can be part of the

resilience process: communities can be both vulnerable and resilient when facing a calamity, but in order for a city to be resilient, it should be aware of its vulnerability. Before a disaster, a city can predict how vulnerable it is depending on the nature of a disaster by putting together a set of indicators and measuring its vulnerability. This way, it can limit the consequences of the disaster by having a good understanding of its weaknesses. But it is different with resilience. It is more difficult to predict how resilient a city is, and it is only after the fact that a city discovers its strengths. It is a process that takes place over a long period of time, and the timeframe can vary from city to city and from urban community to another.

3.2.5. The Impact of the Cultural Landscape on Resilience

The reason why it is important to talk about the cultural landscape when resilience is at stake is because the landscape that is inhabited by people has been modified to fit their needs. When a community's resilience is evaluated, then the cultural landscape becomes a primordial element of a community's come back.

When the focus is on resilience, the element of culture becomes of interest at it plays a role in better understanding how communities behave in a disaster situation. As portrayed earlier, the intangible indicators affecting resilience are part of the cultural landscape (Figure 2.6), which leads to the conclusion that resilience and the cultural landscape are related. Since the cultural landscape is unique to each community, neighborhood, and city, it is difficult to define the relationship between resilience and the cultural landscape in a non-abstract manner.

As stated in the above section, 3.2.4, resilience is perceived as a continuously evolving process that changes over time, and is affected by different indicators. Due to the fact that the intangible indicators affecting it are part of the cultural landscape, this implies that understanding the cultural landscape is crucial as it leads to a better understanding of the resilience of a community. Therefore, the cultural landscape is not part of resilience, but it compliments it, especially when urban communities are at stake. Scholars certainly need to familiarize themselves with the cultural landscape, what it stands for, and how it came to be what it is in order to see how it can affect resilience. In

the case of the LNW, the social networks prior to Katrina were already very strong, but they were shattered after the Hurricane, and that makes them an interesting element to research. It doesn't necessarily mean that the cultural landscape will only affect resilience positively; it can also affect it negatively, and this will be the subject of this research where the focus is on whether the cultural landscape strengthened the resilience of the LNW, weakened it, or both. This investigation focuses on components of the cultural landscape: place attachment, social networks (formal and informal), cultural identity, and memory; and on components of the community: empowerment, diversity, auto-organization, and knowledge/ social learning.

3.3. Resilience: Is it a Complex Concept?

3.3.1. How do Time and Space Affect Resilience?

Since resilience is a continuously evolving concept then the element of time plays an important role in determining the resilience of any community. And how resilience impacts the spatial configuration is also to be taken into account. Time and space go hand in hand in post disaster situations, especially when resilience is at stake. Besides, understanding how time and space impact the level or resilience adds to the complexity of the concept.

Time and Resilience

As discussed in section 3.2.4, the relationship between resilience and time, and between resilience and space, is an important one. It remains very challenging to predict the resilience of an area prior to the occurrence of a disaster. Consequently, it can only be evaluated after the calamity takes place. The location of resilience according to the scale of time is a crucial one. Resilience is part of any community or city and it is always present (Reghezza-Zitt et al., 2012). It only manifests itself at the moment the disaster starts, and it can change to any level depending on the area and the nature of the event. In this research the concept of 'state of resilience' will be used. The state of resilience is the previously established ability of an individual, community, or area (an ability they did not know they had until after the event takes place) to resist or withstand a disaster.

For example, if a person does not die, a home is partially or not destroyed, or an area resisting harsh conditions, then these are signs of an already existing resilience—a state of resilience—one which has its roots long before the disaster actually took place. This can be explained by the following: a specific know-how from the individual about survival, a home that was built with resisting materials, or any other factor that can increase the survival rates of individuals or physical structures. Yet, the consequences of the event and the decisions made after the occurrence of the disaster do not necessarily imply that the individuals, communities, or cities are more or less resilient as it is all a case-by-case scenario.

Another reason why time is of importance to understanding resilience is because the data was collected seven years after the hurricane. All along this time span, many changes took place in New Orleans and in the LNW. Most researchers look at a post-disaster situation immediately after the occurrence of the calamity. As much as it is important to assess the situation right after the disaster takes place, it is even more valuable to look at the area years after the dust has settled. In the case of the LNW, the importance of social networks and place attachment appeared only years after Katrina. This is due to the fact that even if the area has not been rebuilt, it is the strong ties and networks that keep people from leaving the LNW. If these social networks did not exist, the local government as well and the residents would have left behind the whole area. As it turns out, the residents' attachment to their community and their neighborhood revealed the capacity of people to face multiple obstacles just to fight and stay in the LNW.

According to the Encyclopedia of Natural Hazards, there are multiple phases in disaster management, and they include: 1) mitigation, 2) preparedness, 3) relief, or response, and 4) recovery (Bobrowsky, 2013). Throughout each one of these phases, things change, and so does resilience, which reinforces the argument that resilience evolves over time. Also, some authors acknowledge three temporalities of resilience: 1) short-term resilience: rebuilding infrastructures and networks, 2) medium-term resilience: return of the inhabitants and re-stimulate the economy, and 3) long-term

resilience: social and cultural development (Maret & Cadoul, 2008; Oliver et al., 2014). Also, other authors refer to the temporality of resilience as three distinctive states, "a definitive disappearance, the survival of the system as it was, and a structural change that corresponds to a radical structural change of the system." (Reghezza-Zitt et al., 2012, p. 3)

Resilience cannot be a static concept. From the moment any disaster strikes, a community's resilience is put to the test. With an existing state of resilience, resilience itself is put to the test from the moment the disaster takes place until it ends, and long after the dust has settled. Dealing with all the consequences that come after a calamity, whether it is the physical destruction or the personal loss, and overcoming all the adversity that arise along the way to finally find a balance where the whole experience is part of a distant past. The newfound balance is not necessarily similar to the one before the disaster; it is a new form of equilibrium. In this research, the aim is to reach a better and more sustainable balance where the same mistakes will not be repeated.

Levels of Geography and Resilience

As it is with time, resilience changes with the different scales as well. Nelson et al. (2007) point in their article, the rebuilding process happens at three scales: (1) the individual/household level, (2) the neighborhood level, and (3) the citywide level. Also, the rebuilding process is part of evaluating the resilience of a city and since rebuilding takes place at three scales, resilience changes according to the different scales as well. This research proposes looking beyond these three levels. With resilience being a broader dynamic than the rebuilding process per se, it varies over more than the three scales mentioned earlier. Therefore, the following explains how resilience takes place at multiple levels, and Figure 3.3 summarizes it:

- **At the individual level:** people deal and react to disasters in different ways. There is the resilience of the individual and the resilience of the individual in regards to others, as two people cannot be equally resilient.

- **At the household level:** the rebuilding of each household happens in different ways. This process varies according to insurance, wealth, health, and local authority's involvement. Since people function as a community, the rebuilding of residential homes creates a domino effect whereby the more homes are rebuilt, the more they will promote and incite others to rebuild.
- **At the neighborhood level:** there are many elements in a neighborhood (residences, commercial areas, services, etc.), and things can vary depending on old or new zoning laws and on new rebuilding plans. The neighborhood is directly affected by the local economy, the existing social structures, and the political and government involvement.

  Also, different neighborhoods rebuild themselves either differently or at a different speed, which implies that the resilience of one neighborhood could be different from the resilience of another. For instance, the rebuilding of a city's financial district or downtown will be faster than the rebuilding of a residential neighborhood. A rebuilt financial district or downtown helps in promoting recovery and job creation, therefore boosting the economy.
- **At the city level:** with neighborhoods rebuilding themselves differently and at a different pace, then the resilience of the whole city varies. The relationship of the city to its neighboring cities plays an important role in accelerating or decelerating the rebuilding process, thus affecting its resilience. Also, the resilience of a city is directly related to the image it portrays, the economy it wants to have, and the political structure it aims for.

  Also the resilience of a city is impacted whether it lost a big part of its population or if it is receiving a large number of people from another city.
- **At the state/province level:** depending on the disaster that took place and the presence of a state/province (if it applies), the resilience of a state is affected especially at the economic and political levels, especially in the case of a large population migration.
- **At the country level:** depending on the disaster that took place and the size of the country, a disaster can affect the whole country or only a part of it. And

depending on these factors, the resilience of a country can vary. For example, it varies if the disaster destroyed a large portion or not, because then the resources can be allocated to the affected areas. If most of the country is destroyed, the circumstances call for a state of emergency and for international help, which can delay the rebuilding and recovery process.

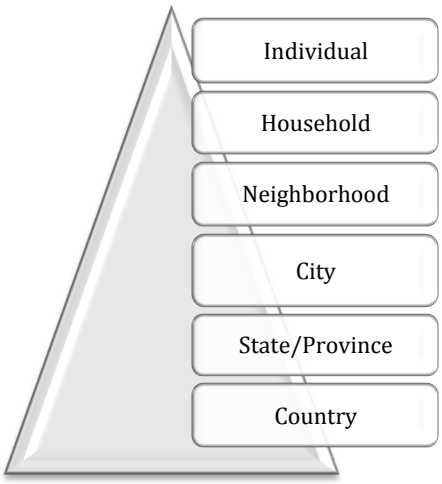

Figure 3.3: The different scales at which resilience varies: the individual level, the household level, the neighborhood level, the city level, the state/province level, and the country level. (source: author)

This research aims at taking all the information proposed and understand resilience at the different scales where it comes at play so as to highlight the lack in data when it comes to disaster research. This especially applies when it comes to taking cultural identity into consideration. Here are two examples that demonstrate the manner in which different scales impact on the level of resilience. The first example is Hurricane Katrina in New Orleans (2005). The calamity caused direct physical damage to a few cities in the south east coast of the U.S., and the consequences had a direct impact on the neighboring cities and states, with the whole country being affected indirectly, as it did not affect the functionality of the government. The second example is the earthquake in Haiti (2010) where a large portion of the country was destroyed by the impact of the earthquake and its aftershocks. The level of devastation directly affected the whole country at all levels, rendering the government almost entirely dysfunctional for an extended period of time. Not enough research has been done on the importance of scale

on post-disaster research. This research aims at proposing an overall perspective on the concept of resilience with all the elements affecting it, as well as opening new doors for new research perspectives.

There is a gap in the literature when it comes to relating resilience to the different scales of the geography. One of the limitations this research faces is to evaluate precisely the manner in which the different scales affect resilience. Yet it is important to take these variations into account for two reasons: 1) because it allows grasping the disaster situation with all its complexity, and 2) because it can be the subject of future research projects. In this dissertation, the choice of study is on one neighborhood, the LNW, and thus the study will be focused on the individual, the household, and the neighborhood level. Yet, it is of great significance to relate the LNW to the rest of the city and the impact it has on the resilience of the city, especially with all the nationwide attention this neighborhood received over the years following Katrina.

3.3.2. Is Resilience a Measurable Concept?

"Risks and catastrophes are complex objects"[9] claim Dauphiné et al. (2013, p. 10). Complexity can originate from the large number of components making a system, be the result of a non-linear evolution of a relatively simple system, and result from the combination of multiple spatial scales or organizational levels. This research argues that the concept of resilience is more than the sum of its indicators. It remains a highly contested concept, especially along these lines: 1) the continuous debate about it being a process or an outcome, 2) measuring it and quantifying it with tangible indicators, 3) adding to that the intangible indicators and the cultural landscape, and 4) the elements of time and space. All these combined render the concept of resilience a complex one that is hard to measure. As Morin (2008 [1990], p. 5) states, "What is complexity? At first glance, complexity is a fabric (complexus: that which is woven together) of heterogeneous constituents that are inseparably associated: complexity poses the paradox of the one and the many."

[9] "Les risques et les catastrophes sont des objets complexes", translation by the author.

He also adds that complexity has two faces: one side is the "fabric of events, actions, interactions, retroactions, determinations, and chance that constitute our phenomenal world", and the second being a messy face that is responsible for the lack of order and certainty. In his opinion, "The necessity of knowledge to put phenomena in order by repressing disorder, by pushing aside the uncertain (…), to select the elements of order and certainty, and to eliminate ambiguity, to clarify, distinguish, and hierarchize." (Morin, 2008 [1990], p. 5)

And this way of presenting complexity is applicable to resilience, where the complexity of resilience renders it a phenomenon of interwoven elements. This complexity represents the strength, the return, the bounce back/forward of a community that underwent extreme conditions and difficulties. Yet, it can encompass so much chaos and uncertainty that it makes it even more problematic to fathom. And knowledge should help in determining the elements of order and clarity, and repress the elements of disorder and ambiguity. In addition, this chapter shows how challenging is the task of determining the resilience of a system, which emphasizes its complexity. Also, Reghezza-Zitt et al. (2012) state that there are no satisfactory way to present a resilient system,

> It becomes evident that, to be resilient, a system must, at the same time, be redundant, diversified and efficient; autonomous and collaborative; stiff, flexible and adaptable; capable of learning from the past and to face future uncertainties; etc., which, every time is evidently contradictory and do not, in the end, allow to find satisfying solutions, either from a heuristic or an operational point of view. Reghezza-Zitt et al. (2012, p. 8)

As shown in section 3.2.1, some authors have tried to measure and quantify resilience. It is important to look at this concept in a holistic manner, which involves taking into account non-quantitative elements. There are too many factors that contribute to its evolution, and trying to assess them through purely quantitative means is a very challenging task. Other than the multitude of indicators, tangible or intangible, there is the element of time. Due to its continuous nature, it makes resilience an evolving concept. So, how do we measure such a concept? Also, the element of space and the scale

used to measure or evaluate resilience, play both a very important role in determining how the concept is perceived. Do we try to measure resilience at every scale or different timeframes? After all, maybe measuring resilience is not the most efficient way to understanding the concept in its fullest. A distinction should be made between the concept and the tool. The process of measuring resilience should be considered a tool while the concept of resilience is a continuously evolving one. This research positions itself with the latter. The methods presented earlier are relevant to show an aspect of resilience, at a very specific time and place, and should be considered a preliminary indication of how a community is doing after the occurrence of a disaster. This, however, is insufficient. After compiling the indicators relevant to the case study, more thorough and in-depth interviews had to be conducted with both the community at stake and with the implicated stakeholders in order to have a proper assessment of the overall resilience of the community, the neighborhood, and the whole city.

3.4. Elements to Retain

In this chapter, the focus is geared on the concept of resilience and how it is looked at in regards to disasters, and all what subsequently comes. In Chapter 2, the highlight was on the existing literature and the (too many) definitions of the concept. Here, the emphasis is on looking at resilience from all angles, which includes the various methods used to measure it, its relation to vulnerability, and the way it relates to time and space. Resilience, as earlier mentioned, is more than the mere sum of all its parts. Beyond the theoretical groundings, this research emphasizes the fact that resilience is affected by the cultural landscape and intangible elements. The aim here is to propose a new way of looking at community resilience and to consider the extent to which place attachment, social networks, cultural identity, and memory can contribute to rebuild stronger and empowered communities that are more informed and built on know-how.

By acknowledging the inherent complexity of resilience, the concept takes on a fuller meaning. This indicates that disaster researchers should take a step back and re-evaluate the concept. Thus far, the studies referring to resilience have taken the concept for granted and undermined it.

It is important to look at resilience from a holistic perspective, one in which measuring it through quantitative data alone is insufficient to conceptualize the concept. Of course, even if this chapter criticizes the different methods of measuring it, they admittedly are essential in providing an early understanding of the state of any community or city at stake. However, such data by itself is not sufficient in fully evaluating resilience, whether through the use of practical tools or conceptual ones. In addition, understanding the relation that resilience has to vulnerability and to the cultural landscape leads to a better comprehension of the elements contributing to increasing or decreasing it. This research proposes to look at vulnerability as a state that is part of resilience, and by doing so, it becomes not only an easier concept to measure, but it provides an indication of the state of the community prior to the disaster. As for the cultural landscape, it helps in determining the cultural elements that constitute a community, which will determine the elements that contribute (or not) to the return and the rebuilding of a community. Also, at the community level, this cultural landscape reinforces elements like: empowerment, social learning, knowledge, diversity, and auto-organization in order to help citizens be more knowledgeable and independent, while taking matters into their own hands. Researchers should look at the tangible and measurable indicators as well as the intangible indicators (place attachment, memory, social networks, etc.), time, and scale as all these elements affect how resilience is evaluated, thus perceived.

Disaster research should be geared toward improving people's lives and providing a safe and stable environment for people to thrive in. When the citizens of a particular city or community suffer due to a disaster, they should not have to worry about how to come back and rebuild. This is where disaster research intervenes. This research demonstrates that measuring resilience is not enough to tackle the complexity of a post-disaster situation, and there are many more elements to take into account, particularly the elements of the cultural landscape, because they help people recover and settle back into their neighborhood and home while maintaining their social networks. Such a perspective puts the focus on resilience and the elements that affect the concept

at the operational and at the theoretical level. Using the LNW as a case study provides a genuine application of how the concept can be used constructively and coherently.

Chapter 4: Using Mixed Methods Research Design

4.1. Overview

This chapter focuses on the methodological approach, process, and methods used in the course of this research. The attention is geared on the period post Hurricane Katrina. The data collected is both qualitative and quantitative, but the author uses the terms primary and secondary data (this will be explained further in section 4.4.2). In Chapter 3, the author showed the importance of time in disaster research, an element that is also pertinent when tackling the methodology process. Time is critical as researchers may focus on: 1) the period before the event, 2) the timeframe of the event, and 3) the period following the event. As noted by Pigeon (2002), and other multiple authors (Chardon et al., 1994; D'Ercole et al., 1994; Maret & Goeury, 2008; Thouret et al., 1996), using an *a posteriori* approach is most relevant to evaluate the vulnerability of a geographic area (a neighborhood or a city) when studying disasters. Although it is opportune to review all three periods, this research aims at putting the most attention on the period post Hurricane Katrina, while using a mixed method design. This method aims at providing a more cumulative perspective on the LNW, along with a possibility for data triangulation for validation purposes.

The main contribution of this methodology helps mainly in answering the research question regarding the relationship between place attachment, social networks, and memory with the creation of resilient communities. Consequently, such a choice of methods brings about more comprehensive sets of results for a very complex situation, thus simplifying it. The aim is to look at the cultural landscape and at the elements that constitute it in order to evaluate how they affect community resilience. This is also done for the aforementioned purpose of highlighting the importance of taking into account cultural elements in post-disaster research, for planners and decision-makers tend to disregard them. The dissertation points out these elements and shows how much they contribute to people's returning when their home is completely devastated. Therefore, the cultural landscape plays a role in promoting community resilience and a mixed

methods design helps in reaching such a conclusion. But to what extent does place attachment/topophilia and social networks contribute to rebuilding a community?

This research study focuses on the LNW after Hurricane Katrina, and the majority of the data was collected during the summer of 2012. The following section provides a theoretical and a practical explanation for the methodological choice. Also introduced are the method used, the obstacles faced during the process of gathering the information, along with the data and how it was collected.

4.2. The Theoretical Reasoning behind The Methodology

4.2.1. A Theoretical Perspective

> "Study what interest and is of value to you, study it in the different ways that you deem appropriate, and utilize the results in ways that can bring about positive consequences within your value system."(Tashakkori et al., 1998) (p. 30)

For the purpose of this study, a mixed methods research approach has been adopted. Creswell et al. (2007) define this method as a research design with anchored philosophical assumptions and a way to research a specific problem. The author states that as a methodology, it relies on philosophical assumptions that "guide the direction of the collection and analysis of data and the mixture of qualitative and quantitative approaches in many phases in the research process." (Creswell et al., 2007, p. 5) Mixed methods research promotes the collection, analysis and mixing of both types of data, all of which can be done in one case study or in multiple case studies. The author states, "its central premise is that the use of quantitative and qualitative approaches in combination provides a better understanding of research problems that either approach alone." (Creswell et al., 2007, p. 5)

Mixed methods research was relatively new when compared to the commonly recognized qualitative and quantitative methods, but researchers have used it extensively over the past twenty or more years. And now, it is a widely accepted methodology in social science and in planning studies. This choice of method is justified

as follows: 1) mixed methods research fills in the gaps that qualitative and quantitative research cannot fill, 2) it offers more exhaustive evidence when studying a research problem than the other methods, 3) it helps in answering research questions that qualitative and quantitative cannot do alone, it encourages the usage of multiple paradigms, 4) and it is 'practical' where the researcher has the freedom to use any method when dealing with a research problem (Creswell and Plano Clark, 2007). These are important points for a research project such as this one, as it allows the researcher to use all types of data that help in understanding the problem. Since Hurricane Katrina, many researchers have worked and published about New Orleans and the issues that came out as a result of the storm. The author's intent is to take all relevant data into account so as to get a more holistic perspective on the LNW.

4.2.2. Pragmatism behind Mixed Methods Research

Philosopher Charles Sanders Peirce founded pragmatism in the nineteenth century. He borrowed the term from Kant and interpreted it as his own in the realm of scientific investigation. Several authors followed his footsteps, among them were: William James, John Dewey, George Herbert Mead, and Arthur F. Bentley. The figure below (Figure 4.1) presents briefly the historical development of pragmatism: the authors/founders, the different theories influencing it, and how it impacted the research field (Maxcy, 2003). According to Tashakkori et al. (1998, 2003), there are multiple reasons why pragmatism is the paradigm behind mixed methods research: 1) pragmatism encourages the usage of qualitative and quantitative research in a single study and at multiple levels of the research, 2) pragmatism gives more value to the research question than the method used, 3) pragmatism refutes the 'incompatibility thesis' and is open to both points of views: constructivism and positivism, 4) the choice of methods to be used depends solely on the research question, and 5) pragmatism has a 'practical' and applied research philosophy.

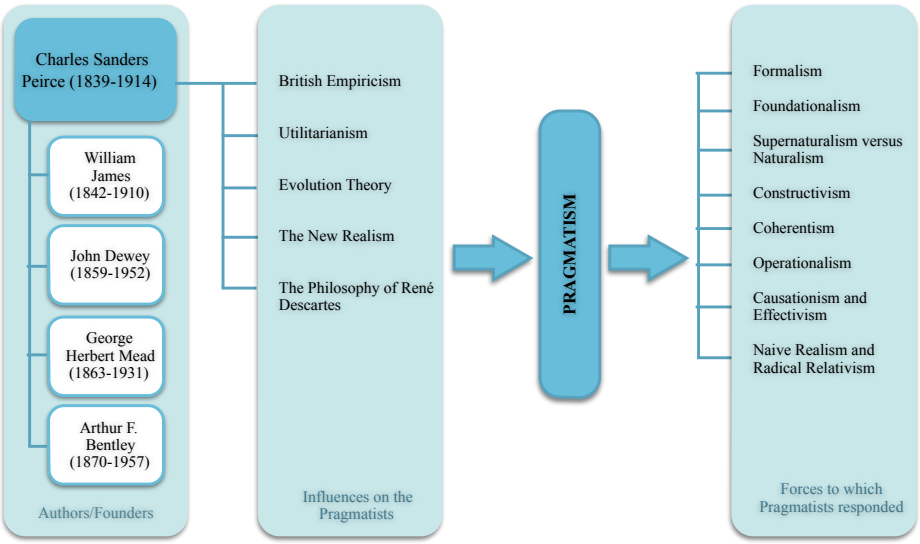

Figure 4.1: The origins of Pragmatism (inspired by Maxcy (2003))

4.3. Methodological and Data Collection Process

4.3.1. Initial Research Intentions and Assumptions

Before going to New Orleans to collect the data, the assumption that gathering the information needed to complete the research was going to be available and easy to find was misleading. To answer the research question 'what is the role of place attachment and social networks in the creation of resilient urban communities in the Lower Ninth Ward after Hurricane Katrina?' the initial design was to follow a mixed method research strategy. The intentions were to interview the residents of the LNW and present the facts from their perspective and point of view. The target was to interview 50 to 60 residents and collect surveys about each, and to gather statistics about the neighborhood. The goal was to talk to as many people as possible: children, young adults, adults, and elderly in order to get the most accurate perspective and to be able to portray the reality of the situation. If time permitted, the researcher hoped to gather the same residents into focus groups and collect road maps so as to identify the neighborhood through their eyes and experiences. Soon after the study began, it became clear that answering the research question needed a thorough look at other sub-questions. To evaluate the strength of

place attachment and the social networks, the author had to answer to the following questions:

- Why is the LNW behind in the rebuilding process?
- How were the social networks formed in the LNW? What is the relationship between social networks and place attachment in the LNW? And how are both elements a symbol of strength?
- What are people attached to in the neighborhood? Their home? Their family?
- What was the cultural landscape before the hurricane? And after?
- Why are people still fighting to return and rebuild?
- What is the role of planners, non-profit organizations (NPOs), and city officials in the rebuilding process?

The plan was to enter the neighborhood by the door of two non-profit organizations (Lowernine.org and Lower 9th Ward Neighborhood Empowerment Network Association - NENA), and do some volunteer work in order to gain their trust. Through the help of Professor Michelle Thompson (Associate Professor, University of New Orleans), contact with key people had been established while still in Montreal, and appointments were taken from them so that the data collection process could start as soon as possible. Soon enough, it was clear that there was some resistance from the NPO representatives, and things needed to be handled differently once in NOLA.

4.3.2. Ethics in Research

With a case like post-Katrina New Orleans, and more specifically the LNW, ethical approval was a required and very important part of the research process. The researcher needed to take into account the trauma that the interviewees had gone through and special care had to be considered as not to harm the citizens. According to Creswell et al. (2007, p. 113),

> Researchers need permission to collect data from individuals and sites. This permission can be gained at three levels: from individuals who are in charge of

sites; from people providing the data (and their representatives, such as parents); and from campus-based institutional review boards (IRBs).

Also, the author was aiming at interviewing young children. According to the ethical boards of both Université de Montréal (UdeM) and University of New Orleans (UNO), these were considered a vulnerable population, which required a special committee for approval. The researcher had to get both institutions' ethical approval in order to proceed with the interviewing process. To get IRB approval, UNO required a certificate of completion from the National Institute of Health (NIH) on behalf of the Primary Investigator (Michelle Thompson) and both Co-Investigators (Nada Toueir and Isabelle Thomas). This required taking an on-line course about "Protecting Human Research Participants" (refer to Appendix B for copies of the certificates). Both institutions required a special committee to approve the ethical certificate due to two reasons: 1) the trauma and the loss that the citizens have been through was very significant, and 2) the interviewing of minor children is a very delicate matter in social sciences (refer to Appendix B for copies of ethical board approvals). Both institutions took the issue very seriously. Consent forms were written to accommodate the interviewees. The researcher decided to keep the identities of the interviewees anonymous, and assign a code for each (refer to table 4.2). This process allowed the participants to feel free to share any information, knowing that their identities would be protected. It was made clear to the participants, in the consent forms and it was repeated orally, that they could stop the interview process if they felt the need to or if they felt any level of discomfort. The purpose was to give the participants the freedom and ease to participate in the research project. Also, it became clear to the author that the residents suffered from "Katrina Fatigue", "Interview Fatigue", and "Survivor Fatigue", which has been documented in the work of Thompson et al. (2015). Finally, the consent forms and questionnaires were ready and approved by the ethical board of both institutions UdeM and UNO (refer to Appendices C and D for copies of consent forms and questionnaires). Contact was established with key informants through UNO, who was hosting the author, and Professor Michelle Thompson supervised the work. Professor Thompson helped in

establishing connections with local people and stakeholders. The latter became the key people connecting the author to LNW residents and NPO representatives.

4.3.3. Obstacles during the Data Collection Process

The first phase of the data collection began upon arrival. The purchase of a phone number with the local area code was important in case phone interviews were to be conducted, and to contact residents and potential interviewees. Also, having a local number helps is gaining people's trust and shows them that the research has anchorage in the area. Emails were sent to key informants to schedule appointments with them in order to evaluate the situation and the amount of data that could be collected within the allocated time (3 months). There was no response from NENA, while the representative of Lowernine.org agreed to meet in order to better understand the research intentions and how to proceed. The representative showed a lot of resistance and made it clear that interviewing the residents entailed paying for their time. This was not possible for many reasons, mainly because it was deemed unethical to pay the residents, and it may compromise the quality of the results and where residents' stories might change. In addition, it was not approved by the ethical boards of either UdeM or UNO, and it was financially impossible for the author to do so. The NPO representative also explained that the residents suffered from 'interview fatigue' and had been interviewed extensively by many researchers who just came to the LNW to gather information. The residents did not see or receive anything in return for their cooperation with various interviewers, which compromised their trust in people coming from outside the neighborhood. In order to enter the closely-knit community of the LNW, a point of entry was needed, and the residents needed to understand the objective of this research project. The aim was to present facts from their perspective, through their eyes, and to propose short and long-term solutions for the recovery of their neighborhood. What needed clarification was what they wanted for the future of their neighborhood and how they wanted it. Also, it was crucial to understand what made this neighborhood special, why are they attached to it to the point that they want to return despite its vulnerability? And finally, did they learn from past experiences? Did memory of past events play a role in understanding

their vulnerability?

Obstacles were faced early on: the NPO representatives' lack of assistance, the distrust residents have in the many researchers that came to interview them, and the various types of traumatisms they have endured since the storm. A change of strategies was deemed necessary after five weeks have passed without a single interview in hand. Professor Thompson helped in establishing contact with fellow urban planners and professionals who are directly or indirectly involved in the LNW. The more meetings could take place with people, the higher the chances were to get in touch with others. Before long, it was clear that the initial approach had been the wrong one.

4.3.4. A New Research Strategy

After a month with no interviews and many meetings with professionals, it became even clearer that interviewing both residents and professionals was crucial to understand why the LNW had not been rebuilt and to answer the research question. And it turned out that in order to understand the relationship between place attachment, social networks and resilience, the author had to investigate further the causes for the LNW's late rebuilding. This is where it became imperative to talk to residents, NPO representatives, city officials, urban planners, and anyone who was involved directly or indirectly in the LNW. Attending community meetings was important to learn more about the LNW and about the city. Among these meetings were: Blight Stat meetings, New Orleans Redevelopment Authority (NORA) meetings, Neighborhood Empowerment Network Association (NENA) meetings, Lower Ninth Center for Sustainable Engagement and Development (CSED) meetings, and Lower Ninth Ward Food Plan meetings. The questionnaires had to be modified to match the new research perspective, and the ethical boards of both universities had to approve them. At that stage, it was crucial to know and understand why, 7 years after Hurricane Katrina, the neighborhood was late in the rebuilding process from the perspectives of the professionals and the residents. Equally important was to understand how each party defined and identified the neighborhood before and after the hurricane. It was paramount to have the residents talk willingly and share their stories. The author was bound to a specific timeframe due

to limited funding, and all the data needed to be collected between May and August 2012. At first, the author wanted to be as objective as possible and keep a distance with the interviewees. It was clear that while retaining a scientific approach, a different way to reach out to them and have them connect with the researcher had to be found. The researcher wanted to create a feeling of ease with the residents and gain their trust so they would feel comfortable to share their stories without the formality of an interview. Consequently, memorizing the questions was essential so the interviews could be inserted into more casual conversations. Also, interviewing minors turned out to be a big challenge, because there was a lot of resistance from the parents. A longer visit would have been required to establish that level of trust with the parents, and that was unfortunately impossible. Also, the author faced some roadblocks of a more personal nature. Being Caucasian did not help in getting interviews, since the residents were majority African American and had already been questioned by other 'white' scholars. However, being Lebanese, having gone through a war, and having been evacuated somehow helped the author, for it gave her an experience with uprootedness and displacement that the residents could associate with. The fact that both parties endured similar events opened the doors to mutual trust and understanding. From that point on, it became easier to find residents to interview. The exchanges took the form of conversations between two individuals who have a mutual understanding of experiencing a specific event and similar circumstances. The second month in NOLA was the one where most interviews were conducted. Talking to residents and professionals shed the light on the reality of the situation, and results started emerging from the data collection.

4.4. Method and the Data

4.4.1. Research Design and Triangulation

From a methodological standpoint, the focus of this research is on using both qualitative (QUAL) and quantitative (QUAN) approaches in accordance with the 'triangulation' design (Creswell and Plano Clark, 2007). The use and application of the mixed method research only started in 1959 by Campbell and Fisk, and it was not until

1979 that triangulating the data became widespread (Creswell, 2009). According to Olsen (2004, p. 3), "the mixing or methodologies, e.g. mixing the use of survey data with interviews, is a more profound form of triangulation." In social studies, triangulation contributed greatly to the growth of the discipline, which has been relying on mixing between qualitative and quantitative data (Olsen, 2004). By mixing approaches, triangulation leads to multiple viewpoints about the studied phenomena:

> "the resulting dialectic of learning thrives on the contrasts between what seems self-evident in interviews, what seems to underlie the lay discourses, what appears to be generally true in surveys, and what differences arise when comparing all these with official interpretations of the same thing." (Olsen, 2004, p. 4)

Also, the reason for using the 'triangulation design' (Figure 4.2) is to "obtain different but complementary data on the same topic" (Morse, 1991, p. 120). It helps in merging between the strengths and weaknesses of both qualitative and quantitative methods (Creswell et al., 2007). The main characteristic of this design method is that it consists a one-phase procedure where both methods are implemented. The methods subsequently merge at the result level, where they are compared. In this research, some of the data was complementary, and some came to fill in the blanks. Creswell et al. (2007) present different models in the triangulation design. We will follow the convergence model (Figure 4.3). In this model, qualitative and quantitative data are collected separately, and only the results converge. Usually, "researchers use this model when they want to compare results or to validate, confirm, or corroborate quantitative results with qualitative findings. The purpose of this model is to end up with valid and well-substantiated conclusions about a single phenomenon"(Creswell et al., 2007, p. 229).

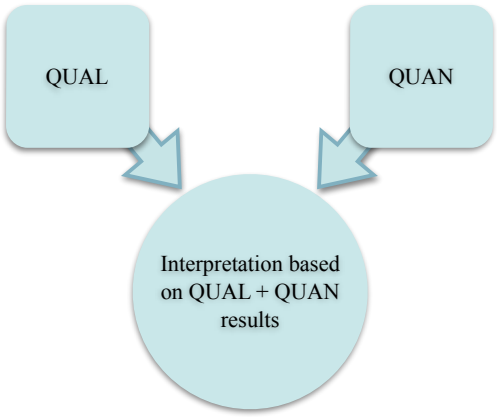

Figure 4.2: Triangulation Design. (source: Creswell and Plano Clark, 2007)

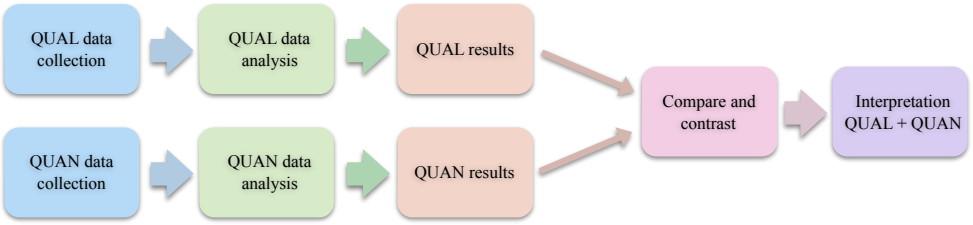

Figure 4.3: Triangulation Design: Convergence Model. (source: Creswell and Plano Clark, 2007)

In this research, triangulation is an important step as it allows in confronting the two types of data by putting side-by-side numbers, interviews, documentation, and observations. Validation was achieved using the totality of all the collected data. This is explained by the fact that the statistical data reflected a reality of the neighborhood that did not coincide with the interviews conducted. The initial phase of the research was to collect numbers that reflected the state of the LNW before and after Katrina. The numbers were very different, which was understandable due to the immensity of the calamity: the LNW lost a large portion of its population and was greatly damaged as it went from a total of 19,515 residents in 2000 to 5,556 residents in 2010, which represents a 72% population loss. When focusing on the numbers post-Katrina, the neighborhood showed to be very weak because how can a neighborhood be rebuilt without the majority of its residents? This will be elaborated on in Chapter 6 and section 6.2. Also, mentioned in section 5.2.7, one of the proposed rebuilding plans, the Bring New Orleans Back (BNOB), it was proposed to turn the LNW into a marsh area.

It became crucial to research the neighborhood with a different perspective. This is when the author decided to go on-site and interview people to verify whether the numbers provided an accurate picture. In the end, the validation process was mostly done by the maps, the articles, and the author's observations. Therefore, the author decided to change the data collection terminology and to proceed with primary and secondary data, instead of qualitative and quantitative. Numbers and interviews were not enough to reach the desired results; it was the permutation of numbers, interviews, newspaper articles, field observations, researcher notes, and documentation that helped in formulating answers to the research question.

Therefore, this research project focuses on the disaster as a phenomenon, along with its consequences on the people and the cultural landscape. This objective could be reached by taking into account different types of data for validation and triangulation purposes in order to determine the resilience of the community of the LNW, and whether or not place attachment and social networks play a role in promoting resilience.

4.4.2. Research Method

A mixed method research approach allows for a better comprehensive and global perspective on what is going on in the LNW. It was important to understand why it has fallen behind in the rebuilding process, while taking into account the complexity of the neighborhood and the gravity of the situation post-Katrina. The assumption of this research is that the late rebuilding process is affecting the resilience of the area. By understanding the reasons behind the late rebuilding, and why the residents have not returned, even if they are strongly attached to their neighborhood, becomes clearer.

In social sciences, it is imperative to look at both numbers and stories, as each have little meaning without the other. Numbers portray, objectively, the factual reality of the scrutinized event, while the stories portray, subjectively, the social reality of the event or circumstances. This research uses one specific case study where it is the recommended approach when investigating contemporary events (Yin, 2003). According to the same author, "the case study relies on many of the same techniques as a history, but it adds two sources of evidence not usually included in the historian's repertoire:

direct observation and […] interviewing."(Yin, 2003, p. 8) This method is appropriate to this research as it:

- Copes with the technically distinctive situation in which there will be many more variables of interest than data points, and as one result
- Relies on multiple sources of evidence, with data needing to converge in a triangulating fashion, and as another result
- Benefits from the prior development of theoretical propositions to guide data collection and analysis. (Yin, 2003, p. 13)

This research uses mixed methods with an embedded/explanatory design while using one case study. The embedded design is where "one data set provides a supportive, secondary role in a study based primarily on the other data type" (Creswell et al., 2007, p. 67). The foundations of this design method are that one set of data is not enough to answer the research question(s). The explanatory design "is a two-phase mixed methods design […] the overall purpose of this design is that qualitative data helps explain or build upon initial quantitative results" (Creswell et al., 2007, p. 72). In this study, the initial data collected was quantitative, as it relied on the numbers and indicators gathered by the U.S. Census Bureau and the Data Center. Initial conclusions were drawn, which helped in designing the interview questionnaires. Therefore, this research starts with the collection and analysis of quantitative data and continues with more emphasis on a qualitative analysis of data and method.

Although this research relies on a more qualitative data collection and analysis, the use of the terminology 'qualitative' and 'quantitative' does not reflect the overall research approach. The initial goal of this research was to investigate the role of place attachment and social networks in the creation of a resilient LNW through the perspective of the residents, exclusively. Soon after the study had started that the researcher realized that the situation was much more complex than hitherto thought, making it necessary to explore several data sources (perspectives of all the actors involved in the LNW, as well as any data source that helped in bringing more light to the reality behind the late rebuilding process). Also, the multiplicity in sources was needed

for the triangulation of the data for validation purposes. The use of the terms qualitative and quantitative did not give justice to the complexity of the neighborhood. This led to a sub-division of the data. Instead the use of 'primary and secondary sources' was the choice made where primary sources stand for open-ended interviews and field observations, and secondary sources stand for maps, census data and newspaper articles (Figure 4.4). The collected secondary source data plays an important role in identifying and explaining the reasons why the LNW has not been rebuilt yet, and the reason why a large portion of the residents did not return to the neighborhood.

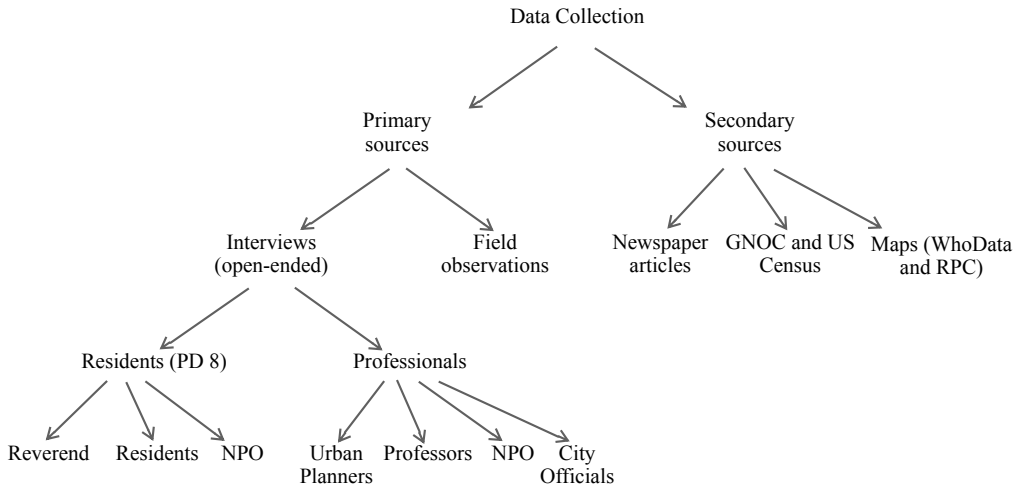

Figure 4.4: Type of data collected. (source: author)

In order to locate the research objectives, an initial review of what the numbers reflected about the neighborhood was undertaken, and statistical data from the Data Center and US census were collected. This led to some further questions, as the numbers revealed a weak neighborhood with fewer residents from all generations, lower homeownerships, poorer people, and lower employment rates (this is explained further in chapter 6). Yet, residents were moving back, building, and revitalizing their neighborhood. Thus, a discrepancy was seen between the numbers and the actual situation of the LNW. This is where the qualitative part of the research became pertinent, consisting of open-ended questionnaires that were designed for the residents and for the professionals. The interviews targeted LNW residents and NPO representatives working in the neighborhood, as well as urban planners and city officials who intervene and are

active in the LNW. It is primarily the combination of both data that lead to a better understanding of the problem at hand and to reach more comprehensive results.

In addition, the way the type of data is triangulated brings the data closer to the resilience model proposed in Chapter 3. Even if the author's model does not take into account vulnerability, this research investigated the elements that rendered the neighborhood vulnerable, as they were mostly related to the decisions that were made over the course of history. The purpose of the proposed model is to evaluate the LNW's community resilience by relying on tangible and intangible indicators through the use of a mixed method research design, while adding maps of the area. This study falls directly into the proposed resilience model. The triangulation of the data takes place with the interviews that were collected, as well as the content analysis, the secondary data, and the neighborhood organizations (Figure 4.5). The latter were set up to help residents rebuild their homes, and, in the process, they became a form of social network that helped the people at the psychological level, as they became sanctuaries to those who needed to share their story.

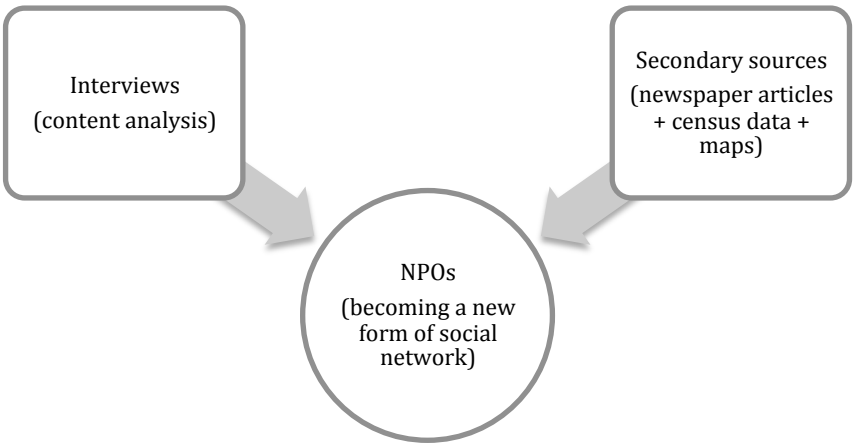

Figure 4.5: Triangulation of the data showing that the collection of mixed data leads to the understanding of the neighborhood transformation with the NPOs becoming a new form of social networks. (source: author)

To select the sample of people to be interviewed, the researcher had to identify the individuals that could deliver the relevant information. According to Creswell et al. (2007, p. 112) "*purposeful sampling* means that researchers intentionally select

participants who have experience with the central phenomenon or the key concept being explored." The obstacles faced to find participants for the interviews notwithstanding, the researcher intentionally selected a sample of people who represented the LNW (residents, professionals, and city officials). A total of 28 interviews were conducted, and the interviewing process came to an end when the statements of the professionals and the residents were deemed repetitive. The interviews were conducted as follows and are summarized in Table 4.1: 8 with active residents of the LNW, 1 with a LNW reverend, 8 with NPOs, 14 planners and experts, 2 city officials, 1 researcher. The aim was to hear from a variety of perspectives that reflected the range of people involved in the LNW. It was clear to the author that there were different categories of people who contributed to the local of the LNW, not just the residents. Due to the multiple roles that some people took on, some of them overlapped in the different categories.

4.4.3. Data Description

Primary Sources

Research Observations

> "Being alive renders us natural observers of our everyday world and our behavior in it." (Merriam, 2009, p. 117)

This research mainly used direct observation to assess the situation in the LNW. According to Merriam (2009, p. 117), "observations take place in the setting where the phenomenon of interest naturally occurs". The author made direct observations at community meetings, during informal conversations, and other pertinent events that took place during the data collection process. It was important to know in advance what to observe, and it was through proper determination of the problem—as well as the questions presented in the theoretical framework—that the elements in need of be scrutinized were pinpointed (Merriam, 2009). Also, being familiar with the context was crucial. It is recommended that "the researcher establish rapport by fitting into the participants' routines, finding some common ground with them, helping out on occasion, being friendly, and showing interest in the activity." (Merriam, 2009, p. 123) Notes were

taken after every community meeting, informal conversation with a resident, or any personal observations during the researcher's stay in New Orleans. A total of 11 community meetings were attended by the researcher, and these involved: NORA monthly meetings, Blight Stat monthly meetings, Lower Ninth Ward Flood Plan monthly meetings, NENA bi-weekly meetings, and CSED bi-weekly meetings. Blight Stat and NORA meetings were organized by the city, and their attendance varied between 50 and 100 people per meeting. LNW community meetings focused more on the residents, with attendance varying between 15 and 20 people per meeting. The organizations that are established in the area play an important role in the rebuilding process, because these are the main contributors in helping residents clear their titles and to help rebuild. Some organizations like: NENA, Make it Right, Lowernine.org, Common Ground, and CSED have managed to gather a lot of funds to improve the situation of the residents.

The time spent with the residents or the LNW's actors was documented at the end of the day, as some residents did not feel comfortable with being interviewed, or with signing a consent form (though these remain undocumented, about 15 residents did not accept to sit in for an interview and preferred to conduct informal conversations). During the data collection, the researcher made sure to introduce herself to the group of people present, explain her objectives, and her research. All the observations were under the form of notes taken during the different events.

Also, one of the old residents of the LNW agreed to take a tour of what used to be his old neighborhood. The tour was taken around the LNW with the resident and pictures, and notes were taken. The focus was mainly on memories of the neighborhood to better understand the cultural landscape prior to Hurricane Katrina.

The observations and the note-taking process helped in identifying current landmarks used by the residents, and determined the actors and residents that were involved in the neighborhood the most. Identifying the landmarks helps in defining the cultural landscape post Hurricane Katrina, and use it as a comparison with what they identify with. Also, it helped in relating what the interviewees said with the situation on the ground, including developments in terms of road improvements, police involvement,

and level of security.

Open-Ended Interviews/ Content Analysis

The bulk of this research's results was based on the interviews conducted. As Merriam (2009, p. 88) state, "interviewing is necessary when we cannot observe behavior, feelings, or how people interpret the world around them. It is also necessary to interview when we are interested in past events that are impossible to replicate." Obviously, replicating an event such as Hurricane Katrina was not a possibility, nor even a desired objective. The research was focusing on the people's recollection of the events and how it affected their community. Hence, semi-structured or open-ended interviews were conducted in order to make the process less formal and more conversation-like so as to minimize the feeling of re-living the whole experience. The respondents were chosen according to two criteria: being a resident of the LNW, or being involved in the LNW either through a NPO or the government (refer to Table 4.1).

Table 4.1: Interviews with both residents and professionals (*some interviewees had more than one role). (source: author)

Interviewee*	**Number of interviews**
Residents	
Reverend	1
Residents	8
NPO representatives	2
Professionals	
Urban Planners	8
Professors	3
NPO representatives	6
City Officials	2
Other	3

Taking into account the trauma that the citizens have faced during and after Hurricane Katrina, it was particularly challenging to get any interviews. Building a

relationship of trust with the interviewees was accomplished through various means: helping key people, making appearances at community meetings, and sharing personal information about the research and the investigator. All interviews were recorded and manually transcribed by the researcher, and all the data is kept in a locked drawer. The informants' names are not to be revealed, and each person is refereed to through an assigned coded (refer to Table 4.2 for the codes).

Table 4.2: Summary of codes used for the interviews. (source: author)

Code for interviewees	**Description of code**
NL9W_R	Non-LNW resident
NL9W_P	Non-LNW planner
NL9W_NPO	Non-LNW non-profit organization representative
NL9W_CO	Non-LNW city official
NL9W_RS	Non-LNW researcher
NL9W_PH	Non-LNW philanthropist
L9W_R	LNW resident
L9W_P	LNW planner
L9W_NPO	LNW non-profit organization representative
L9W_RV	LNW reverend

Once the data was gathered, sorted, and transcribed, came the coding process, done in accordance with rules outlined by Merriam (2009) and Creswell et al. (2007): first, the interviewees names were coded to protect their privacy; and second, the interviews were coded using *content analysis*. According to Krippendorff (1980, p. 7) "as a research technique, content analysis involves specialized procedures for processing scientific data. Like all research techniques, its purpose is to provide knowledge, new insights, a representation of "facts," and a practical guide to action. It is a tool." Content analysis can be used for multiple reasons, one of which is to code open-ended interviews (Weber, 1990).

Then came the analysis process. In Chapter 2, the review of the literature demonstrated that place attachment, memory, and social networks play a role in making urban communities more resilient after a disaster. The researcher wished to investigate whether this is also applicable to the LNW, and the open-ended questionnaires were designed for that purpose. Also, the aim of the questionnaires was to help in answering the research question. The author focused on asking questions that portray the cultural landscape before and after the Hurricane, remember memories of past events, understand why people want to return even after all the loss they endured, whether they trust the levees, and why in their opinion is the neighborhood not yet rebuilt 7 years after the calamity took place. Here are the different keywords that stemmed out:

- *The cultural landscape:* this category portrays what the cultural landscape of the LNW was before and after the hurricane, and how the residents perceive it.
- *Memory of event and past events:* this category focuses on hurricane Katrina and on previous hurricanes.
- *Place attachment and social networks:* this category describes the strong bonds that exist in the neighborhood, and the attachment people have to their home, family, and neighborhood.
- *Auto-organization/Learning/Diversity:* this category puts forth the initiatives taken by the community in order to be independent and self-reliant.
- *The levees and safety:* this category shows how the levees are perceived by the residents, as well as by the professionals.
- *The role of non-profit organizations and meetings:* since non-profit organizations and meetings play an important role in the rebuilding process, this category shows how people feel about these two and what role they play.
- *Rebuilding plans:* this category focuses on the rebuilding plans, the role they played and continue to play, and what people think about them.
- *Perception – professionals:* this category portrays the opinion and the perception of the professionals about the LNW and the rebuilding process.
- *Perception – residents:* this category shows the opinion and perception of the residents about themselves, their neighborhood, and the rebuilding process.

- *Hope and future:* this category emphasizes on hope and what people think about the future of the LNW and of the city of New Orleans.

Secondary Sources

Documentation

> "Documents are, in fact, a ready-made source of data easily accessible to the imaginative and resourceful investigator." (Merriam, 2009, p. 139)

This research uses *popular culture documents*, "these are public in nature and so are sometimes categorized under public records." (Merriam, 2009, p. 143) The collected documents include: newspaper articles from the *Times Picayune*, Nola.com, and the *New York Times*. The *Times-Picayune*, established in 1837, is a well renowned newspaper in New Orleans, especially with its coverage of Hurricane Katrina in 2005, and the Saints winning the Super Bowl in 2009. Since October 2012, for financial reasons, the paper stopped printing on a daily basis and it published online via the website Nola.com. This was a major disappointment for New Orleanians as reading *The Times-Picayune* was a daily ritual. They strongly identified with their newspaper, and were very proud of it. Therefore, printing the paper three times a week meant losing a part of the city's identity. Also, *The New York Times*, a nationally and internationally renowned newspaper, published a lot of articles about New Orleans and Hurricane Katrina. All these newspapers are a reliable source of secondary data and are used widely in this research.

Also, visual documents such as films and documentaries are also used as part of the data collection process. The challenge in this type of data gathering is finding the relevant material. Thus, the researcher has to keep an open mind when in search for information (Merriam, 2009). This is noteworthy, as things appeared very different once in New Orleans. The author initially thought that accessing the information and interviewing residents was going to be a straightforward task, when it was not. It was only when attending community meetings and talking to anyone who agreed to, that things started unraveling. Also, looking through newspaper articles helped the author in

changing perspectives. It required a certain open-mindedness to see that a change in strategy was needed.

Consulting the published documents describing the different proposed rebuilding plans was imperative. It was notably through these documents that the researcher realized that the plans did not take into account community ties and place attachment in the rebuilding process (refer to section 5.4.2). Even though the NONRP and UNOP plans were based on community participation, they do not mention them in their reports (http://nolaplans.com/).

Other information was gathered from the Data Center, articles, WhoDataNOLA.org articles and maps, and books about New Orleans and the LNW. The Data Center, previously known as the Greater New Orleans Data Center, is a colossal asset for professionals conducting research on the New Orleans area. It is the most reliable source of information about the Southern Louisiana area: "The Data Center realizes its mission to build prosperous, inclusive, and sustainable communities by making informed decisions possible."[10]The Data Center compiles its data on a yearly basis mainly from the US Census Bureau, and processes it in order to present it in the most pertinent way to "everyone who needs data to do their work."[11]. The center gathers data and information, publishes, and organizes it in order to show the progress the different neighborhoods have gone through, or where they are falling behind. The Data Center is a very useful tool to this research. The people working in that organism are professionals in the field, and have a wide experience in collecting and analyzing quantitative data. The information they publish is used by both the city and researchers to get an objective perspective on the developments since Hurricane Katrina. The indicators collected from the Data Center were useful in drawing preliminary conclusions that helped in designing the qualitative questionnaires, but they were inconclusive when it came to determine the level of attachment residents have with their neighborhood. Also, these indicators were compared to the indicators compiled in Table 3.1 from the different authors like

[10] The Data Center http://www.datacenterresearch.org/about-us/the-data-center-an-overview/
[11] The Data Center http://www.datacenterresearch.org/about-us/the-data-center-an-overview/

Birkmann et al. (2010); Cutter et al. (2008); Cutter et al. (2003); Cutter et al. (2010); Dauphiné et al. (2007); Pelling (2003). This comparison was done in order to determine their relevancy in resilience research and whether they were good measurement tools of the resilience of the LNW. The indicators and sub-indicators collected from the Data Center are summarized as follows and many of them appear in Table 3.1:

- People and Household Characteristics
    - Total numbers
    - Gender
    - Age
    - Racial and ethnic diversity
    - Households by type
    - Children in households
    - Elderly in households
- Housing and Housing Costs
    - Occupancy status
    - Renters and owners
    - Mortgage status
    - Housing affordability by owner/renter status
- Income and Poverty
    - Household
    - Average household income
    - Income distribution
    - Population in poverty
- Transportation
    - Vehicles available
    - Type of transportation, workers 16+
    - Travel time to work, workers 16+
- Education Attainment
    - Level of schooling, 18+
- Language

    - English as second language
- Employment
    - Workers living in the neighborhood by wage level
    - Workers living in the neighborhood by industry sector

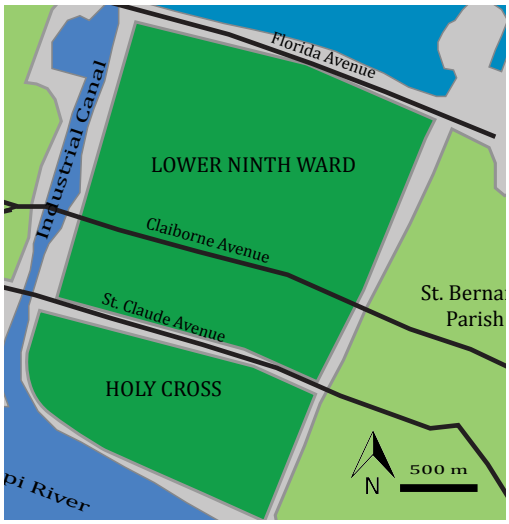

Figure 4.6: Map of Planning District 8 (PD8) showing the divide between Holy Cross and the Lower Ninth Ward. (source: author)

Presented in chapter 6 are the indicators collected by the Data Center for the Planning District 8 (PD8), which includes the Lower Ninth Ward and the Holy Cross areas. The area south of St Claude Avenue, Holy Cross, is at or above sea level because it is located along the Mississippi River. It is thus naturally higher than the rest of the LNW, and it developed faster than the area north of St Claude Avenue, Lower Ninth Ward. Most of the historic buildings (the steamboat houses) and older structures are found in the Holy Cross area (refer to Appendix E). The LNW it is mostly residential (shotgun houses), with some local businesses. This subdivision of the neighborhood is not just geographical, but also socio-cultural. It is reflected in the residents' attitude and perception (this will be elaborated further in chapter 6). Also, the levee breach took place in the Lower Ninth Ward that caused a lot more damage to this part of the neighborhood than it did to the southern part—which suffered from high water levels and wind damage—, and it made it seem that Holy Cross was recovering faster. In

addition, Holy Cross received more attention from the city when the Historic District Landmarks Commission declared it an area with historic value (Commission, 2013). Therefore, when using the term 'Lower Ninth Ward' it refers to the area north of St Claude Avenue, and 'Holy Cross' for the areas south of St Claude Avenue, as shown in Figure 4.6. The US Census Bureau collects the information according to 'census tracts' and Holy Cross has two (tracts 8 and 7.02) and the Lower Ninth Ward has five (tracts 7.01, 9.01, 9.02, 9.03, and 9.04). The Data Center uses the US Census Bureau for its information and presents the data for the two sub-neighborhoods. Therefore, the indicators presented in Chapter 6 show the Holy Cross Area and the Lower Ninth Ward Area in comparison to the Orleans Parish Area.

WhoDataNOLA Maps and Regional Planning Commission Maps

Maps of the LNW were useful secondary sources. Two types of maps were of particular interest: first, aerial photographs, and maps gathered from the Regional Planning Commission (RPC), since they show the evolution of the LNW post Hurricane Katrina (refer to Appendix A). Second, property condition surveys were conducted by WhoDataNOLA.org (refer to Appendix G). WhoDataNOLA.org is a tool developed by Professor Michelle Thompson (UNO), in a collaborative effort between UNO, the city of New Orleans, and the RPC to do property surveys in different neighborhoods of the city, including the LNW. The data is closely monitored by UNO professor Thompson and several planning students, who have experience in this type of data collection and analysis. Volunteers working for Lowernine.org—that is located in the LNW—conducted the surveys. The organizing team explains the data collection process to the volunteers and processes all the information with the help of the software ARC-GIS. The researcher helped in the organization and volunteered in the surveying process during the summer of 2012.

WhoDataNOLA.org has been developed as a tool to assist the city of New Orleans in mapping some of the neighborhoods. It also helps organizations to have more information about properties in their areas. The maps are also very useful to the residents of the neighborhood, or for future residents looking into investing in the

neighborhood at hand. Since blight is an issue in the city, this mapping tool becomes quite handy in assessing property conditions for future buyers and investors.

What Type of Data and at What Level?

Going back to the resilience model proposed in Chapter 3 (Table 3.1), the collected data for this research aims at fitting into the proposed model. Therefore, it is necessary to show what type of data was collected, at which level does it intervene, and how does it help. This information could help future research and could very well be applied to other case studies (refer to Table 4.3).

Table 4.3: Table summarizing the type of data collected, which geographic level it affects, and which decision-makers does it help. (source: author)

Type of Data	**At What Level?**	**Who does it Help?**
Open-ended interviews (primary source)	Individual Household Neighborhood	Researchers: identify intangible indicators. Planners: determine the cultural value of the area so as to propose a viable rebuilding plan. Government officials: identify the cultural elements, the social networks, and landmarks.
Field observations (primary source)	Individual Household Neighborhood City	Researchers: the importance of using mixed methods and collect multiple data/ compare interview content with the reality of the situation/ become part of the research. Planners: look at the study area with a different perspective and compare numbers to the actual situation.
Newspaper articles (secondary source)	Neighborhood City	Researchers: verify events/ evaluate different perceptions/ stay up to date with current events. Government officials: keep track of what is happening and how the rebuilding process is progressing.
Data Center and US Census data (secondary source)	Neighborhood City State Country	Researchers: use census numbers to compare pre- and post-disaster situations. Identify tangible indicators. Planners: use census numbers to reach rebuilding goals. Identify indicators and how they help in the rebuilding process. Government officials: compare pre- and post-disaster numbers and manage funds to reach rebuilding goals.
Maps (WhoDataNOLA and RPC)	Neighborhood City State	Researchers: use spatial transformation and map pre- and post- disaster changes. Planners: use maps as reference to communicate with residents and government officials. Use

	Country	maps as a tool for communication. Government officials: use maps as a tool to show change and improvements. Residents: use maps to evaluate the condition of their neighborhood and can help update maps with the help of user-friendly applications

4.5. Elements to Retain

This research stands out with its methodology and research design. By using a mixed methods design, it is tackling the research problem and questions from a different perspective. Both research problem and question required the use of a mixed method design. With such a method, it was not only possible to answer the questions about the slow rebuilding of the neighborhood, the strong ties between the residents and the LNW, and whether the community is resilient and how. The method also helped in looking beyond the research question and conceptualizing the idea of resilience with more depth by tying it to several variables such as time and space, different geographic scales, and different levels of resilience. Therefore, the various methods used to collect and analyze the data provide a wide overlook at the problem at hand.

Figure 4.7 (shown below) summarizes how the research was conducted. The graph highlights the phenomenon that is being scrutinized, Hurricane Katrina, and the concepts that are being tackled, which include the cultural landscape, vulnerability, and resilience. They all are interrelated and connected at the community level; they are social constructions with intangible elements. Through the case study of the LNW and the use of a mixed method research design, the research was able to reach results at the theoretical level and the case study level.

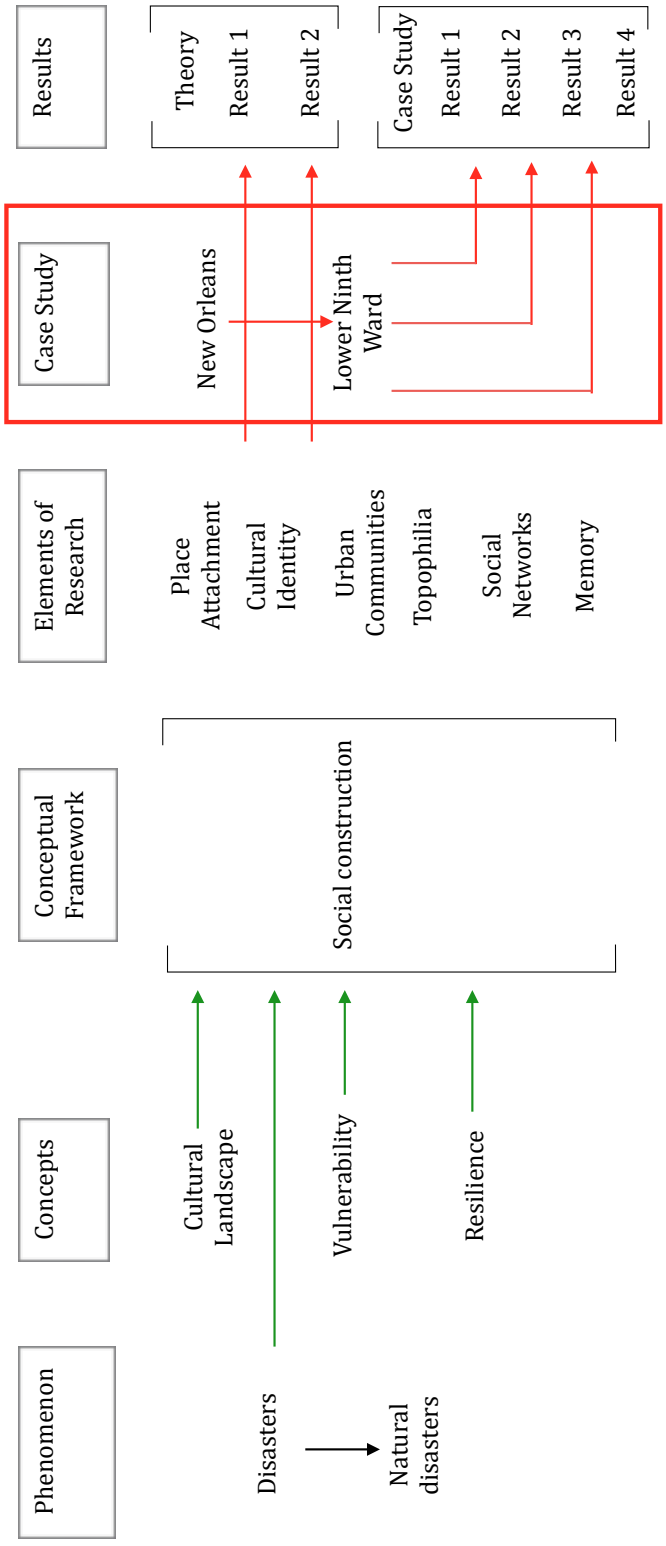

Figure 4.7: Graph summarizing the overall dissertation whole showing how the case study plays the role of a filter through which percolated the case-study results. (source: author)

Chapter 5: Historical Facts Behind the LNW and the City

5.1. Overview

This chapter presents the LNW case study. The LNW constitutes one of the newer neighborhoods in the city of New Orleans, and yet the most neglected. To understand the LNW, it is imperative to look at the entire city from a historical, cultural, and political perspective, while paying special attention to the role of memory in the development and evolution of such a unique place. This leads to a better understanding of the LNW: the historical evolution, the exclusion, the elements contributing to its present state, the cultural landscape, the levees, the impact of Hurricane Katrina, and the rebuilding plans. Looking at the city and the neighborhood helps in grasping what the LNW was before Katrina, and where it stands in regards to the city at large. It is through the historical evolution of the city and of the LNW that the research problem presented in this study can be understood.

This section highlights the many decisions and historical facts that took place as they contributed directly to: the establishment of the strong bonds people have with the LNW, and the on-going vulnerabilities that made the area so weak when facing Hurricane Katrina. Understanding the events that took place in the LNW and in the city makes it possible to fathom the real vulnerability and obstacles that people faced and continue to face. Without such a cumulative look, it is harder to change and improve the lives of the residents of the neighborhood. It is the decisions that were made over the course of history that make the LNW a culturally unique place with its own and strong identity. This chapter provides a historical overview with the objective of pointing out the cultural evolution of the area, which becomes crucial in the rebuilding process of the LNW. It is this unique cultural identity that kept people from leaving this very vulnerable area, and it is also the reason they accept to live in such a fragile environment. It is everything they have and they are attached to it despite its vulnerabilities.

This chapter aims at portraying the most important and relevant events that made the LNW a unique place, albeit one full of contradictions and controversies. It is

this discrepancy that makes it a unique place to study. This chapter is mainly an exploration of known facts, but put in a way that makes them meaningful from a post-disaster analytical perspective. This chapter relies notably on the works of historian Richard Campanella, as well as published material and historical books. The emphasis is on the origin of the issues at hand: why is the LNW behind in the rebuilding process? What makes it a unique place culturally? And why is it such a vulnerable neighborhood? In summary, these questions will portray the historical, socio-economic, and environmental realities of the neighborhood.

5.2. The Lower Ninth Ward (LNW)

5.2.1. Historical Evolution of the LNW

The LNW in its Early Days…

To understand the cultural importance of the LNW, it is very important to look at its evolution from the moment it was created. This historical look is important to this research because it highlights the nuances behind its cultural identity. The elements behind this identity are part of the cultural landscape, and it is thus important to define and describe it. The aim is to see whether or not the elements of the cultural landscape help in the creation of resilient communities in the case of a disaster. In this case, the focus is on the LNW after Hurricane Katrina. Before portraying the historical evolution of the area, it is opportune to locate the neighborhood as it plays a role in emphasizing its vulnerability.

Being one of the recently developed areas in New Orleans, the LNW delineates the eastern side of the city separating it from St. Bernard Parish[12] (Figures 5.1 and 5.3). It used to be half above water and half below. Before the building of the levees, the area to the south (above water and mainly farmland) was first developed to house new immigrants who were poor yet willing to work in the city. The port of New Orleans was

[12] St. Bernard Parish is important to highlight, as it will later play a role in segregating the LNW from its residents by selectively transforming its residents in majority white. And when segregation comes to an end, the area closes itself to its next-door residents. This will be described in detail later in the chapter.

its primary attraction and contributed to the rapid expansion of the urban setting (Toueir, 2015). As portrayed in figure 5.2, the first signs of development took place in the early 1800s and expanded over the years with a growing number of immigrants and the building of the levees, which contributed to the transformation of the swampy areas into residential ones.

Figure 5.1: The city of New Orleans and the LNW highlighted in orange. (souce: author)

The LNW was first named the Third Municipality and had a negative connotation as it referred to the poor area of town. The French Quarter was the First Municipality, and Uptown was the Second Municipality (Campanella, 2008; Kelman, 2003). It was only till the mid to late-1800s that the city was divided into wards, and the Ninth Ward was created (Figure 5.2). Toueir (2015) explains the direct relation between the historical evolution of the LNW and its social vulnerability. The author argues that the decisions made by local officials contributed directly to the alarming devastation when Hurricane Katrina hit. Also, the author presents the main events that made the neighborhood what it is today with the opening of the Industrial Canal in 1923, the end of segregation in 1961, and Hurricane Betsy in 1965. What used to be a racially mixed and mixed-income

neighborhood in the 1960s became a majority African American and poor neighborhood by the year 2000 (Campanella, 2006, 2008; Toueir, 2015).

… An unusual topography…

The development of the LNW was triggered mainly by the fast growing rate the city was experiencing and the need to house the new immigrants that were coming from the different corners of the world. Levees were built, wetlands were drained, and swampy areas became habitable. This gave an opportunity for the city to house its growing population and it gave the opportunity for new immigrants, or free people of color, to own their own homes while residing close to the city (Toueir, 2015). Over the years, the LNW became the neighborhood with the highest homeownership rates when compared to the rest of the city (Campanella, 2008).

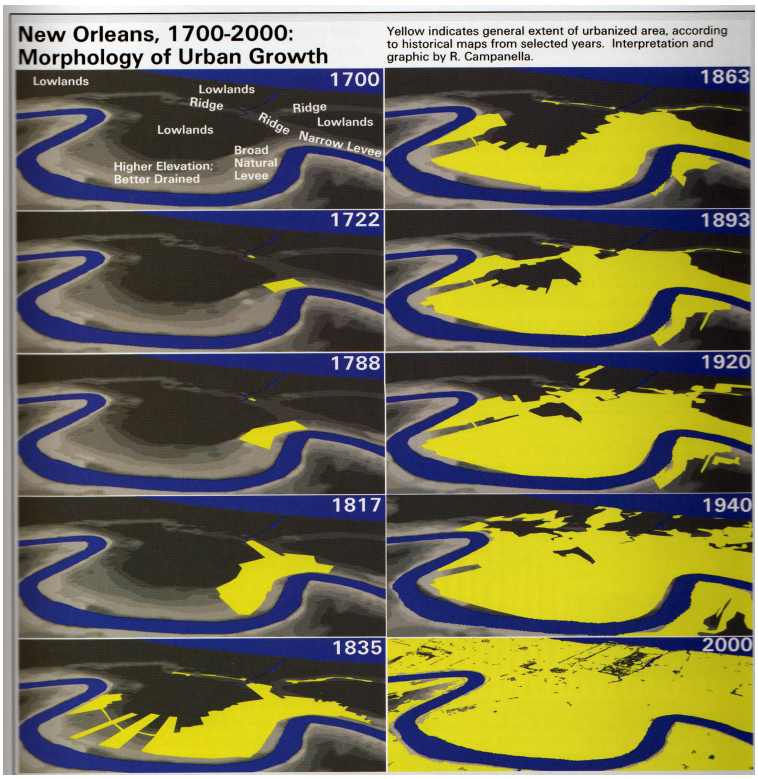

Figure 5.2: New Orleans, 1700-2000: Morphology of Urban Growth. (source: Campanella, 2006)

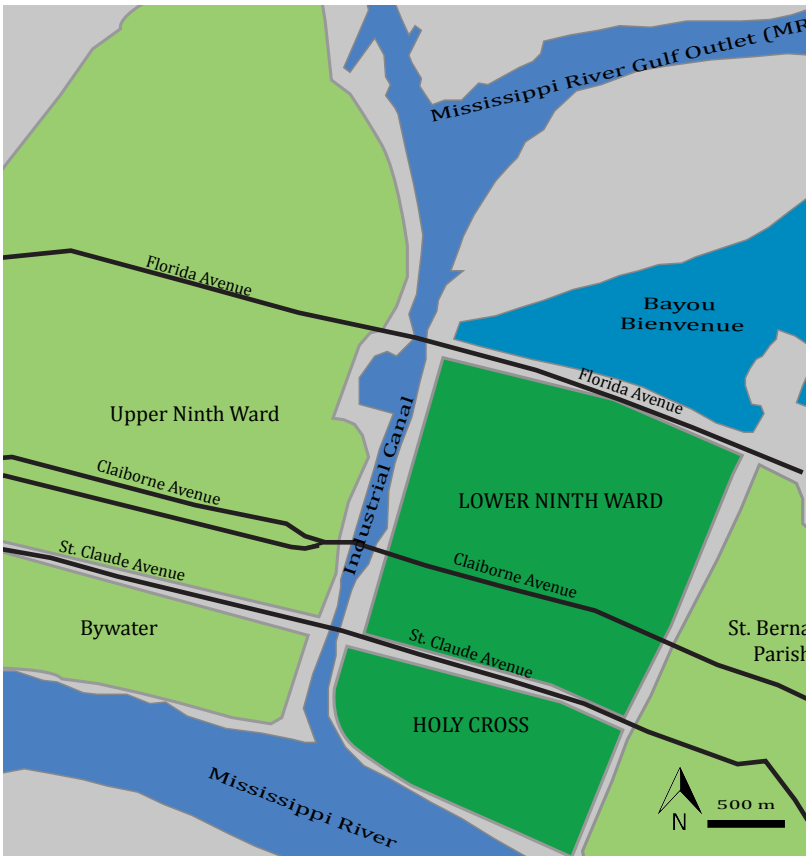

Figure 5.3: Map of the LNW and the different water bodies surrounding it. (source: author)

Due to its uneven topography, the area closest to the Mississippi (Holy Cross) is higher than the northern area (north of St. Claude Avenue) (Figure 5.3). Hence, it was developed before and attracted many working class residents. This natural phenomenon provided added value to the area, as it was prone to less flooding than its northern counterpart. And this contributed to attributing the Holy Cross-area a historic value (Figure 5.4), giving the homes more value than the rest of the LNW (Toueir, 2015). These events caused much disparity within the neighborhood and the Industrial Canal, the end of segregation, and finally Hurricane Katrina only exacerbated the situation.

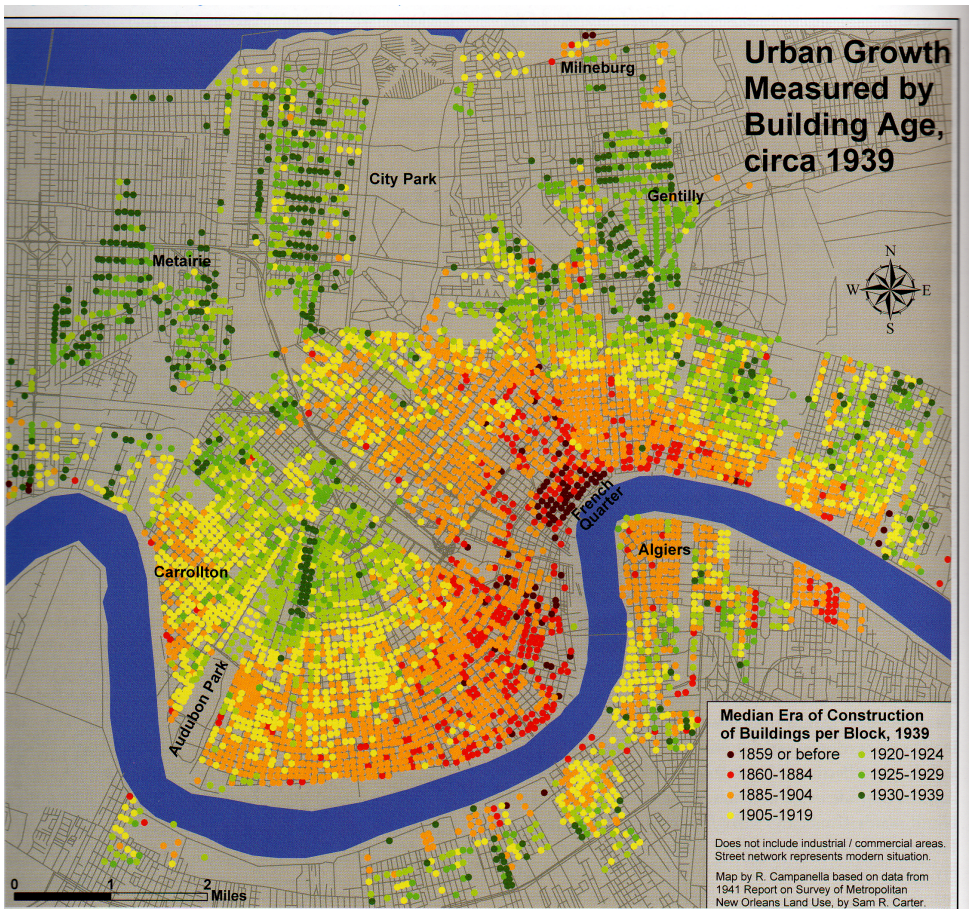

Figure 5.4: Urban growth measured by building age, 1939. (source: Campanella, 2006)

Physical, Social, and Economic Exclusion of the LNW

Over the years, the LNW was slowly excluded from the rest of the city. Not only was it perceived as the poor neighborhood, but also, the building of the Industrial Canal separated the LNW physically, socially, and economically. In addition, the area is surrounded by water: the Mississippi River from the south, the Bayou from the north, and the Canal from the west. The neighborhood also demarcated the limits of Orleans Parish to the east with St. Bernard Parish, which created an invisible physical barrier, as the whites of St. Bernard Parish did not welcome the blacks of the LNW (Toueir, 2015). This physical isolation led to social and economic exclusions as well, as it became harder to travel across the bridges for jobs, especially with the lack of public transportation at the time, which had residents feeling undesired by the rest of the city. Also, having built homes on low-lying areas meant that these homes were easily flooded with any major

rainfall or storm. That meant the homes had to be regularly fixed, which, in a low-income neighborhood, is often impossible. This meant that LNW homes were in dire conditions.

Halfway through the century, the city focused on expanding and connecting to neighboring areas: building a suburban-style development in the Ninth Ward to draw in middle class black New Orleanians, the Causeway over Lake Pontchartrain, the Mississippi River Bridge connecting the city to the West Bank, and the Mississippi River-Gulf Outlet (MR-GO), which shortened routes for ships coming from the Gulf of Mexico (this project started in 1958 and ended in 1968). The building of the MR-GO caused much environmental damage to the wetlands, marshes, and cypress forests that played the role of a buffer zone to the LNW when hurricanes hit. The MR-GO affected the local fauna and flora and destroying populations of fish, shrimps, and trees, as well as exposing the land to strong winds and high waters (Campanella, 2006, 2008; Freudenburg et al., 2009).

The events mentioned thus far highlight several reasons for the vast devastation of the LNW post Hurricanes Katrina and Rita. But it is the compilation of the actions and decisions that segregated the LNW from its surrounding areas that contributed to the creation of stronger bonds amongst residents, and the deep roots that were established over the years. As Toueir (2015, pp. 241-242) argues, "the elements that made it culturally unique and held it together as a neighborhood and community, became the very elements that contributed to its vulnerability."

5.2.3. Betsy and the End of Segregation

On September 9th 1965, Hurricane Betsy hit the city of New Orleans and had a similar impact as Katrina in 2005, albeit the city was more prepared for the disastrous consequences of a hurricane in 1965 than it was in 2005 (Colten et al., 2009). People had a two-day warning to evacuate or move to higher grounds, many small shelters were used, which helped in creating smaller, but more organized rescue groups, instead of using the superdome or the local malls. Also, in 1965, New Orleans did not possess the interstates and highways it does now, and people did not own as many cars as they do today. When people had to evacuate, they went to stronger structures (like brick

buildings), and they "felt safe in the city and "rode out" the storm at home or in neighborhood schools or civic buildings; coastal residents evacuated to levee-protected New Orleans." (Campanella, 2008, p. 321) Those who evacuated never ran out of food and water and the city was functioning normally a month after Betsy, even if parts of the city were under water (Colten et al., 2009). Only 20% of the city flooded in 1965 in comparison to 80% in 2005, and the hardest hit area was the LNW, and more specifically the area north of St. Claude, where water rose between three and nine feet. It took around two weeks to pump out the floodwaters of Hurricane Betsy. According to Campanella (2008, p. 323), lessons were not learned and "Hurricane Katrina would reveal the folly of this effort forty years later, demonstrating a truism long recognized by hazard planners: the aftermath of one disaster becomes the prelude to the next."

Being one of most recent neighborhoods in New Orleans, the LNW attracted more and more residents with the building of better and improved levees, but it was and still is a very vulnerable area because it lies between three and twelve feet below sea level (Campanella, 2006; Landphair, 2007). In 1960-61, *de jure* racial segregation came to an end and the integration of schools was implemented. In 1965, Hurricane Betsy took place and caused major flooding in the LNW (Campanella, 2006). A combination of these two events eased the transformation of the ethnic mix, the LNW turning then from a diversified working-class neighborhood to a predominantly low-income African American neighborhood (Landphair, 2007). Most of the new residents who came to find a new home in the LNW were either the relatives of those who stayed, or those who moved, from Fazendeville. Fazendeville was a small rural community outside the city and was part of St. Bernard Parish. When the city bought the homes to turn it into a National Park, the 100-year old community had to find a new place to settle and moved to the LNW (Chapman, 2004). The residents of Fazendeville moved their church as well, the 'Battleground Baptist Church' and maintained their closely-knit community (Chapman, 2004; Toueir, 2015).

5.2.4. The Cultural Landscape of the LNW

The cultural landscape in the LNW is unique and took its form over the generations. In retrospect, the neighborhood is relatively new; it dates back to the 1850s, and in comparison to other neighborhoods and other cities that date centuries, the LNW acquired its own identity in a very short span of time. Since its inception, the neighborhood was home to the working class, immigrants, and low-income people. Over the years, a series of decisions were made to build levees to develop more areas, such as the Industrial Canal, and the MR-GO. Many hurricanes hit New Orleans, some more damaging than others, but these did not prevent the residents of the LNW to leave. The uneven topography of the area, with the north being below sea level whereas the southern parts being above sea level, was not enough to give people an incentive to look for another place to live. All these factors lead to a community that has no one to turn to other than itself. As the generations went on, people and their whole family stayed in the neighborhood creating strong ties amongst each other. Women, especially grandmothers, are the symbol of stability as they used to keep an eye on the kids, while the parents went to work during the day. It is mostly women who take care of the community and take part in organizing social events. Also, sitting on the steps outside the homes is a major component of the LNW's everyday culture, as it was a way to socialize with the neighbors and a source of security for the kids, who feel they are outside but not too far (Jackson, 2005; Social et al., 2007).

The LNW is a neighborhood with church-going residents. People care deeply about their congregation, and going to church on Sunday is a significant part of their lives, with people gathering afterward for barbequing or any social event. Elderly, who usually are aunts and uncles, or grandparents to many of the children, are addressed with respect "Mrs" and "Mr", or the appropriate surname (Jackson, 2005). This trend is present in the entire city, but more specifically in the LNW. Residents of this neighborhood have only each other to fall back on to, and people lived there for generations, which created long-term bonds and very strong ties amongst relatives and neighbors.

Most of the people living there relate to each other: they are of African American decent; they work with each other; they keep an eye on each other's children; and they go to the same church. Being separated from the rest of the city by the Industrial Canal is the element these residents have in common. All these reasons make for a very strong and unique cultural landscape, which created a very strong sense of belonging and attachment to a highly vulnerable area.

5.2.5. The "Safe Development Paradox" and the Levees

According to Burby (2006, p. 173), "safe development" stands for the simple idea "that land exposed to natural hazards can be profitably used if steps are taken to make it safe for human occupancy". The author argues that since 1947, in the New Orleans Metropolitan area, Congress offered federal assistance to build levees in order "to convert ninety-six hundred acres from wetland to "productive use."" (Burby, 2006, p. 174) Over the last century, controlling floods has been a major concern for the city. Building dams and levees was deemed the appropriate solution. While having these structures helped a lot in generating electricity, controlling water flows, and seasonal floods, it also created a sense of security amongst the neighboring communities. The construction process generated jobs that attracted more people to these vulnerable areas, thus creating important urban expansions around these sites. Over time, newer generations became accustomed to the modified landscape and quickly forgot about the floods that occurred in the past. The risk is that when one of these new structures fails or a major disaster takes place, people are quickly reminded that the safety they felt was nothing more than an illusion.

When Hurricane Betsy (1965) caused major damage to the city, a reasonable solution was to raise the levees and create 'safe' neighborhoods for the working class to live close to the city.

> Although Hurricane Betsy revealed the potential for widespread flooding […], the construction of improved hurricane protection works and availability of flood insurance evidently persuaded thousands of households that the region was reasonably safe. (Burby, 2006, p. 175).

After Betsy, the construction of the 'Hurricane Protection Project' was authorized in order to protect a larger area from flooding and storm surges (Burby, 2006; Colten, 2009). A year after their completion, the levees where put to the test, as they protected the city of New Orleans from another major hurricane that hit the city in 1969, Hurricane Camille. It was a category 3 and had a similar path as Katrina with even stronger winds (almost 200 miles per hour), but the levees held in place and the city was safe (Colten, 2009; Freudenburg et al., 2009). Due to the presence of these levees, the city was able to build new neighborhoods and thus to collect more taxes from residents. The central city of New Orleans has been economically weak for a long time and this urban development was seen as an opportunity. New Orleans did not build a diversified economy, but rather relied heavily on tourism and on its port, as it was the optimal entry point for ships coming from Europe. The urban services in the central city were weak, the school system was inadequate, and the planning practices inappropriate for a flood prone city (Freudenburg et al., 2009; Nelson et al., 2007). There were no advocates to promote disaster awareness and the political culture was not in the promotion of building restrictions.

5.3. The LNW Strongly Influenced by the City's Evolution

5.3.1. Historical Evolution of the City

The facts presented in this section are based on the works of Richard Campanella, and more specifically his book entitled "Geographies of New Orleans" published in 2006. This book provides a broad-based historical overview on the evolution of the city of New Orleans.

In the 1720s, the area began showing more and more potential for growth and that revived the interest to invest in building the city of New Orleans. With that came the first large group of slaves to Louisiana along with European recruits (France, Germany, and Switzerland), and by the end of the decade, there was a better and improved levee system, a larger population, and a bigger city footprint. In the 1760s, New Orleans was passed over to Spain. The rest of the century was mainly about enlarging and improving

the city, which was accomplished through building more streets, churches, hospitals, and cemeteries. In the process, the population kept on growing and reached around 5,000 in 1785, with many French speaking settlers (mostly French and Acadians) moving in the city.

A Cultural New Orleans

During the early 1800s, New Orleans and Louisiana were handed over by the French to the United States. The first decade of the century saw growth, development, and population growth, as New Orleans housed immigrants, slaves, and free people of color; all these factors contributed to the spatial transformation of the region. By 1812, Louisiana became officially the eighteenth U.S. state. New immigrants settled in the swampy areas on the outskirts of the city, now known as the Upper and Lower Ninth Ward. New Orleans' reputation began growing in the 1820s, and it was famous for its ethnic diversity and for being a "unique and exotic city" (Campanella, 2006, p. 10). By 1836, the city was divided into municipalities: "lower First and Third municipalities are mostly Creole and immigrant; upper Second municipality is mostly American and immigrant (…) producing perception of Canal Street as dividing line between Creole and American cultures." (Campanella, 2006, p. 12) As previously mentioned, the Third Municipality was where the LNW is now located, and it was always perceived as poor and dirty area. The 1840s and 1850s were years of prosperity and growth for New Orleans. The immigrant population kept on growing, which impacted the expansion of the city's limit, its infrastructure, and its culture. By 1860, the city had a population totaling 174,491 inhabitants. Postbellum New Orleans continued to grow and to attract more people, especially emancipated slaves who doubled the black population. Also, the local architecture was transformed into a more modern and international look. By the late 1800s, the city witnessed a remarkable change and major technological improvements (electricity, transportation, and communication), and with the expansion of the streetcar, the richer families who used to live in the city center moved to "new garden suburbs", allowing the new immigrants and working class to settle in the inner city where jobs were available (Campanella, 2006).

The mix of the different cultures that came to settle down in New Orleans allowed the city to form a unique cultural identity that seeped through all of its neighborhoods.

Floods as Part of the Local Cultural Identity

The turn of the 20th century marks the city's cultural identity. Jazz music emerged and became a very popular style in New Orleans, and then nationwide. Over the first two decades, the city kept on growing with more neighborhoods and the building of the Industrial Canal (1918-1923). In the meantime, in 1915, the city witnessed a hurricane (this was before they started naming hurricanes) that inflicted a lot of damage and caused the instability to many of its buildings, mainly churches. The 1920s were years of cultural intellectual prosperity; they were labeled the "French Quarter Renaissance", and gave New Orleans a place on the literary map.

In 1927, the famous 'Great Mississippi River Flood' became the worst natural disaster in the Nation, flooding 26,000 square miles, killing hundreds of people, and displacing half a million people. After the flood, and through the Flood Control Act of 1928, the city reinforced its levees, floodwalls, reservoirs, etc., and even if the city was "spared from flooding, but controversial dynamiting of the levee in St. Bernard and Plaquemines parishes to ensure city's safety creates lasting ill-will between city dwellers and rural neighbors."(Campanella, 2006, p. 18) This event will remain engraved into people's memories, especially for the residents of the LNW; this will be tackled later in Chapter 6. In 1930, the population of New Orleans reaches a total of 458,762 inhabitants among which 28 percent were black. The 1940s were marked by the Second World War, which affected not only the city but also the entire nation.

Major Transformations Affecting the City and the LNW

The 1960s brought a lot of changes. The decade started in 1961 with the desegregation process, which initiated a lot of discomfort and unease within the city. While white population left to either white neighborhoods or to the suburbs, the city's economy kept growing due to the development of the oil industry. In 1965, New Orleans was hit by Hurricane Betsy, a Category 3 storm that caused major flooding to the Ninth

Ward, leading to more levees building in marshy and swampy areas. The rest of the decade was prosperous with the building of the first skyscraper, the franchising of the Saints (the local NFL team), and the building of the I-10 highway. However, in 1969, hurricane Camille hit the Mississippi area and caused major devastation, but it spared New Orleans itself. In 1970, the population started declining, and over the next few years, the city embraced its cultural identity. The city began promoting its touristic features—the New Orleans Jazz and Heritage Festival and Mardi Gras—, while it also improved and renovated a lot of its historic landmarks in and outside the French Quarter and Garden District areas. In addition, Mardi Gras Indians became a major cultural marker, especially among residents in the LNW, where designing costumes and parades are part of the local culture and identity.

In 1973, the second worst Mississippi River flood took place and threatened the whole area. A few years later, the Louisiana Superdome was built and became a major landmark in the city (which continues to be today). The end of the decade witnessed an important migration of the Vietnamese community, who settled mainly in the newly developed areas of town, present-day New Orleans East. In the 80s, the city's population continued to change, with the African Americans reaching 55 percent of the total population. The 1980s also witnessed more development, higher levees, and a new appreciation for Creole cuisine. In 1983-84 the city was severely hit by the worldwide oil crash, and for the rest of the decade the economy of New Orleans was in decline, pushing more and more people out. By 1990, the city's population was 496,438, with the black population reaching 62 percent. The century ended with a lot of ups and downs. On one hand, the city got more and more attention, with its unique architectural value and its downtown area booming with new hotels and businesses. On the other hand, racial tensions grew exponentially, a major storm hit in 1995, followed by hurricane George in 1998. A shift was also notable in the business sector, which saw locally-owned businesses giving way to big chain businesses (Campanella, 2006).

The Years before Hurricane Katrina

In 2000, the city's overall population continued to decline, while its black population continued to grow, making it much less ethnically diverse when compared to its past. The early 2000s were full of changes, especially at the housing level. Many public housing projects were demolished and converted to mixed-income housing, and the downtown area started filling up with condominiums. The terrorist attacks of September 2001 affected the whole nation, and the city feared an attack on its port. The population kept declining, and with tourists spending up to $4billion per year, tourism generated thousands of jobs, becoming the main booster for the economy. In 2004, Hurricane Ivan hit the south east coast, causing a lot of damage. Ivan spared New Orleans, even though the city was under a mandatory evacuation order that turned out to be a planning nightmare because of all the congestion it caused. This prompted city officials to put in place new evacuation plans that prioritized the evacuation of the most vulnerable areas to the least vulnerable areas.

5.3.2. A Multicultural and a Multiethnic New Orleans

> "The Crescent City was the talk of early-1800s America, a century old society at the gateways of the Mississippi Valley." (Campanella, 2006, p. 199)

New Orleans is internationally known for being the birthplace of Jazz music, the home of the best southern and Creole cuisine, and the place for the biggest festivals and Mardi Gras parades in the whole nation.

Table 5.1: Diversity in major American cities, 1850 - New Orleans 5th nationwide (Analysis based on "Statistical View of the United States—Compendium of the Seventh Census" (1854) by J.D.B De Bow. (source: Campanella, 2006)

Total Population	119,460
Locally Born (in city or state)	34,101
Born Elsewhere in US	16,369
Born in England, Wales, or Scotland	3,524
Born in Ireland	20,200
Born in Germany, Prussia, or Austria	11,554
Born in France	7,522
Born in Spain	1,150

Born in Italy	658
Free People of Color	9,961
Slaves	18,068
Total US Born	50,470
Total Foreign Born	48,601
Total- Whites	91,431
Percent Foreign-Born plus Black to Total population	64%
Percent Foreign-Born plus Black to White population	84%
Percent Foreign-Born to White population	53%
Percent Foreign-Born plus Free Colored to White Population	64%
Percent Locally Born to Total Population	29%
Number of Ethnic/Nativity Groups Exceeding 5% of Total Population	7

In the early 1800s, New Orleans had a national and international reputation for being the most ethnically diverse city; it was described and praised by many renowned authors for being a multilingual city where every nationality was represented, and where people came from all over the world to gather in this one place (Campanella, 2006). With all the immigrants arriving to the Unites States during that period, New Orleans "was the nation's number-two immigrant port, ahead of Boston and behind New York" (Campanella, 2006, p. 193).

In the 1820s, New Orleans was the fifth largest city in the country in terms of population size. Back then, census data was collected and put in the following categories: whites, non-naturalized foreigners, free colored people, and slaves. Campanella (2006, p. 195) states, "if diversity is reflected by the number of foreigners and blacks (both free and enslaved) compared to the total population, then Orleans Parish ranks number two in the nation, at 57 percent." And if slaves were excluded from the data, Orleans Parish became the most diverse parish in the whole nation (Table 5.1)

New Orleans distinguished itself from the rest of the big American cities with its unique history. Being established by the French, and then colonized by the Spanish for forty years, rendered it politically different. It was a French-speaking city surrounded by English-speaking cities, and it was mainly Catholic whereas the others were Protestant.

The French influence on the history, the culture, and the legal system left New Orleans a unique American city, even nowadays. It was the city that attracted mostly newcomers, inventors, and developers.

By 1850, the city being one of the most ethnically diverse in the nation with the lowest percentage of locally born people earned its ' Ethnic Gumbo' label. Almost three out of four residents were born outside New Orleans, mainly from France, Spain, and Italy.

At the time, slaves were in demand because of the much-needed labor force, "force was also the factor behind the arrival of some early colonial settlers, whose deportation to the Louisiana colony was the only alternative to imprisonment." (Campanella, 2006, p. 199) The decades succeeding the 'Louisiana Purchase' brought a lot of wealth and prosperity to the city, attracting all types of ambitious peoples, from the wealthiest to the poorest. However, halfway through the century, the lack of industrialization caused the city to lose many of its needed immigrants, who were replaced by under skilled and poor laborers. After emancipation, the city also attracted many freedmen (both Creoles and Anglos) from rural areas that added to the diversity of the black population.

5.3.3. Memory and the City of New Orleans

Memory is part of a city's architectural history. It is present in its buildings, memorials, and museums:

> Architecture and city places, as we have seen, give particular form to our memories; they are the mnemonic codes that awaken recall. (…) So it is of the city: its topographical landscape has been constantly restored, replaced, and renewed from epoch to epoch. Yet the name of a city's streets and squares, the gaps in its very plan and physical form, its local monuments and celebrations, remains as traces and ruins of their former selves. They are tokens or hieroglyphs from the past to be literally reread, reanalyzed, and reworked over time. Images that arise

> from particular historic circumstances come to define our sense of tradition; they literally manage our knowledge of the historic. (Boyer, 1994, p. 322)

In New Orleans, the architecture, and especially the French Quarter, are part of the city's and the people's identity and memory. The strong historical influence of many cultures is vividly present in today's New Orleans, and more specifically the street names, the culture, the music, and the food. This specific aspect of the local cultural identity, with its unique combination of French, Spanish, and Creole cultures, infiltrated throughout the entire city. Although history and culture started in the View Carré, before long it was imprinted in the identity of all the residents and the whole city. Many authors described New Orleans in the 1800s, and its multicultural, multiethnic aspects always made it stood out from the rest of the cities. These specific traits are still present today. The cultural identity of the city is so strong that it survived in people's memories. Boyer (1994, p. 343) states,

> The viewer's memory was externalized onto visual surface indicators, architectural forms and atmospheric details, which repetitively shown as a series eventually fabricated a conventional portrait of the town. From that time forward, the anecdotal characterizations of New Orleans, having been placed in the archive of America's collective memory, were easy to recognize and recall.

5.3.4. Impact of Race and Class on New Orleans

From its inception, New Orleans, like most American cities, had to face problems related to race and class. From its early days, New Orleans was home to slaves and to free people of color. New Orleans' reputation preceded it across borders and oceans. People came from Europe and from multiple places to settle down in the Crescent City (New Orleans is called the Crescent City due to the fact that it looks like a crescent because it follows the shape of the Mississippi River). But slavery was also widespread. In New Orleans, the end of legal racial segregation in the early 1960s was a marking point for the African Americans living in the city, as well as for the identity of the city. Campanella (2006) describes the desegregation process as "paradoxical yet typical". It is paradoxical because Black and White New Orlenians were more integrated before 1961

(the year racial segregation ended) than they were after or even now. They knew how to co-exist in a time where racial exclusion was acceptable, and they each moved into their own neighborhoods when segregation came to an end. That was especially true in the

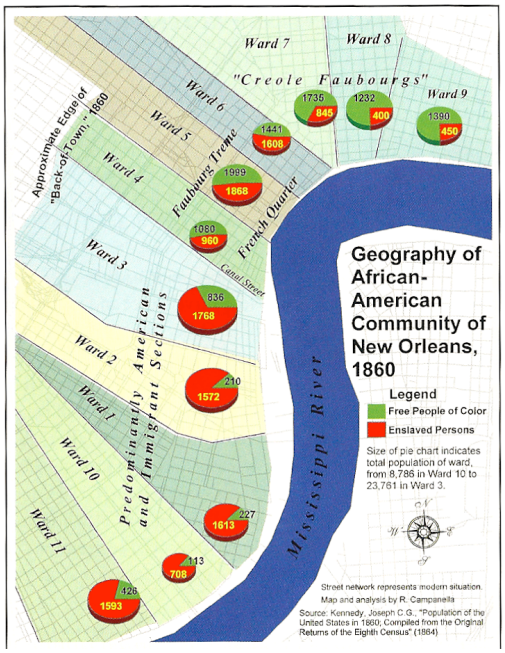

Figure 5.5: Geography of African-American community of New Orleans, 1860. (source: Campanella, 2006)

LNW, where the end of segregation contributed greatly to the transformation of the neighborhood from a racially mixed (and mixed-income) area and to an overwhelmingly African American, impoverished one. Campanella (2006, p. 297) states, "The result today is a spatial distribution of African Americans that is *de facto* segregated in many ways, yet still more integrated than many major American cities."

Most enslaved African Americans worked as domestics, and most of them resided close to their employers in "the distinctive slant-roof quarters appended to the rears of townhouses and cottages" (Campanella, 2006, p. 297). This was referred to as the "back-alley pattern". Other slaves, who did not work in the domestic service, lived in small and simple constructions along the swamps referred to as the "back-of-town" area, because it was right behind the French Quarter in the central neighborhoods. While enslaved people lived in cottages on the lower side of Canal Street, free people of color lived on the Creole side of town (Figure 5.5). The latter, mainly artisans, builders, or businessmen,

represented 45% of the black population in the early 1800s. Free people of color preferred the neighborhoods situated downriver (now known as the Bywater, Upper, and Lower Ninth Ward), as they were more French-speaking, since "many arrived in 1809 as refugees from Saint-Domingue, but many more were native sons and daughters of mixed racial ancestry, Catholic in faith, French in language, and Creole in culture."(Campanella, 2006, p. 298)

Even with the large number of poor black New Orleanians living in the 'back-of-town' area (Figure 5.5), "there were no expansive, exclusively black neighborhoods in antebellum New Orleans. Even Faubourg Tremé, which is sometimes described as American's oldest black neighborhood, was racially mixed" (Campanella, 2006, p. 300)

5.4. Hurricanes and New Orleans

5.4.1. New Orleans: A Vulnerable City?

Hurricanes are common in the south east coast of the United States. Every year hurricanes come and hit the gulf coast, according to the National Hurricane Center[13]. New Orleans has been struck by many hurricanes and floods over the years, the most notorious being The Great Flood (1927), Audrey (1957), Betsy (1965), Camille (1969), Katrina (2005). Due to its strategic location, a lot of hurricanes make landfall in or near the city, and that, combined with its topography, renders it prone to major flooding (Colten, 2009). Many strong hurricanes also missed the city of New Orleans: Danny (1997), George (1998), Isodore (2002), Lili (2002), Bill (2003), and Ivan (2004), but with respects to sheer destruction, these events pale in comparison to what was yet to come in 2005 (Colten, 2009). New Orleans presented many aspects that made it highly vulnerable to Katrina, both geographically and socially.

Geographically, it is below sea level, and is continuously subsiding because sediments do not get deposited due to the ongoing pumping of the water (Campanella, 2006; Colten, 2009). The levees protecting the city have to be maintained regularly. In

[13] http://www.nhc.noaa.gov/ the hurricane season starts on June 1st and lasts till November 30th, which is six months of exposure to life threatening events.

the advent of a breach, the city is inundated right away; therefore, levees have a dual role: to protect the city and to expose it to major flooding.

Not only did this dependence on the levees make the city more vulnerable, but specific actions have resulted in a major deterioration of the natural ecosystem over the years (Campanella, 2006). Among these actions, the numerous canals constructed in the wetlands to look for oil had a strong negative impact on this fragile environment. Moreover, the MR-GO project was proposed in the late 50s, and was only completed in 1968. During the construction period, Hurricane Betsy (1965) hit and the resulting floods were higher than anticipated. It was then that MR-GO was labeled "the hurricane highway" (Freudenburg et al., 2009). It increased the destructive impact of Betsy and did the same for Katrina when it hit forty years later. The level of devastation was beyond anyone's expectations.

In particular, MR-GO had a major impact on the area's biodiversity and wetland environment. Connecting the Gulf of Mexico to Lake Pontchartrain, salt water found its way into the lake's fresh water, which affected the fish and shrimp population, along with the forests of cypress trees that were holding together the fragile soil. Cypress trees cannot thrive in salt water; they gradually died. This not only exposed the city to stronger winds, but also contributed to the loss of land, which, in turn, made the canal wider over the years. The loss of land meant that the canal needed dredging every year in order to maintain its depth to permit larger ships to pass, which allowed more salt water to enter and kill more trees. It was a vicious circle that finally came to an end when the city finally decided to close the MR-GO in 2008 (Freudenburg et al., 2009). Unfortunately, the damage is so great that it will take years and years to restore these wetlands.

Not only were wetlands destroyed by the canals and oil exploitation, but the Mississippi's dams kept the flood waters away from the city contributed to less sediment deposition and prevented the delta from regenerating itself. The combination of these actions, linked with wetlands destruction, weakened the city and the community of New Orleans in the advent of a major hurricane.

Socially, the city's population changed a lot over time. Since the 1950s, the population of New Orleans has been declining[14], and the majority of the people living in New Orleans are African American who belong to the lower income class, which makes all their residences vulnerable to flooding due to poor maintenance and cheaper quality of houses. Most of these residents live in the lowest parts of the city, which also increases their susceptibility to floods.

5.4.2. Hurricane Katrina

On August 23, 2005 Hurricane Katrina began forming on the eastern shores of the Bahamas. It strengthens on its way to New Orleans, reaching a Category 4 storm to make landfall on August 29, 2005. Hurricane Katrina caused unprecedented devastation and destruction. It remains to this day the costliest disaster in the history of the United States. Thousands of people could not evacuate, and found themselves trapped on their rooftops, in the Superdome, or in the Convention Center, the majority of which were poor and African American. The days that followed the deluge were even more catastrophic due to the chaos caused by lack of organization and assistance. Looting, shooting, and fires became commonplace (Campanella, 2006). A week after the hurricane, the appalling death toll had reached an official mark of 1,078 in total. Katrina turned New Orleans into a "ghost city", with the majority of its inhabitants scattered all over the country, with no electricity or running water. The flood was pumped out fast enough to allow some of the residents to return by September. Unfortunately, Hurricane Katrina was not the only blow that hit the city: on September 23-24, Hurricane Rita hit the region. Most repairs done beforehand were in vain, and some areas got flooded again. The city struggled to get back on its feet. There were many issues to deal with, and the situation was overwhelming to everyone, though, at least, both hurricanes had opened the eyes of the residents as well as the local officials in terms of disaster management, planning, and evacuation (Campanella, 2006). People had little or no time to mourn their loved ones. They had to get back on their feet and figure out a way to rebuild, and rebuild

[14] http://www.datacenterresearch.org/reports_analysis/population-loss-and-vacant-housing/

fast. But what the hurricanes did was more than flooding the city of New Orleans and exposing its vulnerability. The hurricanes took away a piece of the city and its identity, of the people and their memories, and of the local history and culture.

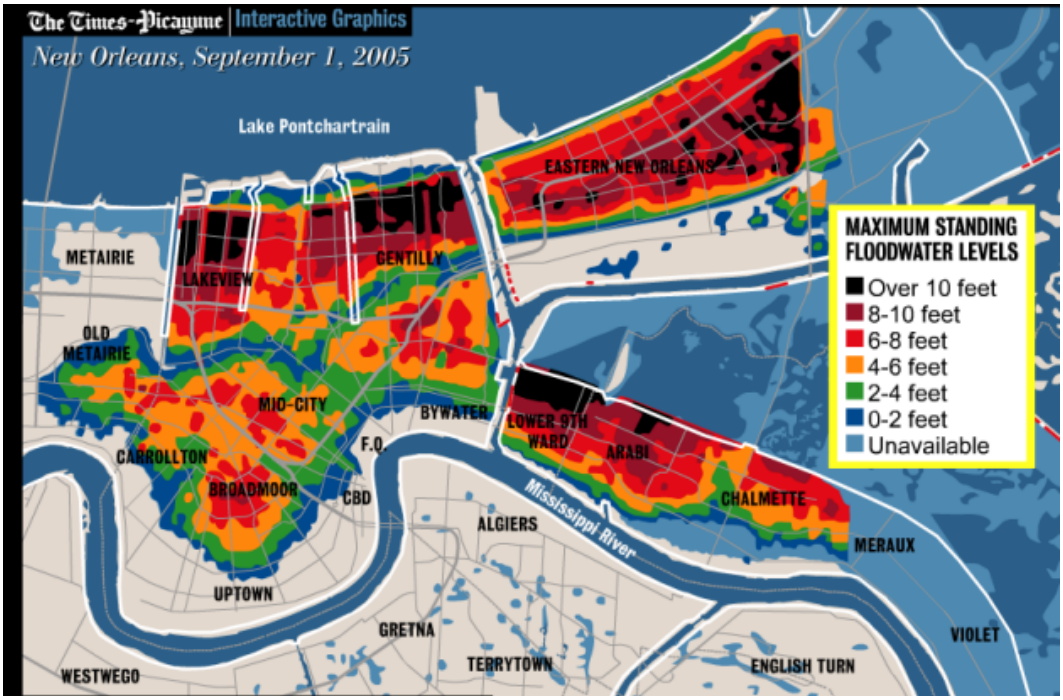

Figure 5.6: Flood map of New Orleans on the day Hurricane Katrina hit. (source: The Times Picayune)

When Hurricane Katrina hit, the levees were breached, the majority of the city was flooded, and especially the LNW (Figure 5.6). People lost their lives and many of those who survived, lost everything.

> As the experience of New Orleans illustrates, federal policy had its intended effect of facilitating and sustaining development in hazardous areas. The paradox is that in trying to make the most hazardous parts of New Orleans safe for urban expansion it had the unintended effect of contributing directly to the devastation resulting from Hurricane Katrina. (Burby, 2006, p. 176)

Therefore, with levees protecting the city and transforming wetlands into livable neighborhoods, did the 'safety development paradox' contribute to weaken people's and the city's memory?

The impact of Hurricane Katrina was devastating for the entire city of New Orleans, but more specifically on the LNW (refer to Figure 5.6). Not only were the levees overtopped from the northern side, but they also failed and breached on the eastern side of the Industrial Canal, resulting in more water rushing in from Bayou Bienvenue from the east. The combination of all this floodwater drowned the LNW up to 10-feet over a period of twenty minutes. While those who did not evacuate perhaps thought for a moment they would wake up the next morning to clean up, pick up the branches, and fix their roofs, they rather found themselves with water up to the roof and many perished (Campanella, 2008).

Hurricane Katrina raised another problem. Most of the displaced people that could not come back to the city are from an African American origin, most belonging to the lower income class and living in the lowest neighborhoods. Falk et al. (2006) argue that even if the reality may seem different, "Katrina clearly moved the process along in ways that reduce the likelihood that proportionately large numbers of displaced African Americans will return to New Orleans." (p. 121) And they add that it is the affluent people, regardless of their race, who have higher chances of returning and rebuilding faster than anyone else. However, Laska et al. (2006) argue that "community resilience cannot be achieved for New Orleans if it becomes a predominantly white gentrified community clustered in the high ground […]And much of the culture valued by the world would be lost with the absence of the African American community." (p. 22) Since the LNW is predominantly African American, the residents felt that their neighborhood was being eradicated and their existing feelings of distrust grew even stronger. That gave them more of an incentive to prove to themselves (and to local officials) that they were worth fighting for, and they were determined to stay and rebuild.

In addition, New Orleanians showed the country and the world that they were not willing to give up on their city or cultural values. In 2006, six months after Hurricanes Katrina and Rita took a piece of the city's identity, elected officials and the citizens agreed to celebrate Mardi Gras. Many were opposed to it because a large majority of the citizens were still living in exile and the city was still mourning. But everyone was

persuaded that celebrating Mardi Gras was going to help overcome their devastating loss and remind the world that the city of New Orleans always celebrated life (Guenin-Lelle, 2007). Regardless of the fact that having Mardi Gras was mainly driven by economic reasons, but "what is true on the individual level is also true on the collective level because the traditions of Mardi Gras are deeply embedded in the collective identity of this city. […] it was also an important point in reclaiming what is unique to New Orleans' history and culture at this seminal moment in New Orleans history." (Guenin-Lelle, 2007, p. 75)

Rebuilding Plans

In New Orleans, especially by reason of its uneven topography, taking proper planning measures is crucial for a resilient rebuilding of the city and its communities. Laska et al. (2006) say that "hurricanes become disasters because of human decisions […] [p]olitical, social and economic factors determine what land is developed, what is built, and who lives there." (p. 17) They also say that New Orleans is a very good example of how communities were placed at risk due to improper land use regulations. After Hurricane Katrina, the city was under the pressure to propose a rebuilding plan, but it was challenging to have everyone's consent (Nelson et al., 2007). For example, government officials and the people know that it is reckless to rebuild the city as it once was, because the existing conditions were the main cause behind the devastation that took place. There were multiple plans that were set in place: the Bring New Orleans Back Commission (BNOB), the New Orleans Neighborhoods rebuilding Plan (NONRP), and the Unified New Orleans Plan (UNOP) (Nelson et al., 2007). Some of these proposed plans affected the LNW negatively and some positively.

The BNOB Plan

The BNOB plan was first initiated after Katrina in September 2005, and was presented to the public in January 2006. The new plan, initiated by the Urban Land Institute, was a top-down process that gathered planners and decisions makers without

consulting local people (Figure 5.7). Therefore, the plan proposed the shrinking of New Orleans' footprint to maintain the most important services, as it projected a smaller population in the future due to the large number of displaced people. This would impose "a 4-month moratorium on building permits in flood-affected areas, and implementing a 4-month neighborhood planning process in which residents of the city's 13 planning districts would be able to prove the viability of their neighborhoods by demonstrating that a significant proportion of the residents wanted to return." (Nelson et al., 2007, p. 28) This incentive meant that some residential areas located in severely flooded areas would be converted into green spaces and parks. The proposed plan was published in the local newspaper, *The Times-Picayune*, with large green dots on the areas that were proposed to become parks, the LNW being under one of the dots, which lead to a public outrage of residents who immediately conveyed their dismay to the city (Figure 5.7). According to Ford (2010, p. 33), "this disputed plan by the Bring New Orleans Back Commission failed a city already fearful of its future, and split New Orleans in two—into one set of neighborhood located safely on the natural levees and a second set located on the unsafe low-lying and imperiled land."

Figure 5.7: The Bring New Orleans Back Commission Proposed Plan with the Green Dots. (source: Bring New Orleans Back Commission)

The NONRP Plan

In December of 2005, a new plan was already set in motion, the New Orleans Neighborhoods Rebuilding Plan (NONRP), colloquially known as the Lambert plans. With the BNOB plan's lack of success, the NONRP started taking form in the spring of 2006. Focused on rebuilding the entire city, the plan took into account public participation and organized neighborhood meetings with residents. The plan's purpose was twofold, "the city council wanted to focus the disparate efforts of all the neighborhood groups and to provide technical assistance to develop project lists for procuring funding to facilitate the rebuilding of neighborhoods citywide." (Nelson et al., 2007, p. 30) The NONRP focused on creating proper storm protection for the whole city instead of shrinking the city's footprint as did the BNOB plan, which was more in tune with the objectives of the city

council members, who wanted their pre-Katrina neighborhoods. The plan was accepted by the city in October 2006.

The UNOP Plan

Even before the NONRP was finalized, a new plan had started to form, the Unified New Orleans Plan (UNOP). This plan aimed at creating a unified citywide plan for the flooded and un-flooded areas, and was designed as a guide for the different investments coming from federal, private, public, or philanthropic sources. Public participation was an integral element in UNOP's designing, and public meetings were held so that residents could give their input, contribute, and meet with planners. According to Nelson et al. (2007, p. 32), "the planners produced plans for each of the city's 13 districts, and a spate team produced a single plan known as the Citywide Strategic Recovery and Rebuilding Plan (or the citywide plan)." The main objectives of the plan were 1) to give people financial incentives to raise their homes according to the FEMA Advisory Base Flood Elevation, 2) to transform the slab-on-grade residences and build them on piers or with fist-floor basements, and 3) to move households and businesses to areas that were less prone to flooding and to areas with higher concentrations of people (Nelson et al., 2007). The problem was that the UNOP meetings took place while it was already a little over a year after Hurricane Katrina, and "some people, particularly those from the flooded neighborhoods, complained about "planning fatigue", saying that they'd answered these same questions for former consultants and resented their precious time being wasted in answering them again."(Ford, 2010, p. 37)

The plans mentioned earlier were essential, as the city needed a rebuilding plan, one on which it could fall back to avoid chaos. Whether it was the BNOB, the NONRP, or the UNOP plans, it took about two years to propose a plan that was accepted by the city and the residents. It was the UNOP that finally unlocked "federal construction money" to start with the post-Katrina rebuilding process (Ford, 2010). But time was passing, and people in the LNW were getting tired of their current living situation. Before reaching a consensus on a rebuilding strategy, people wanted to go back to their homes, and a year after the storm, some residents were rebuilding their homes (Green et al., 2007).

Moreover, shortly after Mardi Gras of 2006, mayor Nagin addressed the residents of the city and encouraged "the devastated neighborhoods (Lakeview, the Lower Ninth Ward) to begin to plan for themselves" (Ford, 2010, p. 34). With all the uncertainty and confusion, a reasonable solution for the residents of the LNW was to rebuild their homes as they were before the hurricane, and this attitude led to some unsound rebuilding techniques. Also, instead of taking into account the work done by planning contractors, every plan initiated a new set of questions and inquiries and that lead the residents to suffer from "planning fatigue"(Ford, 2010). "Decisions being made today will determine the New Orleans of the future. No community can be viable without a cross section of residents employed in all the diverse roles required to sustain it." (Laska et al., 2006, p. 22) All in all, this slow rebuilding process played an important role in preventing people from returning as Maret and Cadoul (2008) predicted. The impact of such random and slow rebuilding will be discussed later in Chapter 6, which tackles the results of the data collection.

5.4. Elements to Retain

This chapter displayed a historical overview of the pertinent facts that made New Orleans the unique city that it is today, and how the LNW evolved over the years to become today's most controversial neighborhood. The decisions made over the course of history shed the light on many of the reasons behind the vulnerability of the LNW, as it was addressed by Campanella (2008) and Toueir (2015). This historical study allowed for a better comprehension of the local cultural identity behind the city and the LNW. The events highlighted in this chapter draw a portrait of the neighborhood and show its unique value. Understanding the history of the LNW makes it clear why people were strongly attached to their neighborhood, and why they decided to come back and rebuild despite its vulnerability. By highlighting this attachment and the origins of the intricate social networks, it becomes pertinent to look at these elements in regards to community resilience.

In order to understand the following chapters, it was crucial to explain and investigate the important facts that drew the historical path of this specific

neighborhood. This process made it possible for the author to develop and design the methodology used for the data collection, and then the questionnaires, along with the type of data collected during the field study. Also, many of these facts lead to a better comprehension of the reasons behind the late comeback and rebuilding of the LNW. The facts described in this chapter explain further the choice of mixed methods, as it is the combination of many different types of data that helps in answering the research question and bringing to light some of the issues behind the controversies of the LNW. The author believes that a better understanding of these facts could have mitigated the most serious side effects of the disaster: the considerable devastation caused by Hurricane Katrina, to the delayed rebuilding of the neighborhood. Although mainly descriptive, this chapter is vital to the course of this research process.

Chapter 6: The Different Aspects of Resilience

6.1. Overview

This chapter uses the different types of data collected in order to evaluate whether or not place attachment and social networks contribute to the resilience of the LNW. It is divided into four parts; the first investigates the reasons behind the late rebuilding of the neighborhood from a quantitative perspective to then compare it to the qualitative data. While conducting the interviews, it became clear that in order to understand the slow comeback of the LNW, a cumulative historical study needed to be done (see Chapter 5 of this dissertation). The historical overview allowed the researcher to understand the facts behind the evolution of the city and the LNW. And most importantly, it showed the extent to which the area's vulnerabilities were the result of a series of decisions made over the course of history.

The second step was to identify the cultural landscape, and in the process, two perceptions surfaced: one of the residents and how they see the LNW, and the other is of the professionals and their perspective of the LNW. Regardless of the main reason for the slow rebuilding process (the historical characteristics of the LNW, or the aforementioned differing perceptions, or both), many residents were prevented from returning, and those who came back, had to work hard.

The third part focused on drawing conclusions from the collected tangible and intangible indicators, which led to inconclusive results. This explains why it was important to use a mixed methods design, as it allowed reaching open-ended results that could lead to further research projects. This research focuses more on opening new doors to evaluating the concept of resilience than on actually measuring it. It became clear that what mattered more is to lay the grounds to a new way of evaluating resilience. And to actually do it will be the subject of further research projects that involves specialists from different disciplines and expertise, along with the proper funding and timeframe.

Finally, the fourth section of the chapter is on the newfound hope in the LNW. Also, it tackles the changes of the residents and of the neighborhood. These changes are in part positive and in part negative, but how will they affect the future of the LNW?

6.2. The LNW Post-Katrina

6.2.1. A First Perspective: What do the Indicators Imply?

The preliminary observations show that the quantitative data pertaining to the LNW shows a different reality from the one experienced by its residents. The numbers show that 20-25% of the residents have returned while talking to the residents shows that those who have returned are very involved in the recovery of the neighborhood and its strong and improved return. The reasons why the LNW is far behind schedule in the rebuilding process are due to many factors: the history of the neighborhood, the title clearing issue, the access to schools and health care, the shrinking economy, and many more. There are numerous NPOs involved in the LNW, but their presence does not seem to yield the required results to improve the situation of the neighborhood and its residents. It turns out that while some NPOs are working for the LNW and its residents, others are mainly interested in making profit out of a very unfortunate situation. Also, there is a gap between the residents' perception of their neighborhood and the professionals' perspective. That gap in large part explains the reason why the residents have lost their trust in the professionals and the state government. It has been proven that the local government that was in charge during and after the hurricane was corrupted and the mayor has been found guilty and was prosecuted for fraud charges (Robertson, 2014). The current government, the Landrieu administration, has to pick up the pieces and figure out a way to gain people's trust again so they can join forces and work efficiently to bring back the community and improve the neighborhood. Another problem is that a lot of the younger residents or the young families have left the LNW due to the lack of resources and services, and those who are actively returning to the neighborhood belong to the older generation, i.e. those who are the most attached to the neighborhood and are not willing to let it sink and disappear.

7 years after the Hurricane the neighborhood was still falling short in the rebuilding process. Thus, it was necessary to try to understand the reasons behind such a late comeback when the rest of the city was following a faster recovery process. One of the assumptions of this research is that the late rebuilding of the neighborhood affects its resilience negatively. This first section aims at investigating whether this claim is correct or incorrect. The author looks at different data (quantitative and qualitative) and multiple sources (primary and secondary) in order to have the most holistic perspective on the issue.

First set of results: the Data Center indicators and sub-indicators

The first set of results presented in this section comes from a compilation of the Data Center[15] indicators. The Center uses data published by the U.S. Census Bureau[16] and compiles it using indicators and sub-indicators. They publish data about each neighborhood and the whole city. They are a very reliable source for information gathering, especially that they offer researchers and anyone who is interested free access to this continuously updated information through their website (http://www.datacenterresearch.org/). One of the most important elements they provide is a comparison of the same indicators between the years 2000 and 2010, and Hurricanes Katrina and Rita took place right in the middle of these two dates.

Since the interest is PD8, the author compiled the data relevant to the two sub-neighborhoods, L9 and HC, and then compared the same data to the rest of the city. Table 6.1 assembles all the pertinent data between 2000 and 2010 of the L9, HC, and Orleans Parish. First, the author did a simple comparison between the two periods and used three types of marks to represent the changes. An arrow pointing down (↘) is used to show that the change is negative; an arrow pointing up (↗) is used to show that the change is positive; and an equal sign (=) is used to show that no changes occurred. These marks were not indicative enough about the meaning behind these changes, and another level of interpreting the data was required. After spending time with the different

[15] The Data Center http://www.datacenterresearch.org/
[16] The U.S. Census Bureau http://www.census.gov/

stakeholders, it became clear to the author that the marks were not representative of the actual situation. It turned out that a mark (↘) did not necessarily mean a negative trend, and a mark (↗) did not imply a positive trend. Through the perspectives of the residents—and regardless of the marks—the author used a color code to show the negative trends (in red), the positive trends (in blue), and the neutral ones (in white). These trends are explained in detail later in the text. The data is presented under different categories and each has a series of indicators, and they go as such:

- People and household characteristics:
    - Total numbers
    - Gender
    - Age
    - Racial and ethnic diversity
    - Households by type
    - Children in households
    - Elderly in households
- Housing and housing cost:
    - Occupancy status
    - Renters and owners
    - Mortgage status
    - Housing affordability by owner/renter status
- Income and poverty:
    - Household
    - Average household income
    - Income distribution
    - Population in poverty
- Transportation:
    - Vehicles available
    - Type of transportation, workers 16+
    - Travel time to work, workers 16+
- Educational attainment:

    - Level of schooling, 18+
- Language:
    - English as a second language
- Employment:
    - Workers living in the neighborhood by wage level
    - Workers living in the neighborhood by industry sector

Table 6.1: Census numbers (2000 and 2010) comparing the Holy Cross to Lower Ninth Ward to Orleans Parish - red numbers reflect a negative trend, blue numbers reflect a positive trend, and white numbers reflect no change (inspired by the Data Center, compiled and analyzed by the author)

Indicator	Sub-Indicator	Holy Cross			Lower Ninth Ward			Orleans Parish		
People and Household Characteristics										
		2000		**2010**	**2000**		**2010**	**2000**		**2010**
Total Numbers	Population	5,507	↘	2,714	14,008	↘	2,842	484,647	↘	343,829
	Total Household	1,982	↘	1,040	4,820	↘	1,061	188,251	↘	142,158
	Family Household	1,315	↘	642	3,467	↘	683	112,977	↘	76,643
Gender	Female	55.7%	↘	54.7%	53.7%	↘	50.3%	53.1%	↘	51.6%
	Male	44.3%	↗	45.3%	46.3%	↗	49.7%	46.9%	↗	48.4%
Age	5 years old and under	10%	↘	9.5%	9.3%	↘	8.9%	8.4%	↘	7.6%
	6-11 years old	10.2%	↘	8.7%	10.9%	↘	7.1%	8.4%	↘	7.6%
	12-17 years old	12.2%	↘	8.4%	10.5%	↘	7.9%	9.1%	↘	6.9%
	18-34 years old	22.3%	↗	25.2%	21.6%	↗	21.8%	25.9%	↗	29.2%
	35-49 years old	20.1%	↘	17.6%	19.8%	↘	18%	21.9%	↘	19.2%
	50-64 years old	13.9%	↗	21.4%	13.9%	↗	21.9%	13.8%	↗	19.4%
	65-74 years old	5.4%	↗	5.6%	7.6%	=	7.5%	6%	↗	6.1%
	75-84 years old	4.1%	↘	2.7%	4.9%	=	4.9%	4.2%	↘	3.4%
	85 years old and older	1.8%	↘	0.9%	1.5%	↗	1.9%	1.5%	=	1.5%
Racial and ethnic diversity	Black or African American	87.5%	↗	89.3%	98.3%	↘	95.5%	66.6%	↘	59.6%
	White	9.4%	↘	6.9%	0.5%	↗	1.8%	26.6%	↗	30.5%
	Asian	0.2%		0.2%	0%	↗	0.1%	2.3%	↗	2.9%
	American Indian	0.5%	↘	0.3%	0%	↗	0.3%	0.2%	=	0.2%
	Other	0.1%	=	0.1%	0.1%	=	0.1%	0.2%	↗	0.3%
	2 race categories	0.9%	↗	1%	0.6%	↗	0.8%	1%	↗	1.3%

Indicator	Sub-Indicator	Holy Cross			Lower Ninth Ward			Orleans Parish		
	Hispanic (any race)	1.4%	⇗	2.1%	3.1%	⇗	5.2%	12.5%	⇗	16.3%
Households by type	Total Household	1,982	⇘	1,040	4,820	⇘	1,061	188,251	⇘	142,158
	Female householder (no husband present) with children under 18	25.1%	⇘	21.7%	24.9%	⇘	18.7%	17.7%	⇘	13.7%
	Male householder (no wife present) with children under 18	2.9%	⇘	2.8%	3.4%	⇘	3.6%	2.7%	⇘	2.4%
	Married-couple family, with children under 18	16.5%	⇘	9.7%	14.8%	⇘	9.4%	14.8%	⇘	11.1%
	Nonfamily households, with children under 18	0.3%	⇘	0.2%	0.2%	⇘	0.1%	0.3%	⇘	0.2%
	Households with no people under 18 years	55.2%	⇗	65.6%	56.7%	⇗	68.2%	64.7%	⇗	72.3%
Children in households	Population under 18 years in households	1,784	⇘	721	4,293	⇘	682	128,785	⇘	72,917
	Children living as head of household	0%	⇗	0.3%	0%	=	0%	0.1%	=	0.1%
	Children living with mother only	43.2%	⇗	49.5%	40.7%	⇘	35.6%	39.2%	⇘	18.5%
	Children living with father only	3.7%	⇗	6%	4.7%	⇗	7.5%	4.7%	⇗	6.7%
	Children living with married parents	29%	⇘	21.2%	25.4%	⇘	22.1%	35.9%	⇘	34.3%
	Children living with grandparents	18.1%	⇘	18%	23%	⇗	26.8%	14.9%	⇘	14.2%
	Children living with other relatives	4.4%	=	4.4%	4.9%	⇗	6.7%	4%	⇘	2.1%
	Children living with non-relatives	1.6%	⇘	0.6%	1.3%	⇘	1.2%	1.5%	⇘	1.2%
Elderly in households	Elderly in households	535	⇘	251	1,963	⇘	406	53,375	⇘	36,152
	Living alone	44.9%	⇘	27.1%	26.8%	⇘	25.6%	34.2%	⇘	32.9%
	Living in family households	51.7%	⇗	68.1%	71.2%	⇗	71.9%	62.6%	⇗	62.9%
	Living in nonfamily households	3.4%	⇗	4.8%	2%	⇗	2.5%	3.2%	⇗	4.2%
Housing and Housing Costs										
Occupancy status	Total housing units (full count)	2,340	⇘	1,767	5,601	⇘	2,039	215,091	⇘	189,896
	Occupied housing units	84.7%	⇘	58.9%	86.1%	⇘	52%	87.5%	⇘	74.9%
	Vacant housing units	15.3%	⇗	41.1%	13.9%	⇗	48%	12.5%	⇗	25.1%
Renters and Owners	Total occupied housing units	1,982	⇘	1,040	4,820	⇘	1,061	188,251	⇘	142,158

Indicator	Sub-Indicator	Holy Cross			Lower Ninth Ward			Orleans Parish		
	Owner occupied	41.8%	⇗	55.5%	59%	⇗	66.4%	46.5%	⇗	47.8%
	Renter occupied	58.2%	⇘	44.5%	41%	⇘	33.6%	53.5%	⇘	52.2%
Mortgage status	Owned with a mortgage or a loan	67.2%	⇘	48.5%	44.5%	⇘	34.6%	67%	⇘	60.8%
	Owned free and clean	32.8%	⇗	51.5%	55.5%	⇗	65.4%	33%	⇗	39.2%
		2000		**2008-2012**	**2000**		**2008-2012**	**2000**		**2008-2012**
Housing affordability by owner/renter status	Owner occupied paying 30% or more of income on housing	na		24.5%	na		40.5%	na		34.6%
	Renter occupied paying 30% or more of income on housing	na		86.9%	na		53.3%	na		62.9%
Income and Poverty										
Household	Wage or salary income	69.9%	⇘	69.7%	67.2%	⇘	46.6%	73.3%	⇘	72.6%
	Self-employment income	7.1%	⇗	10.3%	5.4%	⇗	7.8%	8.7%	⇗	9.9%
	Interest, dividends, or net rental income	13%	⇘	8.7%	10.8%	⇘	3.5%	23.7%	⇘	16.9%
	Social security income	28.7%	⇘	24.6%	35.8%	⇗	49%	24.7%	⇘	24.2%
	Supplemental security income	12.7%	⇗	15.5%	14.5%	⇗	20.7%	7.8%	⇘	7.4%
	Public assistance income	4.3%	⇘	3.6%	8.3%	⇘	1.2%	5.4%	⇘	2.1%
	Retirement income	15.5%	⇘	11.1%	15%	⇗	20.9%	13.4%	⇘	13.1%
	Other types of income	15.6%	⇘	11.1%	15.9%	⇗	20.9%	12.4%	⇘	9.9%
Average household income	Average household income (in 2012 dollars)	$44,375	⇘	$36,463	$37,894	⇘	$33,557	$59,497	⇗	$60,280
Income distribution	Less than $10,000	26.9%	⇘	17.1%	25.1%	⇘	19.6%	21%	⇘	15.4%
	$10,000-14,999	9.2%	⇘	2.8%	14.5%	⇘	11.8%	9.6%	⇘	7.8%
	$15,000-19,999	11.8%	⇗	14.4%	10.9%	⇘	9.5%	8.3%	⇘	7.6%
	$20,000-24,999	7.8%	⇗	11.4%	9.5%	⇗	14.2%	7.5%	⇘	6.3%
	$25,000-29,999	7.6%	⇗	10.6%	9.4%	⇗	9.9%	7.2%	⇘	6%
	$30,000-34,999	6.6%	⇘	5.9%	5.3%	⇗	6.8%	6.3%	⇘	5.3%
	$35,000-39,999	4.4%	⇘	3.8%	5.7%	⇗	8.2%	5.4%	⇘	4.2%
	$40,000-44,999	6.5%	⇗	7%	4.2%	⇘	0.9%	4.6%	⇗	4.7%
	$45,000-49,999	3.6%	⇗	6.4%	3%	⇗	3.6%	4%	⇘	3.9%
	$50,000-59,999	7.1%	⇗	9.7%	6%	⇘	4.3%	6.1%	⇗	6.8%
	$60,000-74,999	2.6%	⇗	4.2%	3.2%	⇘	1.6%	6.5%	⇗	7.7%
	$75,000-99,999	2.7%	⇘	2.1%	1.7%	⇗	3.6%	5.7%	⇗	8.6%
	$100,000-124,999	1.7%	⇗	2.4%	0.9%	⇗	4%	2.8%	⇗	5.2%
	$125,000-149,999	0%	⇗	1%	0.1%	⇘	0%	1.4%	⇗	3.2%
	$150,000-199,999	0.7%	⇘	0.4%	0.2%	⇘	0%	1.4%	⇗	3.1%
	$200,000 or more	0.9%	⇘	0.8%	0.4%	⇗	2%	2.2%	⇗	4.1%

Indicator	Sub-Indicator	Holy Cross			Lower Ninth Ward			Orleans Parish		
Population in poverty	People living in poverty	29.4%	⇗	34.8%	36.4%	⇘	31.3%	27.9%	⇘	27.2%
	People living at or above poverty	70.6%	⇘	65.2%	63.6%	⇗	68.7%	72.1%	⇗	72.8%
Transportation										
Vehicles available	No vehicles available	36.1%	⇘	12.2%	32.4%	⇘	26.6%	27.3%	⇘	18.5%
	1 vehicle available	38.8%	⇗	45%	42.3%	⇘	41.7%	42.3%	⇗	45.4%
	2 vehicles available	25%	⇗	42.8%	25.3%	⇗	31.6%	30.4%	⇗	36.2%
Type of transportation, workers 16+	Car, truck, or van	78.7%	⇗	93.2%	76.2%	⇗	89.6%	76.4%	⇗	80.9%
	Public transportation	17.2%	⇘	3.2%	17.4%	⇘	5.1%	13.2%	⇘	6.9%
	Bicycle	0.8%	⇘	0.7%	1.1%	⇘	0%	1.2%	⇗	2.1%
	Walked	1.6%	⇘	0%	2.8%	⇗	4%	5.2%	⇘	5.1%
	Other means	0.4%	⇗	0.8%	2.2%	⇘	0%	1.3%	⇘	1.1%
	Worked from home	1.3%	⇗	2.1%	0.3%	⇗	1.2%	2.7%	⇗	3.2%
Travel time to work, workers 16+	Average travel time to work (minutes)	35	⇘	24	32	⇘	27	26	⇘	23
	Less than 30 minutes	40.5%	⇗	69.1%	51.9%	⇗	60.3%	66.4%	⇗	71.5%
	30 to 44 minutes	34.9%	⇘	21.6%	24.9%	⇘	23.7%	20.3%	⇘	18.4%
	45 to 59 minutes	10.9%	⇘	2.1%	9.8%	⇘	5.9%	6.1%	⇘	4.6%
	More than 60 minutes	13.7%	⇘	7.2%	13.3%	⇘	10.1%	7.2%	⇘	5.4%
Educational Attainment										
Level of schooling, 18+	Less than 9th grade	8.3%	⇘	4.8%	11%	⇘	7.5%	7.2%	⇘	4.5%
	9th to 12th grade, no diploma	28.1%	⇘	10.3%	29.1%	⇘	25%	18.2%	⇘	11.1%
	High school diploma or GED	26.4%	⇗	40.2%	29.7%	⇗	41.5%	24%	⇗	25.5%
	Some college, no degree	25.8%	⇗	28.4%	21.6%	⇘	18.4%	22.8%	⇗	23.8%
	Associate's degree	3.4%	=	3.4%	2.6%	⇘	1.9%	3.3%	⇗	3.8%
	Bachelor's degree	5.4%	⇗	7.7%	4.7%	⇘	3.9%	13.9%	⇗	17.9%
	Graduate or professional degree	2.6%	⇘	5.2%	1.3%	⇗	1.8%	9.2%	⇗	12.1%
Language										
English as a second language	Native English speaker or speaks English as a second language "well" or "very well"	99.1%	⇗	100%	99.8%	⇗	100%	98.7%	⇘	98%
	Speaks Spanish at home and speaks English "not well" or "not at all"	0.9%	⇘	0%	0.1%	⇘	0%	0.6%	⇗	1.2%
	Speaks other languages at home and speaks English "not well" or "not at all"	0%	=	0%	0.1%	⇘	0%	0.7%	⇗	0.8%
Employment										
		2000		**2011**	**2000**		**2011**	**2000**		**2011**

Indicator	Sub-Indicator	Holy Cross			Lower Ninth Ward			Orleans Parish		
Workers living in the neighborhood by wage level	Total number of workers living in the neighborhood	1,924	↘	1,269	4,663	↘	1,192	172,274	↘	112,739
	$1,250 per month or less	40%	↘	28.8%	42%	↘	27.9%	33.8%	↘	24%
	$1,251-$3,333	49.2%	↘	47%	47.7%	↗	50.6%	44%	↘	41.6%
	More than $3,333 per month	10.8%	↗	24.2%	10.3%	↗	21.5%	22.2%	↗	34.4%
Workers living in the neighborhood by industry sector	Total number of workers living in the neighborhood	1,924	↘	1,269	4,663	↘	1,192	172,274	↘	112,739
	Agriculture, Forestry, Fishing and Hunting	0%	↗	0.3%	0.1%	↘	0%	0.1%	=	0.1%
	Mining, Quarrying, and Oil and Gas Extraction	0.7%	↘	0.4%	0.1%	↘	0%	0.7%	=	0.7%
	Utilities	1.1%	↘	0.6%	0.7%	↗	1.3%	0.7%	=	0.7%
	Construction	3.8%	↗	4.9%	4.6%	↗	6%	3.1%	↗	4.3%
	Manufacturing	4.3%	↗	4.5%	5.3%	↘	4.4%	4.1%	↘	3.8%
	Wholesale Trade	3.3%	↗	3.9%	2.8%	↘	2.1%	3%	↘	2.7%
	Retail Trade	12.8%	↗	14.3%	11.7%	↗	17.1%	10.3%	↗	11.1%
	Transportation and Warehousing	4.2%	↗	5.4%	3.7%	↗	5.5%	3.9%	↗	4%
	Information	1.8%	↘	1.5%	1.5%	↘	1.1%	1.8%	↗	2%
	Finance and Insurance	4%	↘	3.7%	3.8%	↘	2.4%	4.6%	↘	3.6%
	Real Estate and Rental and Leasing	2.9%	↘	2.6%	2.3%	↘	1.3%	2%	↘	1.7%
	Professional, Scientific, and Technical Services	4.5%	↗	4.9%	4.2%	↘	3%	5.6%	=	5.6%
	Management of Companies and Enterprises	1.7%	↘	1.6%	1.5%	↘	0.5%	1.6%	↗	1.8%
	Administration & Support, Waste Management and Remediation	7.1%	↗	7.3%	7.5%	↗	7.6%	7%	↘	6.9%
	Educational Services	7.4%	↘	6.1%	10.1%	↘	6.6%	11.8%	↘	10.4%
	Health Care and Social Assistance	12.8%	↗	14%	13.1%	↗	14.1%	13.7%	↗	14.5%
	Arts, Entertainment, and Recreation	2.9%	↘	1.8%	3.1%	↘	2.3%	3.5%	↘	2.3%
	Accommodation and Food Services	15.6%	=	15.6%	15.2%	↗	17.4%	14.5%	↗	17.1%
	Other services (excluding Public Administration)	3.9%	↘	3.2%	4%	↘	2.4%	3.5%	↘	2.8%
	Public Administration	5.2%	↘	3.5%	4.3%	↘	3.8%	4.4%	↘	4%

A first reading of the indicators and sub-indicators was made by the author so as to make an initial evaluation of the neighborhood. It seemed relevant to compare the L9 to HC, and to see how the changes between 2000 and 2010 affected the neighborhood.

Also, comparing the neighborhood to the rest of the city helped in better understanding the discrepancies, and shed light on the late rebuilding of the LNW. Therefore, the author took the initiative to make a preliminary assessment of the data and highlighted in red the numbers that reflected negatively, in blue the numbers that reflected positively, and in white the numbers that showed no change. With a total of 125 sub-indicators, HC shows a higher ratio of red over blue with 61 red, 58 blue and 6 white sub-indicators; and the same with L9, with 61 red, 59 blue and 5 white sub-indicators. This first reading is summarized in table 6.2 and it comes to affirm the late rebuilding of PD8.

Table 6.2: Premilinary assessment of Planning District 8 compared to Orleans Parish

	HC	%	L9	%	Orleans Parish	%
Red	61	48.8%	61	48.8%	52	41.6%
Blue	58	46.4%	59	47.2%	64	51.2%
White	6	4.8%	5	4%	9	7.2%
Total	125	100%	125	100%	125	100%

After compiling the indicators with the marks, the color codes, and making an initial assessment, it deemed necessary to go in depth as to what each indicator stands for. A first glance makes it clear that there are negative elements affecting the slow rebuilding process, especially when compared to the rest of the city. Yet, this is not a sufficient or representative figure, but it gives an indication as to where to look next. It is imperative to have a closer look at the indicators and sub-indicators and to investigate these trends. This analysis will focus on each category alone.

People and Household Characteristics

Due to Hurricane Katrina, the city lost a large number of its residents. Table 6.1 shows that the city's **total population** dropped 30% between 2000 and 2010, and HC and L9 lost respectively 51% and 80% of their population. This had a direct impact on the 'total household' and 'family household': HC numbers went from 1,315 to 642 and L9 from 3,467 to 683 family households. This indicator shows a drastic loss in the number of residents in the PD8. A neighborhood with a major loss in its population can affect its resilience.

In terms of **gender**, the ratios have not changed much, PD8 has had more female than male residents: between 50% and 55% females and 45% and 50% males (before and after Katrina); both sub-neighborhoods witnessed a slight increase in their male population and a slight decrease in their female population. Overall this change did not affect the general ratio of men and women, which means that even with Hurricane Katrina, the proportions between the genders are still the same and that is positive to the LNW.

As for **age**, there was a decline amongst the young, those under 18 years old (yr), a slight increase in the category between 18 and 34, a decline in the category between 35 and 49, an increase in the category between 50 and 74, and a decline in those older than 75. This is explained by the fact that young families with children under 18 yr have not returned to the area, as well as their parents who probably are between 35 and 49 yr. Those between 18 and 34 yr are both living with relatives and decided to return on their own, or are single and can live on their own. The final category, the older generation, has increased (between 50 and 64 yr) from 13% to 21%. This is explained by the very strong attachment this generation has with this neighborhood. They were the first to come back and are the highest in numbers because their children are older and no longer attended schools. This generation is the backbone of the neighborhood and its presence is a sign of strength. This is highly noted by the residents themselves.

The indicator **racial and ethnic diversity** shows higher percentages of African Americans in the PD8 with 89.3% in HC and 95.5% in L9. Being a pre-dominantly African American neighborhood pre-Katrina, these numbers explain the high percentages. Whites decreased slightly in HC and increased a little in L9. Asians and American Indians are still less than 1%, but the Hispanics have increased slightly in number between 2000 and 2010: from 1.4% to 2.1% in HC, from 3.1% to 5.2% in L9, and from 12.5% to 16.3% in Orleans Parish. This last trend is explained by the fact that Hispanics are still considered cheaper labor, and with all the devastation caused by Hurricanes Katrina and Rita, the city witnessed a large migration of Hispanics seeking jobs. This shows that the area is starting to be more diverse, but the change remains insignificant. Also, the

numbers show high percentages of African Americans in both sub-neighborhoods, and this trend can explain why these residents are highly attached to their neighborhood. As it will be explained in section 6.3, people in the LNW have a very strong attachment to their social networks as many of them are related.

The **type of household** indicator shows a general decrease especially that the total household number went from: 1,982 to 1,040—a 47% drop—in HC, and 4,820 to 1,061—a 78% drop—in L9. Mainly, single-parents households are fewer in number, especially the 'married-couple family, with children under 18' category: they dropped from 16.5% to 9.7% in HC and 14.8% to 9.4% in L9. The loss among the households with children is explained by the lack of schools for these young families to return. Both communities lost a very large portion of their households, which is due to the level of inundation that took place in 2005, when many of the homes were swept away by the high waters.

The indicator **children in household** illustrates well the degree to which both areas changed. The PD8 lost many of its younger generation between 2000 and 2010 (below 18 yr): HC went from 1,782 to 721—dropping 60%—, L9 went from 4,293 to 682—dropping 84%—, and Orleans Parish went from 128,785 to 72,917—dropping 44%. These numbers emphasize again the lack of amenities in both areas, especially the absence of schools, as these are major contributors for young families to return. The PD8 has one school left; the Martin Luther King School, and it cannot absorb all the children of the neighborhood; especially when it takes on children from other neighborhoods as well.

The last indicator in this category, **elderly in household**, is a little intricate, since it shows a much smaller elderly population in absolute numbers, but yet higher percentages. HC went from 535 to 251, losing 53% of its elderly; and L9 went from 1,963 to 406, losing 80% of its elderly. Yet, the percentages of those living in family households increased between 2000 and 2010. This is explained by the fact that this portion of the community is the one mostly attached to the neighborhood. Also, they do not have young children to send to school anymore, which means they face less restrictions with the

prospect of returning. They are the backbone of the community. They are the ones who help the rebuilding process and encourage the rest of the residents to return.

Housing and Housing Costs

After Hurricane Katrina, PD8 was closed for months and residents could not come back right away. This factor contributed to having lower occupancy rates in both areas. The indicator **occupancy status** shows that the total housing units decreased drastically between 2000 and 2010: 2,340 to 1,767—dropping 24.5% in HC, and 5,601 to 2,039—dropping 64% in L9. From these housing units only 58.9% and 52% in HC and L9, respectively, were occupied post-Katrina. Before the hurricane, the occupancy rate was around 85% in both areas. This implies that there are much higher vacant lots, which for a city like New Orleans—with its yearlong tropical weather—might pose problem, as one of the main issues is overgrown lawns and plants.

As for **renters and owners**, PD8 was known for its high homeownership rates pre-Katrina. Although the number of occupied units is lower, but the percentage of ownership is higher post-Katrina. By comparing the neighborhood, before or after the hurricane, to the rest of the city, PD8 has always had higher homeownership rates. This can be explained by the fact that back in the early days, the city gave permission to people settling in this neighborhood to purchase their homes. Also, being an area with strong family ties, people tend to stay around family and pass on their home from generation to generation (which will be problematic after Katrina, as will be explained further in this chapter).

The indicator **mortgage status** indicates that HC has a higher percentage of homes owned free and clean in 2010 than in 2000, the same goes to L9. But with the fewer housing units, the numbers do not necessarily mean that more people are mortgage-free. Rather, it indicates that the culture is geared toward owning your home and paying off the mortgage in full. This reinforces again the strong and long-term ties that existed and continue to exist in the neighborhood.

For **housing affordability by owner/renter status**, this information does not exist for the 2000 census, but the Data Center has numbers between 2008 and 2012

(post-Katrina). The percentage of people paying 30% or more of their income on housing is high for both areas, HC and L9. But the percentage of renters is much higher than the owners, which reflects that people struggle to pay for their homes.

Income and poverty

For the indicator **household**, and after taking into account the drastic drop in the number of households (a 47.5% drop in HC and a 78% drop in L9), wage or salary income post-Katrina is much lower in L9 compared to both HC and Orleans Parish. Self-employment income has increased in all three, whereas social security income has gone up in L9 but not in HC. Either before or after Hurricane Katrina, the percentage of people receiving social security income or public assistance is high if compared to the number of households (around 24% in HC and 50% in L9). The large number of elderly in the area, along with the fact that they all held jobs during their working years, can explain this trend. Also, people seem to rely on multiple sources of income in both sub-neighborhoods.

The **average household income** has dropped post-Katrina: it was $44,375 and became $36,463 in HC, and it was $36,463 and became $33,557 in the L9 (in 2012 dollars).

As for **income distribution**, HC and L9 are in the lower income ranges. If the federal minimum wage is taken into account, $7.24/hr[17] with a full-time job, then annual income ends up being around $15,000. According to table 6.1, 19.9% of HC and 31.4% of L9 households have an income lower than $15,000. In the HC area, 14.4% of the households have an income between $15,000 and $19,999, and the L9 has 9.5%.

Dr. Amy Glasmeier, professor in Urban Planning at Massachusetts Institute of Technology (MIT), developed a tool called the 'Living Wage Calculator'[18] that uses data from the U.S. Census bureau to estimate minimum wages and expenses. This tool gives an estimation of hourly wages, monthly expenses, and typical hourly wages for all

[17] United States Department of Labor: http://www.dol.gov/whd/minimumwage.htm
[18] MIT Living Wage Calculator http://livingwage.mit.edu/

American states. Table 6.3 shows the typical expenses in Louisiana, and the values vary by family size, composition, and location. The table shows that a family made of 1 adult and 1 child needs $32,028 after taxes annually, and a family made of 2 adults and 1 child needs $31,152 before taxes annually. These numbers are around the average household income for HC and L9 areas, and the PD8 is a family oriented neighborhood with more than one-child per family.

As for **population in poverty**, table 6.1 shows that up to 34.8% and 31.3% of people in HC and L9 live in poverty. Considering the total number of residents who have returned, these percentages are relatively high. Thus, residents of the LNW do not have high salaries, and the numbers show that they live in poverty. This trend emphasizes more the reasons behind their attachment to their social networks and neighborhood. Being poor is a means for them to help each other; therefore, reinforce their already existing bonds.

Table 6.3: Typical expenses - The values vary by family size, composition, and the current location (taken from MIT-Poverty in America, Living wage calculator http://livingwage.mit.edy/states/22)

Monthly Expenses	**1 Adult**	**1 Adult, 1 Child**	**1 Adult, 2 Children**	**1 Adult, 3 Children**	**2 Adults**	**2 Adults, 1 Child**	**2 Adults, 2 Children**	**2 Adults, 3 Children**
Food	$242	$357	$536	$749	$444	$553	$713	$904
Child Care	$0	$362	$567	$771	$0	$0	$0	$0
Medical	$146	$413	$429	$411	$289	$410	$387	$397
Housing	$589	$761	$761	$976	$646	$761	$761	$976
Transportation	$318	$618	$712	$764	$618	$712	$764	$777
Other	$73	$158	$199	$254	$125	$160	$181	$207
Required monthly income after taxes	$1,368	$2,669	$3,204	$3,925	$2,122	$2,596	$2,806	$3,261
Required annual income after taxes	$16,416	$32,028	$38,448	$47,100	$25,464	$31,152	$33,672	$39,132
Annual taxes	$2,840	$5,542	$6,652	$8,149	$4,406	$5,390	$5,826	$6,771
Required annual income before taxes	**$19,256**	**$37,570**	**$45,100**	**$55,249**	**$29,870**	**$36,542**	**$39,498**	**$45,903**

Transportation

According to New Orleans Regional Transit Authority (NORTA)[19], there are two bus lines that go to PD8: number 84 – Galvez and 88 – St Claude/Jackson Barracks. Both lines start around the French Quarter area. The 84 comes in through Claiborne Avenue and passes every 40 minutes. The 88 comes in through St Claude Avenue and passes every 20 minutes (refer to Appendix F for bus maps and schedules). NORTA faced several challenges in restoring most of its services post-Katrina, and it took a long time to have mass transportation running up again[20].

For the indicator **vehicles available**, table 6.1 shows that a majority of residents had one car in the household in HC and L9, 45% and 41.7% respectively. Up to 42.8% in HC and 31.6% in L9 have two cars, and 12.2% in HC and 26.6% did not have any cars. The high car ownership in these areas can be explained by the events following Hurricane Katrina. Most residents who did not evacuate could not do so because they did not own a vehicle. Those are the residents who either stayed at their home, or evacuated to the superdome or the convention center.

As for the **type of transportation** used, residents of both areas relied mainly on car, truck, or van to go to work, 93.2% in HC and 89.6% in L9. Less than 5% rely on public transportation and around 2% work from home. Public transportation is therefore not used by the residents. Possible reasons for it are its lack of reliability or efficiency (see next paragraph). Having one or two cars means having the possibility to evacuate if necessary. According to the residents, the possession of a car is a positive thing as it indicates that those who own a car or two can evacuate with their loved ones without having to rely on the city or on public transportation.

For **travel time to work**, residents from both areas do not exceed 30 minutes to get to their workplace (around 60% of the residents spend less than 30 minutes). Less than 10% of the residents spend more than 60 minutes to reach their job destination. This is explained by the fact that people do not use public transportation to go to their

[19] New Orleans Regional Transit Authority (NORTA) http://www.norta.com/
[20] NORTA History http://www.norta.com/About-the-RTA/RTA-History.aspx

workplace, because taking the bus or a combination of bus and streetcar to go anywhere in the city takes at least one hour (the NORTA has a 'Plan Your Trip' option which gives the route options and the shortest route to the French Quarter is 30 minutes long).

Educational Attainment

The **level of schooling** varies in the PD8. Around 40% in both areas have a high school diploma or GED. 28.4% from HC enrolled in college without receiving a degree, and 18.4% in L9. Around 10% from HC and 25% from L9 went to school between 9th and 12th grade, but did not receive a diploma. Very few residents have a university degree or higher. This trend shows that the level of schooling is not high in the neighborhood.

Language

The indicator **English as a second language** shows that 100% of the residents exclusively speak English in both sub-neighborhoods. This can be explained by the lack of diversity in the area since the mid-1900s. Yet, Chapter 4 showed that this area was home to immigrants, and that it was the part of town that spoke more French than English. This indicator therefore shows that the neighborhood lost its ancestral cultural identity.

Employment

As for the indicator **workers living in the neighborhood by wage level**, HC has 1,269 working residents (34% loss), among whom 28.8% are paid less than $1,250 or less per month, 47% are paid between $1,251 and $3,333, and 24.2% are paid $3,333 or more per month. The L9 has only 1,192 working residents (74.5% loss), among whom 27.9% are paid less than $1,250 or less per month, 50.6% are paid between $1,251 and $3,333, and 21.5% are paid $3,333 or more per month.

The indicator **workers living in the neighborhood by industry sector** shows that people from both areas work mainly in construction (around 5%), retail trade (around 15%), transportation and warehousing (around 5%), administration and support, waste management and remediation (around 7%), health care and social assistance (around 14%), and accommodation and food services (around 16%). This can

be explained by the fact that New Orleans relies primarily on tourism, an economic sector where retail and food services are major sources of revenue. As for the health care and social assistance, the growing number of hospitals in the city explains this trend.

What are these indicators implying?

These indicators and sub-indicators show that the population dropped drastically after Hurricane Katrina. Not only did the city witness a smaller population, but the LNW lost 51% and 80% of its residents in the HC and L9, respectively. That indicator alone explains why the neighborhood is not rebuilt. The rebuilding process is not going to take place if the residents have not returned. In the rest of the city, the population dropped 30%. Therefore, why is the rate of return lower in the LNW than it is in the rest of the city, especially when one considers that this area has a strong cultural identity? What is preventing people from coming back? In 2012, the author noted that the LNW was drastically falling behind when compared to the other neighborhoods in the city. The data shows two contradicting trends: one of a strong attachment and high homeownership rate, and another of a slow rebuilding with a drastic loss in residents. It was imperative to conduct interviews with local stakeholders and questionnaires were designed to identify the following:

- The cultural landscape (before and after the storm)
- The strength of place attachment and informal social networks (before and after the storm)
- The role of memory and place attachment in creating resilient communities
    - Coming back after the storm
    - The rebuilding process
    - Hurricane Betsy
    - Life after Katrina
    - Life now

The interviews helped understand the existing bonds between the residents, and between the residents and the neighborhood. Also, they provide hints for the neighborhood's slow comeback, from the residents' perspective. By talking and

interviewing the residents, it was clear to the author that there was more to the LNW than the numbers.

6.2.2. A Second Perspective: the Slow Rebuilding Process

This section is based mainly on the researcher's notes and observations, and the interviews conducted with the residents. During the three months spent in New Orleans, and more specifically in the LNW, the author noticed the residents' late return to their neighborhood stems from a series of complex factors. Some of these run deep in the past, before the storm, while others are the result of the storm. In the paragraphs below, the author will go over the factors that contributed to the devastation of 2005, those that took place after the storm, and those stemming from the author's notes, observations, and informal talks that took place with residents who did not want to sit in for an interview during the summer of 2012.

As portrayed in Chapter 5, section 5.2, many pre-Katrina historical developments contributed to increasing the neighborhood's vulnerabilities at all levels. The most important are: the draining of the wetlands to develop the land, the building of the Industrial Canal, Hurricane Betsy, and the building of the MR-GO. The decisions made over the course of history increased the vulnerabilities of the LNW before 2005. But several additional elements came to exacerbate the recovery process after the passing of the storm.

Hurricane Katrina

Many of the residents did not have the means to evacuate and were accustomed to ride out the storms. They found themselves drowning in their own homes before Hurricane Katrina hit. The levees were overtopped and breached before the storm made landfall. The breach caused a big wave of water that washed out everything in its path. This explains why cars were on top of other cars and roofs were often found blocks away.

> *"Because in Katrina the water went in at 250miles/hr, and if you see what I saw, it was houses on top of houses, cars on top of cars, 18 wheels." (L9W_R&RV1, 2012)*

This was still part of the post-hurricane landscape one year after when the author visited New Orleans for the first time, and as described by Green et al. (2007). Some residents testify to the mediocre maintenance of the levees, which were poorly kept before 2005. They also mentioned the presence of a barge in the Industrial Canal that contributed to the breach,

> *"… we later learned that part of the reason why the L9W flooded was because there was a barge that was parked in the industrial canal and we are still trying to understand why, because in most cases when there is a pending storm, all ships are put out to sea. So why would you put a barge into coastal waters?" (L9W_R&NPO6, 2012)*

The Feeling of Being Neglected

Most residents who returned after the storm feel neglected by the city and by other neighborhoods. This feeling dates back way before the Hurricane and continued afterwards. It is partly due to the fact that the Industrial Canal physically separates the neighborhood from the city,

> *"…the canal divided us from rest of world and the 9th Ward is a Siamese twin to St. Bernard parish, connected by the hip, and they created untrue stories about us" (L9W_R1, 2012).*

To some residents, Hurricane Katrina brought some attention to the LNW, and although this improved slightly the situation, it was not enough,

> *"We was neglected, and still neglected, not as bad as it was but still. We have to always be at the end of the line, we were never able to be at the front or middle."(L9W_R1, 2012)*

Some residents think that the city is using the LNW to attract money. They mention how, from their standpoint, the rest of the city can take advantage of the permanent image of a neighborhood that has not been rebuilt,

"…neglect, even before Katrina, this is a neighborhood that was not a priority for the city and the interesting thing is that after Katrina, this has become like a tourist destination, however it's a tourist destination because of the tragedy, so it doesn't benefit the city to make the neighborhood better, if the tragedy that is bringing the dollar, so that's problematic. I want to know where the money that came into NOLA went. I think that the L9W, became the poster child of hurricane Katrina, and people and individuals and organizations and corporations poured money in and gave money, and gave money and this neighborhood is not seeing it." (L9W_R&NPO4, 2012)

Accessibility and Amenities

After the passing of the hurricanes, the city was closed off for a few days with a mandatory curfew, but the LNW was closed for months. Only gradually did the residents have the opportunity to check on their homes, provided they had the proper means of identification. Some residents were only allowed to visit their properties in November of 2005, almost 6 weeks after the storm, and the northern areas were not accessible for residents for three months (Green et al., 2007). This process was a roadblock for residents who wished to return and start the rebuilding process.

"When we got back here, the first day we go back, November, because they only allowed us to come in to look, and we would come in get on the bus, police car front and police car in the back, drive around a desolated route" (L9W_R&RV1, 2012)

Most of the LNW lacked municipal services like gas, electricity, and potable water for almost a year, and it took longer for some areas to have access to these services (Green et al., 2007). That alone greatly contributed to the late return of the residents, and a late return meant a late starting date for rebuilding their home. In addition to that, amenities have not been restored as well, most importantly the schools. There is only one school for the entire Upper and Lower Ninth Ward, and it does not have the capacity to accept all the children of the neighborhood,

"… we watch other areas with high school rebuild and the only school down here the Martin Luther King (MLK), but we are trying to figure out why it's taking them almost 7 years to build a high school in the LNW." (L9W_R&NPO6, 2012)

Obstacles faced by The Road Home Program

Put in place after Hurricane Katrina, the Road Home Program (RHP), caused additional obstacles to the residents who wanted to rebuild their homes because of the title clearing problem. Many of the properties were handed down from generation to the next, because Louisiana follows the Napoleon Code. Many of the residents needed legal counsel to help them find a solution, but they could not cover the steep costs of legal advice. Many residents were schemed into fake deals and fake promises:

> *"But the problem that we found, especially in the L9W because it was a mindset where if your great great great grandmother died, she handed it down to her child, and then that child would die and handed down and there was no legal transfer or titles and so, there was no clear title to the property and it goes back generations. And we got back we had unscrupulous people talking about helping us to clear the titles, but it will cost $20,000 and nobody had this kind of money. Louisiana is different from a lot of states in America, but the Road Home Program said that if you don't have a clear title then you don't get the money you needed in order to rebuild. So some people are just clearing up after 7yrs, and some people are throwing their hands up because the family is so scattered after all these generations."(L9W_R&RV1, 2012)*

> *"… now we started to fight with the state government and the Road Home Program. The RHP maxed out at a $150,000, and that is not enough to replace, and rebuild a lot of the structures in the L9W. There was no guarantee that you would get the whole amount." (L9W_R&NPO6, 2012)*

The Non-Profit Organizations

The non-profit organizations (NPOs) active in the neighborhood had a mixed impact on the rebuilding process. Some of these NPOs took advantage of the situation people were in and made profit out of a very unfortunate situation. According to some residents and NP)s representatives, these other organizations promise people to help them rebuild their homes, they get the funding to do so, and they do not keep their promises. Whereas, other NPOs delivered, they helped rebuilt many homes, and continue to do so. These organizations are: Make It Right Foundation, Lowernine.org, Common Ground Relief, Lower 9th Ward Village, Neighborhood Empowerment Network

Association (NENA), Lower 9th Ward Center for Sustainable Engagement and Development (CSED), and the Homeownership Association. All these are 501(c)(3) organizations making them reliable and trusted entities, because according the Internal Revenue Service (IRS) they are mandated to be charitable organizations and are tax-exempt: "The organization must not be organized or operated for the benefit of private interests, and no part of a section 501(c)(3) organization's net earnings may inure to the benefit of any private shareholder or individual." (IRS, 2015) A resident who is also running a NPO says,

> *"A lot of people say that there are so many organizations, why can't you all work together and get things done. There is a lot of in-fighting in the L9W, this group doesn't trust that group, and this one won't work with that one. It's difficult. But I think that these groups are doing what they can."(L9W_R&NPO4, 2012)*

Another resident said,

> *"And so, we are going to come together, and that's my agenda because I have seen it, we have too many organizations and not doing all they can do if they worked together." (L9W_R&RV1, 2012)*

Lack of Trust

Residents are under the impression that the government does not want them to return and is purposefully keeping funds away from residents,

> *"When we saw destruction, they saw opportunity. And that I think is part of why we haven't rebuilt. Because you can come up with means to get people to fund if you allocated it, but we got all the funds for every house in the LNW that was destroyed, but they haven't issued these funds."(L9W_R&RV1, 2012)*

Also, the LNW received a lot of negative attention after the storm, and in the BNOB proposed plan, the area had a green dot on it and was considered not viable for rebuilding. The media often implied in their coverage that with devastation as the one seen in the LNW, it should not be rebuilt. The administration at the time was corrupt, and Mayor Nagin, who is currently imprisoned on fraud and corruption charges (Robertson,

2014), did not facilitate the rebuilding process in the some areas of the city, especially the LNW. As one resident puts it,

> *"We are on the right path to recover, but we've had so many things placed in our path that I don't think the politicians get it just yet. They come down here, with their grandiose speeches and things and after they leave we are still left with what we have. So we've got to the point now where we look long and hard at the people that we elect because we see now that those persons that we have elected to office are not doing what we want them do and not what needs to be done." (L9W_R&NPO6, 2012)*

> *"… the people who were pushed out didn't have: 1) the resources to begin with to sustain that kind of loss, and 2) were not supported properly to be able to come back and that's based strongly in racism." (L9W_R&NPO4, 2012)*

6.2.3. Why is the LNW not rebuilt 7 years after?

This first section answers to the questions on the slow rebuilding process in the LNW. The numbers show the unfortunate reality that more than half of the residents have not returned, and more so in the L9 than in HC. After the author interviewed the residents and spent time in the area, other facts explaining the late rebuilding process surfaced. Between the time it was safe to return and the moment the interviews were conducted, seven years later, the residents of the LNW kept facing obstacles preventing them from either returning or rebuilding.

Other than the fact that many residents lost their lives during the storm, the neighborhood suffered from a significant loss in its population size. This essential factor provides a major explanation about the late rebuilding of the LNW. But why have the residents not returned yet seven years after? First, those who have young children have to think about which schools they can send their children to, which explains why the percentage of older people is high among those who have returned. Second, the clearing of home titles—identifying who owns the property was an obstacle to many as many of the homes were passed on from generation to the next—so they can have access to the RHP grant was not an easy process, and continues to be another obstacle among many others. Third, being located across the Industrial Canal, the residents have always felt

neglected by their local officials and government, and the LNW having been always labeled as black, poor, and unsafe area made it difficult for the neighborhood and its inhabitants to recover and trust outsiders. Finally, the NPOs are also facing their own share of problems, especially getting funding to rebuild and gaining people's trust. This last point is being made difficult since some NPOs have taken advantage of this very unfortunate situation.

The slow rebuilding process is not only the outcome of the devastation caused by Hurricanes Katrina and Rita alone, but also from the many historical events and decisions that were made in the past. These contributed greatly to the creation of a neighborhood that is socially and physically very vulnerable. This combination of past and present factors explain why the LNW suffered from such an enormous devastation and why it has not been rebuilt yet seven years after.

A neighborhood with such strong cultural values is commonly assumed to be one that would rebuild quicker than other areas in the advent of a disaster. This first section brought to light the obstacles faced by the residents who wished to return and rebuild. As to whether or not the late rebuilding process affects negatively the resilience of the area, the following can be extracted: at the physical level, the LNW does not show signs of resilience; but at the level of the community, the residents are taking initiatives that lead to a more resilient state. This needs further exploration and it will be the subject of the following section. The author will subsequently investigate 1) whether the strong attachment, the social networks, and memory contributed to the return of the residents, 2) how they perceive themselves, and 3) how they are perceived from outside the neighborhood.

6.3. Perceptions in and of the LNW

6.3.1. Identifying the cultural landscape in the LNW

"as i mature
i wonder
how made it
we being

the men in my family
the various
african-american males
who colorfully crossed
past bold confusions
intentionally engendered
by the infamous hidden alabaster hands
of america's human marketplaces
…
if only i can embody that black eloquent
strolling through the spaces i move
returning home at dusk
from the workplaces/the social
slaughterhouses with nary a drop of blood
messing up my mean cleanness, no malice
on my mind, and just a grinning wide with some kind of
alligator tossed
casually cross my shoulder"
[Kalamu ya Salaam] (D'Ann et al., 2009, pp. 80-81)

As mentioned in section 4.2.4, the cultural landscape in the LNW is unique and is the result of strong family bonds that took form over generations. Many factors contributed to this: being excluded from the rest of the city, being a low-income yet working class community, being majority African American, being religious and attending church regularly, and being a network of close-knit families. With a large portion of the community not returning, what happened to the cultural landscape after Hurricane Katrina?

This section is mainly based on the interviews conducted with the residents and their testimonies. The focus here is to identify the LNW's cultural landscape through the residents' eyes. By understanding the value of this neighborhood to its residents, one can better fathom the persistency of the people to returning home and rebuilding their devastated community. As mentioned in Chapter 3, the main elements of the cultural landscape are place attachment, social networks, memory, identity, and cultural values. The interviews focused mainly on locating these elements through the discussions.

In addition and for validation purposes, some extracts from narratives taken from the book "Overcoming Katrina" written by D'Ann R. Penner and Keith C. Ferdinand will

be used as well to reinforce the interviews. These narratives tell stories about the LNW from the 1950s and 1960s up until Hurricane Katrina and its after-effects.

Place attachment

One factor that contributed to the strong attachment residents have to the LNW was its high proportion of African American homeowners. Everyone wanted the American Dream—access to estate property—for themselves and for their families. And some residents emphasized on this fact,

> *"I think people have a strong loyalty to the neighborhood and it's because they built the neighborhood. This was a place at one time, or one of the few places in NOLA, where black people could own their property and live in a community safely. Because the properties are cheap enough and they didn't have to worry so much. I have heard stories about family, literally, building their homes from the ground up. And this neighborhood had the highest, and I don't know if it still does, but it had the highest homeownership rate in the entire city." (L9W_R&NPO4, 2012)*

> *"… American dreams, freedom, Americans believing in American dreams. We want to do what other family members did: work, get educated, and get a house… you do what others do." (L9W_R1, 2012)*

This is also emphasized in the narratives written by D'Ann et al. (2009), "The land and house were for the family. Just about everybody in the Ninth Ward owned his own property. […] My daddy owned three adjacent lots: in the middle was our houses; on one side of our house there as a lot where my father used to grow the corn, string beans, potatoes, cabbage, lettuce, tomatoes, and belle peppers" (D'Ann et al., 2009, p. 11). This book tells how the LNW's population changed after WWII. Many people came from the center of New Orleans because they wanted to live in better houses. Most of the newcomers were first time homeowners and took pride in that.

In the LNW, the church plays a major role in reinforcing residents' attachment to the neighborhood, as it constitutes their main opportunity to congregate. If the church does not return, an incentive for many people to return vanishes.

"It's loosing the social anchors of your church and your family and your people that led the area to be what it is right now, which is this void." (L9W_R&P7, 2012)

"… the African American black church is always been prominent in the history of our nation. Even when we were slaves, they allowed us to have service. And that's when people gathered […] even now, I feel that the church has to be a part. When the storm hit, my wife and I knew that we were coming back and had nothing to come back to […] we were going back because if there was one person who didn't know God, we had to come back and share that good news with them, but not only that but also to help rebuild our community." (L9W_R&RV1, 2012)

Also, the community is kept closer because many members of the same family live around each other. They all gather and help each other in cooking, keeping an eye on the children, or in helping a neighbor build his house (D'Ann et al., 2009). People always gather around food, music, and Mardi Gras Indians.

"My sister in law is next door. And I have a daughter that lives around 7 blocks away." (L9W_R&RV1, 2012)

"This was a place where people put down their roots, and raise their families for generations. So it's this strong kind of attachment to this place, which one of the horrible things about the levee failures during hurricane Katrina is that it really ripped a hole in that." (L9W_R&NPO4, 2012)

"… the thing that New Orleans is known for come out of the culture of the people who live in this neighborhood, lower to middle income African-American people, jazz, the food is very strongly rooted in African and African-American food traditions, the Mardi Gras Indians." (L9W_R&NPO4, 2012)

"People here used to sit on the steps at 2:30, it's the time kids get out of school and they watch the kids go home. They watched everything that's going on. It's kind of changing now because the kids don't go to school in this community." (L9W_R2, 2012)

Social networks

> "Now when I was coming up we knew everybody. Just like family. […] There wasn't any sense in doing something wrong because somebody was going to tell on you." (D'Ann et al., 2009, p. 11)

One of the elements rendering the LNW a unique place is the strength of its social networks. The bonds that were created when people started settling in the neighborhood only grew stronger and closer over the generations. Two primordial elements are at the root of these networks: family and church.

> *"I think we've lost a little bit of our culture since Katrina, but its still family that gathers us. It's still family oriented. With us, my sister in law was living around the corner, my father in law was living around the corner, our children were no more than 15-20 minutes away, cousins, and family. But the storm has scattered that, but we are still back together, next week we are going to have our 3rd family reunion since Katrina. […] well the church is still a big part of the community. Community activities. Gatherings at churches, whether religious or just community gathering, and family gatherings. It's always centered on the family in reaching out […] If you don't have food in NOLA then it's not going on. Food is a catalyst. We even try to educate about healthy eating. But always centered around a meal." (L9W_R&RV1, 2012)*

> *"But what is unique is the families down here. Parents and children, my mom and dad lived here. My sister is next door, and you got that a lot. From the bridge all the way to Florida avenue you have people from the same family all living there, first and second generations." (L9W_R2, 2012)*

> *"It was my grandparents who lived there, so we would go there every week at least to hang out with them and go to church, the St Maurice Catholic Church." (L9W_R&P7, 2012)*

> *"Any given day you pull out the grill or if you smell smoke, you know that everyone is gathering. People gather around food and everybody knows everybody." (L9W_R1, 2012)*

After Hurricanes Katrina and Rita, the residents of the LNW felt neglected by the rest of the city and its officials. Over time, the area saw the establishment of several NPOs who, as part of their mission, organized meetings during which residents have an

opportunity to discuss the issues they face and make important announcements. The NPO meetings became a sanctuary for the residents who were attending them. During these meetings, residents have the freedom to talk about any of their problem, comforted that they all share the same experience. These community meetings or church gatherings have become a new form of social networks that give residents a safe place to vent and have fellowship.

> *"There is a small group of people here that, before they never spoke to one another because they really didn't need to. And now they are, everybody is getting together and everybody is talking to each other, and everybody knows who everybody else is." (L9W_R&NPO5, 2012)*

> *"… we still have the town hall meetings every now and then, when the council person wants to pass on information. And yesterday we had the 4th of July celebration, we always have parties for labor day and Christmas […] the meetings give people a place to vent, and it gives them an outlet and say exactly what's going on. They feel conformable here, that they can say what they want without any reprises. And we have always maintained it, you have to be respectful in what you say and we are not going to disrespect each other. I will defend your right to say the things you can't say. It's helpful and it's part of the healing process." (L9W_R&NPO6, 2012)*

Memory

The residents' memory is deeply marked by what they had before the storm. When asked about the landmarks that they used to associate with before the storm, their answers were always centered on churches, schools, or gatherings.

> *"People were the landmark, there were no big businesses in the community, it was mainly residential." (L9W_R1, 2012)*

> *"We used to have stuff, you used to walk to corner stores everywhere. We grew up going to corner stores to go shopping. There was a little department store on Caffin and St. Claude. There were little smaller places that you can get around, but now there is one little gas station." (L9W_R&P7, 2012)*

> *"You had the Holy Cross School, then you had the St. Maurice Church down on St Maurice Avenue, you had the New Israel Baptist Church down on St. Claude Avenue, then you have first Thessalonian Church*

down on Caffin Avenue, and you had a lot of businesses up and down the St. Claude corridor." (L9W_R&NPO6, 2012)

"… a lot of stories that people tell about how the LNW used to be in addition to talking about how there were gardens everywhere and people just grew their own food. There were fruit trees everywhere. They talk about how close the neighborhood was, it was a close-knit community. [...] church is a landmark, and was and continue to be the primary gathering place of people. There is a lot of churches in the neighborhood before and after Katrina." (L9W_R&NPO4, 2012)

Also, people remember that the LNW was a self-sustaining community that took care of its own, one where people could walk home, feel safe, and do not lock their doors. There were no random crimes, and the only fights that took place were bar fights between intoxicated people (D'Ann et al., 2009).

"The best time that's in the late 60s early 70s. That's when neighbors got along. You could smell everybody cooking."(L9W_R2, 2012)

When residents were asked about Hurricane Betsy, and how they dealt with the flood 40 years ago, they answered,

"I was in Middle school, they always put out the hurricane warnings and notices and traditionally people would put together the evacuation food […] my brother and other who could swim rescued people and brought them to higher ground; and when daylight broke, water was up to the rooftop and we had chicken and ducks swimming around the house. […] I was rescued in 1965 but in 2005 I was left on my own." (L9W_R1, 2012)

"a lot of people in the Holy Cross area, for Betsy, they had never flooded because they were high up, so my mom told me that for Betsy, they stood in the house for about a week with no power and their neighbors would come together and cook and they would do big barbeques every night to eat. But they never flooded, they would look down the street and they can see water." (L9W_R&P7, 2012)

Many residents yearn to the 1970s when the neighborhood was safe and family oriented. Some blame Hurricane Betsy for turning the LNW into a dangerous the drug-ridden area that it has become in the late 1990s and early 2000. "I feel that a lot of the discord, the crime, and the drugs in the Ninth Ward were because of the damage that was

done to the housing and the stress to the families. […] The Ninth Ward went from a fairly stable environment to a very unstable environment after Betsy, and it never recaptured the sense of purpose that it had before."(D'Ann et al., 2009, p. 93)

Identity

Residents of the LNW identify greatly with the local culture, whether it was the barbeques, the church gatherings, the music, or the Mardi Gras Indians.

> *"Every week there is an Indian something, there are Indians everywhere. So they had these more familiar street parties and block parties. A couple of different smaller churches that they would congregate to, you had two predominant churches in the area, the St Maurice Catholic Church and St David Catholic Church. The St David was the African American Catholics, and the St Maurice was the white Catholics. The St David survived and is still there today. So I think churches and schools they kept them where they are, but some of the schools even went away." (L9W_R&P7, 2012)*

As one of the residents in the book "Overcoming Katrina" puts it, "We used to say, People "from the Nine don't mind dying." We were proud of it. […] Some of our areas were swamp lands or the rough edges of the city, where you had tall grasses, marsh, trees, bushes, and shrubs, so they had to be claimed as a place to make a home. So the neighborhood was built by people who were fairly ambitious in terms of trying to make a homestead for themselves." (D'Ann et al., 2009, p. 91)

Physically they also identify with the Industrial Canal, whence the sardonic expression 'the people on the other side of the Canal' they use to describe themselves.

Cultural values

The cultural factors that bring the residents of the LNW together are: family, homeownership, church, school, food, and music. All of these are deeply engraved in their identity.

> *"People always interacted with each other, it was very family oriented, you were always in somebody's yard, barbequing food, rehashing history, complacent with life. Everyone knew everyone, like a little village. We was okay. […] Growing up as a kid, most of the neighbors are family.*

People shared their lives with each other. I am a big brother, and people come to me for advice. My wife and I raised two sons and it was in this yard. They call me Mister R. People don't know how we live down here." (L9W_R1, 2012)

"And people built most of their families' houses. The children help and it gives you more ownership and you take a little more pride in what you got. You were always walking distance from your brother, from your sister, from a relative."(L9W_R2, 2012)

Even hurricanes are part of the local culture. They provided unwelcome opportunities for people to gather and cook together, as one resident explained,

"we were told that the water could never get as high as it did, we knew that our levees were going down and they were sinking, but from 1970s through Katrina, 2005, there was nothing. […] you will always be at your grandparents' home and hang out through the night with your cousins, and that's what everybody did and nothing ever happened. You didn't have any power for a day or two, and then you go help your parents sweep and pick up the leaves, twigs, and branches. But we hadn't had one in so long that there was a sense of complacency. People didn't know that the water can rise 25ft and then bust through all these levees." (L9W_R&P7, 2012)

When they are asked about the levees and their safety, they answer back with certainty that this is not something they spend their time thinking about. More important matters were finding employment, buying a home and founding a family.

"It's very New Orleans to not think about tomorrow. You think about today. You can't live your life scared." (L9W_R&P7, 2012)

"I didn't think about the levees, there were just there. You thought about them if you went fishing or crossed the river. The levees was part of your life and community." (L9W_R1, 2012)

After interviewing the residents and trying to identify the cultural landscape of the LNW, it turned out that it consists primarily of the people and the bonds they have built amongst each other over the generations. Whether they gathered around food, church, or music, what mattered at the end was the fact that they all got together around the activities that mattered to them. Their landmarks were their homes, their churches,

and their schools, to which frequent community meetings could be added. What separated the residents from their neighboring areas brought them closer to each other, and the resulting networks make the community unique and irreplaceable. This gives the residents the motivation and the will to return even after such a devastating loss.

As the interviewing phase of the research was ongoing, the author began to notice the discrepancy between two different perceptions: one from the residents, and another from the professionals. These two perceptions will be tackled in the following section.

6.3.2. Residents' perception of the LNW

It became clear after a few interviews with residents that they perceived themselves to be different from the rest of the city. As mentioned in chapter 4, the LNW was always labeled negatively and considered one of the poorest neighborhoods in New Orleans. Being physically separated by the Canal and surrounded by water contributed to the exclusion of the neighborhood from the inside out. "In 1923 the construction of the Industrial Canal further isolated the areas from the rest of the city, dividing the Ninth Ward into the upper and lower sections. Thus, the Lower Ninth Ward referred not so much to the altitude of the land but more to its proximity to the mouth of the river below the Industrial Canal" (Wilkinson, 2010, p. 6). When the residents experienced the segregation of their area from the city, they turned onto themselves and created a self-sustaining LNW with home gardens, corner stores, and small retail stores along St. Claude Avenue (Wilkinson, 2010). This feeling of seclusion reinforced the existing bonds and many members of the same family lived in the same area. When Hurricane Katrina hit, the whole family was affected and people of the LNW had no one to help them through their difficult time: "Everybody in New Orleans was going through the same thing so who were you going to go to for help? The government seemingly had no clue. I didn't receive any assistance until the end of November. If you were not on welfare, like we weren't, it seems like assistance was not readily available." (Wilkinson, 2010, p. 14)

Feeling Excluded

Residents of the LNW were subject to being labeled poor and not accepted by the rest of the city. While it contributed to make the LNW culturally unique, being excluded by the rest of the city nonetheless led the residents to develop a negative perception of themselves when compared to the rest of the city. They identify with being on the other side of the Canal, and they felt unwanted by the city, before and after Hurricane Katrina hit New Orleans. Many disliked the manner in which they were treated when they wanted to return to the neighborhood after the disaster, with mandatory escort by the National Guard. They also resented being labeled "refugees" by the media when they did not leave their country.

> *"the other thing that really hurt more than anything else, is the news commentators talked about refugees. I had to explain to my 14-year-old daughter, she asked: "we are refugees?" I told her: a refugee is from a foreign country, you are native born, you can't be a refugee; are you a displaced American? Yes you are, refugee no!" (L9W_R&NPO6, 2012)*

> *"they tell us, you need to show your ID. We need to make sure that you belong here. […] they told us that we had to be out of there before it gets dark as if you don't get out there by the time it gets dark then you are not allowed to leave are trapped there overnight." (L9W_R&NPO6, 2012)*

Obstacles Faced by the Residents

After the re-opening of the LNW and authorization given to let people come back, residents were struggling with insurance companies and the Road Home Program. They felt that they were discriminated against because they were poor and black.

> *"After fighting with the insurance company, now we started to fight with the state government and the Road Home Program. The RHP maxed out at a $150,000, and that is not enough to replace, and rebuild a lot of the structure in the LNW. There was no guarantee that you could get the whole amount. They based that on the value of the house at the time of the storm, and they used a lot of other formulas to water it down and they said that they are trying to make sure that everybody takes a piece of it.[…] and after the fight with the state government, you have to fight with city hall." (L9W_R&NPO6, 2012)*

> *"The Road Home was invented as a way to bring people back home but in reality it was into 'a' home, 'a' house. You had a choice to make, you got more money if you decide to come back and rebuild your home, or if you decide to leave all together and move somewhere else, you could do that and you only got 40% to 60% of the value of your home. So lots of people ended doing that, they sold their properties and they moved somewhere else." (L9W_R&P7, 2012)*

Also, the lack of schools and amenities (grocery stores, pharmacy, health clinics, etc.) was a big obstacle for people not returning.

> *"We only have one school. Before the hurricane we had seven. We don't know why we have one school only. They said there was one point something billion dollars to rebuild and they tore three schools down and that cost almost half a billion dollars." (L9W_R2, 2012)*

The Perception from the Outside

Residents were asked about what they assumed the rest of the city thought about them. Some people said the government neglected them because they were poor and black and they did not want them to return. Others feel that the city does not want them as well, and that even the Road Home Program was designed to keep them from returning.

> *"The people on the other side of the canal, they look at us like: 'you live down there? Are you out of your mind? Why would anyone in their right mind would want to live below the industrial canal?' they view us as the backwoods aboriginals. But that's the way it is." (L9W_R&NPO6, 2012)*

> *" [The LNW] is not getting any attention. We need to get out and get our own money. You know nothing started here, there are plans for everything, but the construction has been going on here now, this is what President Obama's quick shovel ready projects. They have been talking about this since 2009, we knew about this 3 years ago, and now it's starting." (L9W_R&NPO5, 2012)*

> *"there is always a negative connotation for being in the LNW, even before there were black people, the whole people were considered trash. No matter who you are what color you are. My dad was telling that they used to ride bikes into St. Bernard and the police would chase them back to the Ninth Ward and tell them 'get back in the ninth ward trash'"(L9W_R&P7, 2012)*

> *"A lot of people never come down here. And a lot of people think that Brad Pitt gave us these houses. They don't realize that this is people's land and people paid for it. They were shocked when they found out." (L9W_R2, 2012)*

> *"The LNW is the focus of the disaster. Everything was focused on the LNW, help those poor people, we weren't poor, we owned the land. We didn't have a million dollar condo, but we owned the land." (L9W_R&RV1, 2012)*

> *"in neighborhoods like the LNW where there is a lack of resources […] the mentality of lack is really strong, and they feed of each other, so if you live in an environment you are very protective of what you have so you don't want to share, you don't want to risk somebody else taking what you have because you feel like you have so little already. […] and that leads back to the racism, it created this situation." (L9W_R&NPO4, 2012)*

The interview extracts presented in this section show that even with the strong attachment the residents have in regards to their culture, their homes, and their neighborhood, they still perceive themselves through the lens that the city created and continues to see them through it. Over the years, the Canal has physically segregated the neighborhood, which in turn pushed away the residents. As a consequence, the latter kept to themselves and turned towards each other. While being fully aware of the impression the outside world had of them, they developed a sense of rejection where they only accepted each other and formed strong bonds between themselves. The current slow rebuilding process is a direct result of the city and the LNW not having done anything about restoring relationships between the city and the neighborhood – not before the Hurricane, nor after. The city endured major corruption, especially post-Katrina, which led to loss of faith into the government. And people did not see any change until the arrival of Mayor Landrieu and the new Obama administration. As a result, years have passed and residents feel they need to figure things out on their own, yet again.

6.3.3. Professionals' perception of the LNW

As the author was interviewing the professionals to understand why the LNW was not rebuilt seven years after the storm, and who is involved in the rebuilding process, a different point of view about the neighborhood rose. Professionals interviewed were planning professionals, planning professors, city officials, and non-profits organization representatives (involved or not in the LNW).

The Road Home Program as an Obstacle

The main element that both sides agree on is the Road Home Program (RHP) being an inefficient program for a neighborhood like the LNW, especially when the homes were passed on from generation to generation and the titles were not cleared properly. According to an old rule from the Napoleon Code, if the owner of a property did not set a will in place before dying, then the latter is equally divided between the children. Properties in the LNW were bought generations ago and handed down to children and grandchildren. After Hurricane Katrina, this caused many delays in the rebuilding process as it was challenging for families and the government to track down all the family members in order to clear home titles.

> *"… in the LNW, people were still trying to prove that they actually lived in the property and had some rights to it, and they were waiting for the Road Home Program which was extremely slow and extremely contorted and took years and years before any money really began to flow." (NL9W_P5, 2012)*

> *"… you can't apply for grants knowing that you don't have a clear title on the property. And then a lot of the paperwork got washed away, and got flooded especially in the LNW. And we did some property research, and at this point they had moved all the City Hall records to the convention center it was this gigantic circus." (NL9W_P6, 2012)*

> *"… the biggest barrier for [non-profit organizations] and for the homeowners also, is the state government. The billion and billions of dollars that were allocated to get people home, wasn't administered well in my opinion. […] So as a result, the poorer the neighborhood you lived in, the less the resources you had at your disposal, the less money you got." (NL9W_NPO3, 2012)*

Acknowledging the Misconceptions

The LNW has always been labeled negatively. Before the 1960s, it was a racially mixed poor neighborhood. Desegregation caused the exodus of many white residents, who were replaced by African Americans. It thus became a poor and black neighborhood. Many of the interviewed professionals acknowledge the presence of misconceptions about the LNW.

> *"Part of what's held the LNW back is that it's always been sort of isolated from the rest of the city and looked down upon the rest of the city … there is this looking down on the LNW, and a lot of misinformation about thinking that it's a lower elevation, its not. Lower means down river." (NL9W_NPO3, 2012)*

> *"The misconception is the lower component and the African American who were poor and desolate and subsidies, I am not saying that wasn't the case but it was very vibrant historic community with a lot of rich heritage." (NL9W_CO2, 2012)*

> *"One issue with the LNW it was always the last piece, it's cutoff by the Industrial Canal by three bridges and then the train line. So to get into downtown New Orleans, you have to cross the industrial canal on one of three bridges, two of the three are drawbridges, so when that's up you are stuck. […] Many people choose not to go to the LNW for many reasons and I think the challenge with the LNW is what are the possibilities for the LNW to be a sustainable community while not trying to think of it as being every single piece of property has to be occupied?" (NL9W_P10&P11, 2012)*

> *"… a neighborhood that historically was physically and socially removed from the rest of the city that identified itself as country, and there was very tightknit internally but not necessarily politically represented or connected outside of itself." (NL9W_RS1, 2012)*

Drawing Attention

In the wake of Hurricane Katrina, the area received a lot of media attention and attracted major organizations involved in the rebuilding process. Some of this attention helped the area, but also contributed to some extent in its late rebuilding. The LNW was used as a poster child for the whole city, and many tourists come to see the devastation of the LNW. This touristic activity requires the involvement of local residents as tourist

guides, and thus generates revenue. It also draws a lot of funding, though a lot of it is not necessarily directed towards the LNW.

> *"I think the LNW got a lot of attention, a lot of positive attention because of all the negative that happened as a result of Katrina." (NL9W_P10&P11, 2012)*

> *"Due to the fact that the LNW is in the region, we are paying more attention to the LWN due to Katrina and Rita, and right after the storm we brought a number of dignitaries in the areas, […] the LNW was the media's target, so a number of people paid more attention to it." (NL9W_CO2, 2012)*

> *"The LNW became to symbolize the destruction of New Orleans." (NL9W_CO1, 2012)*

> *"… the LNW became the symbol of the city's tragedy, because it really is a city-wide tragedy at different levels." (NL9W_P8, 2012)*

> *"The LNW had been the spot light nationally. All had gotten lots and lots of attention from academics and urban planner and idealistic and opportunistic types of all stripes and sorts and through all that attention and time, has seen very little payoff." (NL9W_RS1, 2012)*

Big Storm and Bad Economy

Many of the planners, city officials, and non-profits organizations involved in the LNW say that a lot of money and work have been invested in the area. However, the economy was severely hit in 2008, which affected the amount of money that was flowing towards the city. With all the damage caused to the LNW, many residents decided not to return and that has caused many challenges to the city and the organizations that are helping the LNW.

> *"… the amount of funding that goes to the LNW compared to before the canal, the per capita spending is unreal, the amount of debt-dollars going in, a million dollars per person in funding, capital expenditures, road improvements, sewage improvement, levee work." (NL9W_P6, 2012)*

> *"The only thing that was different about the LNW, the force of the water was so strong that it destroyed the houses completely, and that's*

different from slowly rising water […] limited resources go farther when you are starting with a shell and not having to rebuild. That's the distinguishing factor between the LNW and the other 15 very poor neighborhoods that flooded." (NL9W_P9, 2012)

"… in community development and redevelopment, the LNW has been on the radar since well before Hurricane Katrina. Katrina exacerbated a situation that existed for years before, but there has been significant involvement and investment in the LNW by community development organizations for years." (NL9W_P10&P11, 2012)

"Due to the slow progress in the LNW, the senator decided in 2010, and she was asked by the residents to look at the fact that they didn't have a high school, the senator made a commitment to them that she would deliver a high school." (NL9W_CO2, 2012)

"The city has a place based strategy and one of their target neighborhood is the LNW and they are putting all this funding towards the school, the community center, the fire station, roads. So we are trying to help them focus on the fact that what's good in having all this infrastructure if you don't have people living there?" (NL9W_NPO3, 2012)

"We started saying that there for to be a way to create an online community data information system that can be shared with multiple organizations and that's when I started developing a very specific platform for this WHODATANOLA project. […] there was great need to collect data that would help folks figure out how to help the LNW to come back." (NL9W_P8, 2012)

Disparities Among the Neighborhood

Professionals also acknowledge the fact that there are some disparities within the neighborhood. Holy Cross being a more historical area, it got more funding and more positive attention than the northern area. Also, the Make it Right Foundation is helping people close to the levee breach to return and rebuild their homes following green and sustainable standards. This foundation aims at re-installing a sense of community by rebuilding a cluster of 150 homes in the same area. The non-profit organizations that are involved in the LNW are: lowernine.org, NENA, CSED, The Homeowner Association, LNW Village, and Common Ground. They all work for the residents and the neighborhood, but their work is clustered in specific areas and they have limited resources. Also, some of

them do not cooperate with each other, and that causes many problems to the city and hinders the rebuilding process.

> *"The further you get north of that, so north of the MLK charter school, at about Galvez, the majority of the people elected not to come back." (NL9W_P10&P11, 2012)*

> *"One of the barriers in the LNW, it not a historic district; nobody went back to determine which from the labeled homes actually didn't need to be demolished." (NL9W_NPO3, 2012)*

> *"The residents who are there and the people who are considered the leaders of some of the organizations are doing the best that they can. But they are not cooperating with each other and in many times they are not cooperating with the city." (NL9W_P8, 2012)*

> *"Every time I tried in the LNW, there were a lot of split groups. It was very difficult. […] there is a lot of special interest people, they might call themselves non-profits, some non-profits are wonderful and some are self-serving." (NL9W_P1, 2012)*

New Administration

Finally, most of the professionals agree to the fact that the change in the municipal administration was a positive element, but it came a little late in the process. The Nagin administration made many promises that were never kept and corruption was a significant problem. When Mayor Landrieu was elected, he promised many changes but it takes time to rebuild a torn city and reduce its corruption. This adds to people's motivation and hopefulness.

> *"I like Mayor Landrieu, he is cleaning house in every which way, but you try to clean a house and build a house at the same time and it's almost impossible. But I think that things are moving in the right direction." (NL9W_P8, 2012)*

> *"I think our mayor [Landrieu] is effective, so I think there has been a lot of positive but you have to be very careful that sort of forward momentum doesn't trample on the people who make the city what it is." (NL9W_NPO3, 2012)*

> *"I think with the new mayor [Landrieu] things are happening. You have the Sanchez Center, you have the fire station is coming up, you have the expansion of the MLK, you are going to have a new school, the infrastructure. People are beginning to see activity in the LNW, and that makes people feel hopeful. Back in, and I not being critical of the past administration, but they said that a lot of things were going to happen but it really didn't." (NL9W_CO2, 2012)*

From the professionals' perspective, the city is involved in helping the LNW in coming back. But there are many barriers to face: an immense devastation, a smaller population, and years of segregation (racial and physical). Professionals are well aware of the misconceptions that the residents and the LNW have been carrying, and changing that will take a lot of time.

6.3.4. How the two perspectives lead to the late rebuilding process?

The residents of the LNW have always been excluded from the rest of the city. This has been a trend that dates from the conception of the neighborhood and more so when the Industrial Canal was built. As segregation came to an end, a major transformation occurred in the LNW: it became majority African American coming mainly from lower income families. Feeling secluded from the rest of the city, the residents turned towards each other and took care of their own. Over the years, the combination of all these events reinforced the segregation of the LNW and its reputation was that of a drug and crime-ridden area, majority black, and poor. It was more and more neglected, especially with the high levels of corruption in the city. The LNW is an area with limited resources and with under-insured residents. When Hurricane Katrina hit, a monstrous wave washed away more than half of the neighborhood. Many residents could not evacuate and died. For those who survived, the level of stress that accompanied the rebuilding process was too large to bear and either died or decided to move to another neighborhood or city.

From the perspective of the professionals—NPO representatives, city officials, and planners—, other elements contributed to the LNW's slow rebuilding. The storm affected the whole city, and not only the LNW. The economic crash in 2008 reduced greatly the amount of money allocated for rebuilding. With the funds being limited, more

competition appeared between the NPOs involved in the neighborhood. Also, too many residents have decided not to return, and this made it difficult to attract investors and businesses. Granted, a lot of attention has been given to the area. A lot of money was donated for the LNW, but it is unclear how the money was managed. Yet the city is investing in improving streets and building bus shelters, and there is limited amount of improvements that can be done since the administration has changed. The corruption percolating from the Nagin administration was a major component that needed to be addressed and fixed by the Landrieu administration, and change is happening only incrementally. In conclusion, there is a gap between what the residents and professionals think. This is best illustrated in the figure below (Fig. 6.1.).

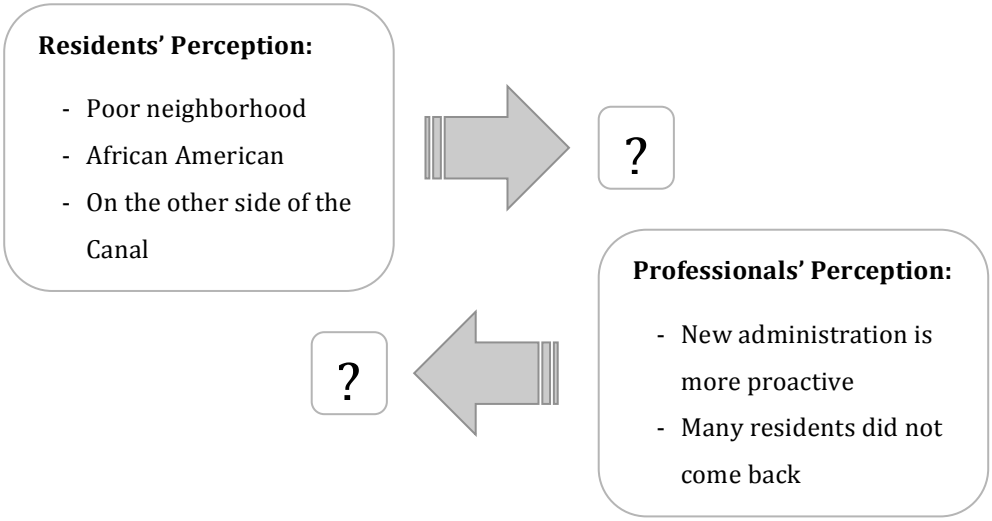

Figure 6.1: The gap between the residents and the professionals (source: author)

Both residents and professionals agree on the misconceptions that accompany the neighborhood and the barriers faced by the residents. The main difference is that the residents are under the impression that the government does not want them to return and is continuing to neglect them, whereas the government and the planners claim otherwise. As of now, the LNW has only a quarter of its residents back, thus a quarter of its residences rebuilt. The progress is very slow when compared to the rest of the city, especially when half of the neighborhood was washed away during the disaster. Also, the scarcity in available resources is affecting the whole city and not only the LNW, but the latter is the neighborhood that shows it the most. The most unjust element is the use of

the tragedy—and of the LNW as a poster-child—to attract funds. In addition, there is some miscommunication between the residents or their representatives and the professionals.

Will all this prevent the area from fully recovering? And what does it imply for the future of the LNW? If the population is composed of mainly older people, and with only one school in the area, will it lead to a shrinking area until everyone leaves the neighborhood indefinitely?

6.4. Resilience and the LNW, the residents and the implications

This section aims at understanding the resilience of the residents and that of their neighborhood. As mentioned in Chapter 3, it is imperative to differentiate between the various levels of resilience. More specifically, in section 3.2, the literature shows that resilience can be evaluated with tangible indicators, to which the author added intangible indicators that give a more complete evaluation of resilience. Thus, the author will first tackle the resilience of the residents, and then the neighborhood. This section focuses on both types of data: the tangible indicators (Data Center numbers combined with the compiled indicators in section 3.2) and the intangible indicators (the interviews with the participants).

6.4.1. How does the data reflect on the resilience of the LNW?

From the collected numbers in section 6.2, the LNW appears to be a smaller version of what it used to be before Hurricane Katrina, with approximately 25% of its residents back. The percentages and ratios correspond to a similar pre-Katrina state; with the population number being much lower as a difference (refer to table 6.1 for numbers). When it comes to housing, there are more vacant lots but with the smaller population size, the trend is easily explainable. Yet, when it comes to the total occupied housing units, the percentages before and after the hurricane are similar. The same applies to income and poverty: the residents' average income varies approximately between $33,000 and $36,000 per year. The element that shows significant change is the vehicles available per household, and this trend implies either that more residents have

acquired cars, or that only those possessing cars have returned to the LNW, or both. As for education, the percentages are very similar pre- and post-Katrina, and this trend results from the combination of the presence of fewer schools and the lower number of residents.

These numbers show a smaller sample of what the LNW was before the storm, though this does not necessarily imply a smaller footprint. The neighborhood is still the same in size, which is clear in the property surveys that were conducted by WhoDataNOLA. The LNW shows a clustered and random rebuilding configuration. Figure 6.2 shows the condition of the properties with blue for properties in good condition, yellow/brown for properties in fair conditions, red for properties in bad condition, and green for vacant lots. The map shows three distinctive areas: 1) the northern section of the LNW is majority vacant lots and properties in bad condition, except for the area by the levee breach to the east where the Make it Right homes are located; 2) the middle section is half rebuilt with vacant lots located in a random pattern across the area; and 3) the southern section, the HC area, where the majority properties is in good and fair condition, with a few vacant lots. The HC area being above sea level, the massive wave did not wash it away. Hence, its residents did not lose their homes and were able to gut and clean in order to rebuild. The wave washed away the middle and northern sections, both located close to the levee breach. These are the two sections that were completely devastated by Hurricane Katrina.

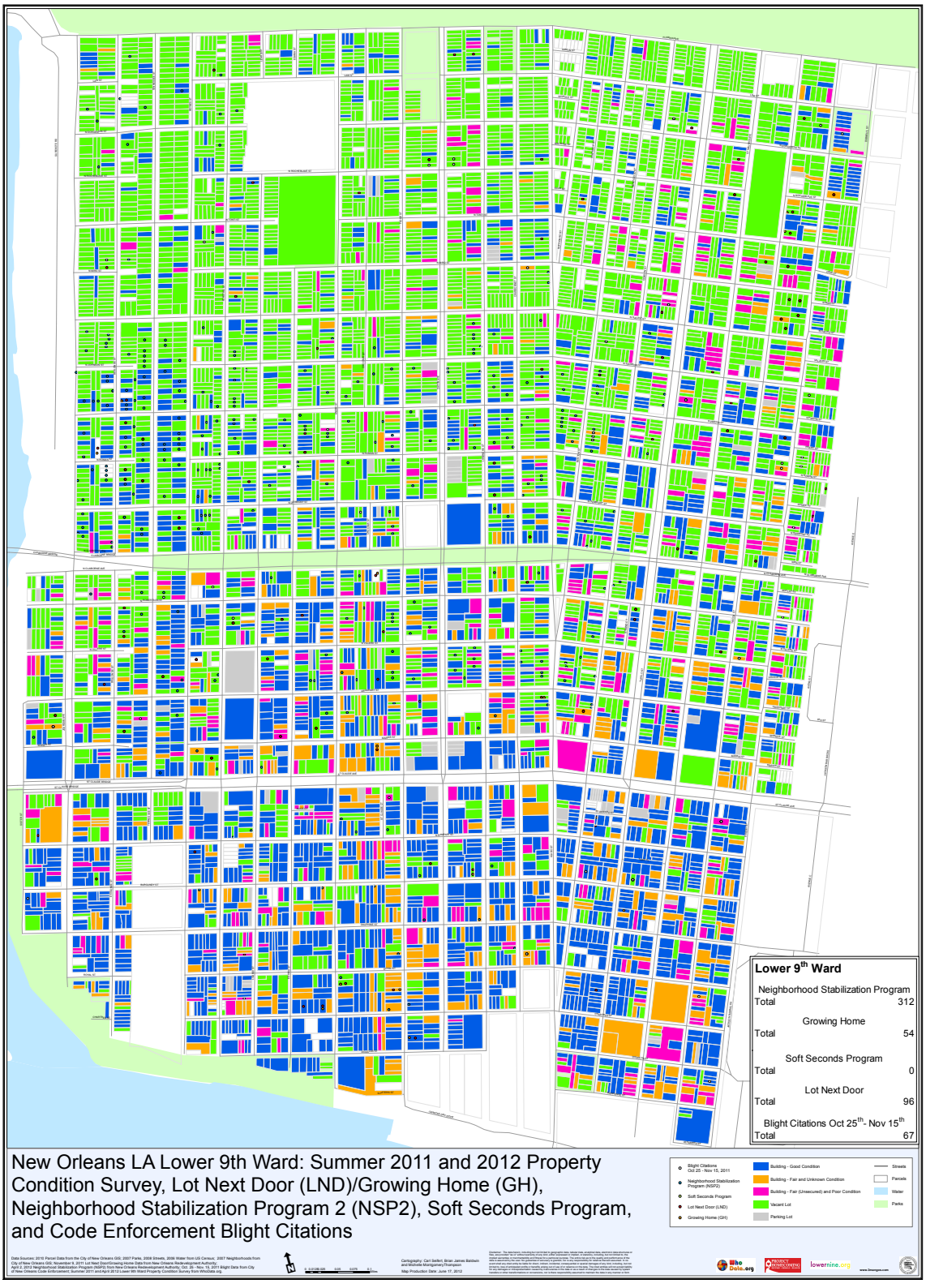

Figure 6.1: WhoDataNOLA map of vacant and rebuilt properties. The northern area has a lot of empty lots and the southern area is partially rebuilt and recovered faster than the rest. (source: WhoDataNOLA.org)

It is beyond the scope of this research to measure resilience quantitatively with the use of indicators. Yet, it was imperative to attempt a comparison of tables 3.2 and 6.1. The first table is a compilation extracted from the literature and reflects a cumulative perspective on the majority of the indicators that are taken into account when resilience is at stake. Table 6.1 is compiled from the Data Center, and consists in a reflection of the indicators that represent the city of New Orleans and its neighborhoods. Therefore, the table below (Table 6.4) presents each of the indicators taken from the literature and explains how they affected the resilience of the LNW positively or negatively. This analysis results from the informal talks and interviews conducted with the different stakeholders.

Table 6.4: The tangible indicators taken from the literature and put in the context of the LNW to show if the indicators affect positively or negatively the resilience of the neighborhood. The Analysis results from the interviews with the different stakeholders. Refer to Table 3.2 for the sources for each indicator (compiled by the author)

Indicator	**Impact on resilience**	**Explanation specific to the LNW**
Governance/Institutional		
Political Power	Negative	Nagin administration did not invest in the area, whereas Landrieu administration is involved.
Recovery	Negative	The city and the LNW were not prepared for devastation as large as Hurricane Katrina.
Coping	Negative	More than half the residents have not returned, and those who have are still struggling.
Preparedness	Negative	Residents were not prepared for an extended evacuation and most did not have the means to leave.
Adaptive potential	Negative	The neighborhood and the residents are still struggling to return seven years after.
Uncertainty	Negative	The lack of funds, amenities, and support create an uncertain environment.
Cooperation	Negative	The different groups and NPOs do not cooperate together, nor does the government.
Trust	Negative	There is mistrust toward the government and the levees.
Medical Capacity	Negative	There are no medical facilities in the LNW.
Participatory Development	Positive	Residents who rebuilt showed a lot of initiative and participation in the rebuilding process and plans.

Indicator	Impact on resilience	Explanation specific to the LNW
Local organization	Negative	Random rebuilding and NPOs not cooperating.
Prevention	Positive	People are taking preventive measures: evacuate when needed, insure property, and build higher.
Auto-organization	Negative	Few residents took initiatives but the majority did not.
Social		
Diversity	Negative	The LNW is one of the least diverse areas with multiple families living in the same area.
Social Structure	Positive	The strong bonds contributed to the return of the residents.
Livelihood	Positive	People work hard and lived with what they have.
Gender	Positive	Equal ratios between female and male residents (refer to table 6.1)
Age	Negative	Majority older and few young residents (refer to table 6.1).
Physical and psychological health	Negative	Residents do not have access to medical facilities in proximity of the LNW.
Place Attachment	Positive	High homeownership rate and people born and raised in the LNW.
Cultural values/ Traditions	Positively	Residents identify greatly with their churches, schools, barbeques, and gatherings.
Adaptation/ Adaptability	Positively	Some residents are changing their habits and are better prepared for the future.
Education	Negatively	One school in the area and majority with a high school diploma (refer to table 6.1).
Knowledge	Positively	Residents are more aware of their vulnerability and are more informed.
Social networks	Positively	Very strong bonds exist between the residents and the church plays a major role.
Economic		
Income	Negative	The LNW is a low-income area (refer to table 6.1).
Wealth	Negative	The LNW is a low-income area (refer to table 6.1).
Technology/ Innovation	Negative	The residents of the LNW do not rely on technology except for some new houses that are green constructions.

Indicator	Impact on resilience	Explanation specific to the LNW
Insurance	Negative	Most residents were under-insured pre-Katrina.
Economic stability	Negative	The LNW is a low-income area and many residents lost their employment after the storm.
Household asset	Negative	Even with the high ownership rate, many homes were undervalued (refer to table 6.1).
Employment	Positive	The residents are hard working people and value this mentality (refer to table 6.1).
Land tenure	Positive	Homeownership rates are among the highest in the LNW (refer to table 6.1).
Susceptibility	Negative	The LNW remains very exposed to flooding.
Poverty	Negative	The LNW is a low-income area (refer to table 6.1).
Physical		
Exposure	Negative	The LNW remains very exposed to flooding.
Recurrence	Negative	Hurricanes are a recurring threat multiple times every year.
Infrastructure	Negative	Roads and sidewalks are in bad condition.
Resistance	Positive	The Army Corps of Engineers improved the levee system.
Security	Positive	Police presence and involvement is greater in the LNW.

From the conducted interviews, with the residents and the professionals, it is clear that the LNW faced many obstacles since the Hurricane took place in 2005. The series of events that followed the storm hindered the recovery process, and they can be summed up as follows:

- The damage caused by the massive wave was too large
- The death toll in the LNW was the highest
- The closing of the neighborhood with restrictive access for months
- The lack of amenities, infrastructure, and services
- The title clearing creating problems with the Road Home Program

- The using of the LNW as a poster child for donations
- The many NPOs working in the LNW but not cooperating together
- The economic crisis that affected the whole city
- The lack of commitment from the Nagin administration

Table 6.4 shows that the LNW is not a resilient neighborhood, even without putting numbers next to the indicators. Seven years after the storm, the LNW shows early signs of recovery, despite all the work that has been done. Thus, the prospect of a full recovery is to be questioned. How does this unfold in the short term and in the long term? And what does this imply when the numbers and the indicator show two different realities? The first shows that the neighborhood is not as resilient as the rest of the city, and the interviews show commitment and perseverance from the residents to rebuild the LNW. These questions remain yet to be answered, and it implies that more research needs to be conducted on the LNW.

6.4.2. How does the Data Reflect on the Resilience of the Residents?

As shown in the section 6.3, the residents who have returned to the LNW identify greatly with their neighborhood and are extremely attached to their community. But how does this reflect on their level of resilience?

The residents who were interviewed are a reflection of the people who are determined to return and rebuild their homes, their community, and their neighborhood. It was challenging to gain their trust and to have them agree to sit in for an interview, and because of all the resistance, the researcher did not have the opportunity to collect quantitative data about the residents. The researcher also wanted to interview residents who did not return in order to evaluate their level of attachment to the area, but this was not possible due to lack of funding.

As for the residents who have returned, the interviews showed a high level of commitment and perseverance. Even facing the misconceptions that come with living in the LNW and the multiple roadblocks they faced, they have not given up on the area. They are doing everything in their power to bring back the neighborhood to what they

once had. In terms of cultural identity and attachment, the residents have showed a very strong sense of belonging to the LNW, as they have been settled there for generations. Family bonds are very tight, with multiple members of the same family living in the area. Section 6.3.1 focused on the unique cultural landscape that exists in the LNW and how residents identify with the local culture and traditions. The objective of this section is to show how place attachment, social networks, and memory contribute positively to the resilience of the residents.

Table 6.4 shows that by simply looking at the indicators, the LNW shows early signs of recovery and this points to an uncertain future. Yet, when the author went to the neighborhood to interview the residents, it was clear that those who have returned are very dedicated to rebuilding and they show an important attachment to their neighborhood. But is that sufficient to say that they are resilient?

Why would residents who lost everything—their homes, their personal belongings, their memories, and their community—would want to return to a devastated area? This question is simply answered by the following: people want to go back home. From the inception of the LNW, residents who came to settle in it and stayed for generations have made it a home to them, and in return, they became have settled deep roots in the area. This neighborhood matches the description of a cultural landscape. It started as a swampy area that turned into farmlands for its first occupants. With the improved technology and the levees, these lands were divided into smaller lots and developed into residential areas for new immigrants and free people of color. And finally, with the Industrial Canal, the LNW became a secluded neighborhood with majority African American residents, which was accentuated further when segregation came to an end. It became a place with a tightly knit community. Therefore, it is a place that was transformed by people and they changed it to fit their own needs, and over time, the LNW acquired its own unique identity. The residents of the LNW are trying to rebuild a neighborhood with similar attributes so they can feel home again. These attributes are:

- The social networks that they once knew – the family gatherings and networks, the churches they used to attend, the schools that their children used to go to, the local businesses that they had, and the social events that brought them together.
- The strong attachment to their community – the LNW is a place where people looked after each other, worked hard, and built their own homes.
- The unique identity – residents gathered over food and music, took part in Mardi Gras parades, and they built a community based on respect.
- The good memories they have of their neighborhood – residents reminisce on a place that was safe with strong family values, and they have very distinctive ability to not think about the levees or the floods; but Hurricane Katrina will be forever engraved in their memory.
- The collective cultural values that they all share – working hard to buying their own home, attending church with family, and gather over food and music.

Other intangible elements have been acquired through the hard experience of rebuilding:

- Auto-organization: residents have learned that they need to be self-organized to bring back their neighborhood. Their personal commitment and involvement does not compare to the government or NPOs' involvement.
- Social learning and knowledge: they are more aware of their vulnerabilities and of the danger they face if another hurricane hits their city. They are more resourceful and for those who never learned how to swim, they are either learning or teaching their children.
- Empowerment: residents know that they need to empower themselves in order to get attention and to rebuild. By taking on initiatives, they understand they are valued and by being on the other side of the Industrial Canal they do not have to be ignored.
- Diversity: they understand that change and having a more diverse neighborhood, racially and economically, is a positive improvement. Opening the area to new residents will attract more funds and more amenities.

These intangible indicators show that the residents show signs of recovery, some have rebuilt and are helping others rebuild, some are involved in NPOs, and others are involved in the opening of businesses, schools, and other amenities. With their strong attachment, social networks, knowledge, and auto-organization, residents have proven to show signs of resilience. Their implication and drive in the rebuilding of their homes and community imply that the residents are working hard to bring back their community, and maybe a few of them are individually resilient. But the fact that residents take initiative and are trying to improve their neighborhood is not enough to make them collectively resilient. In addition, the numbers show that the neighborhood lacks in resilience; thus, what does that imply about their overall resilience?

6.5. Hope in the LNW and Improvements since Data Collection

6.5.1. Hope

This section focuses on the hopes expressed by the residents and the professionals since the data was collected, and on the steps that were taken to fulfill them. When the interviews were conducted, the residents said that they felt hopeful about the future of their neighborhood and their community. The majority showed optimism, more awareness, and more faith for an improved LNW.

> *"As people rebuild, they are more clever, and they think 'if this will happen again, how will I do this?' People are thinking about it. And hopefully it will be in everybody's mind in this city." (L9W_R&NPO5, 2012)*

> *"Now people are a little more aware, during the hurricane season people start preparing themselves early on, they start doing their checklists, and watch the news, collecting batteries and getting radios during the season. In case they need to evacuate, they put money aside. […] I am very optimistic. I think this area has a great deal of potential. I think this area really has not hit a gross pert yet, I think we just need this one business to start." (L9W_R&NPO6, 2012)*

> *"There is more awareness on the ground. Because we have community groups that go out and share, the church shares information about evacuation, and we have an evacuation plan." (L9W_R&RV1, 2012)*

6.5.2. Empowerment

Some residents, especially those involved in NPOs and some of the professionals, feel that the residents of the LNW have become more empowered and are taking initiatives to improve and continue the rebuilding of their neighborhood.

> *"Katrina taught the people of this area a valuable lesson: you can't rely on the federal government or the state government and all you have is each other." (L9W_R&NPO6, 2012)*

> *"The hope we have we can share that. As long as we have hope, and I was reading that in bible study: 'The hope that is seen is not hope because I got it', but the hope in this area will come back better and stronger, but it's not here, and how do you get it here? You gotta work towards it, you gotta advocate, you gotta push for it, you gotta share with people." (L9W_R&RV1, 2012)*

> *"And then you have everything else going on. You have neighborhood groups who feel empowered, they are much better organized, they are much more organized that they were before." (NL9W_CO1, 2012)*

6.5.3. Guarded Optimism

As for the professionals, they all are optimistic about the LNW, though some look at the long-term future of the area with cautious optimism.

> *"I think the city as a whole has made really remarkable recovery. […] And to get back to the LNW, the recovery has been uneven, you can't talk about recovery of the city as a whole you have to look at it neighborhood by neighborhood, not only the LNW." (NL9W_NPO3, 2012)*

> *"I think there was paranoia when Gustav hit in 2008, because people thought it was Katrina again. But I think that everything tested, Gustav tested the system and people are very aware and resilient but they are a little bit more comfortable that they could come back go to work and live their lives again." (NL9W_P10&P11, 2012)*

> *"People are making sure that they have insurance. And I think that people are not as materialistic as they were pre-Katrina. […] I think we have done a lot. We had to rebuild, and basically it was the people, it was faith-based organizations, it was non-profit organizations, it was people who still volunteer their time." (NL9W_CO2, 2012)*

"I have some good feelings about New Orleans, I am not so sure that they would transfer over to what the future of the LNW is going to be." (NL9W_P5, 2012)

"I don't believe that there was a commitment to put the type of money that was needed to build a neighborhood up […] I think there is less of an incentive because you don't have the population, you don't have the tax base, you don't have the homeownership level, you don't have the political will. So I really don't believe that there is a sincere commitment by our government, meaning our federal and the state; I think the city has some commitment, very limited to really bring that neighborhood back." (NL9W_P8, 2012)

6.5.4. Improvements, Positive Change, and 10-year anniversary

Improved Levees and Evacuation

Since the data was collected in 2012, some positive changes took place in the LNW. An important element to highlight is the levee systems have been improved, and they have been put to the test, once with Hurricane Gustav in 2008, and again with Hurricane Isaac in 2012. Yet, as Schleifstein (2014) puts it in his column, "despite levee upgrades, don't let your guard down", people need to be constantly reminded that in the advent of an approaching hurricane, safety measures have to be taken. When the city calls for a mandatory evacuation, residents must leave and those who decide to stay must bear the consequences of being on their own (Schleifstein, 2014). There are permanent structures being built on: the 17th street, Orleans Avenue, and the London Avenue canals. These structures "will include new gates to block storm surges and pumps to move rainwater from the canals into Lake Pontchartrain during storms." (Schleifstein, 2014) Also, the city of New Orleans now has an online page designated to assist residents in better preparing for a hurricane and for an evacuation: http://www.nola.gov/ready/[21]. For Hurricane Isaac, the city, mandated an evacuation of the city and a contraflow plan was accessible to the residents on the local newspaper's website, NOLA.com | The *Times-Picayune* (refer to Figure 6.3).

[21] Are you ready? Get informed. Get prepared. Get ready. City of New Orleans, http://www.nola.gov/ready/

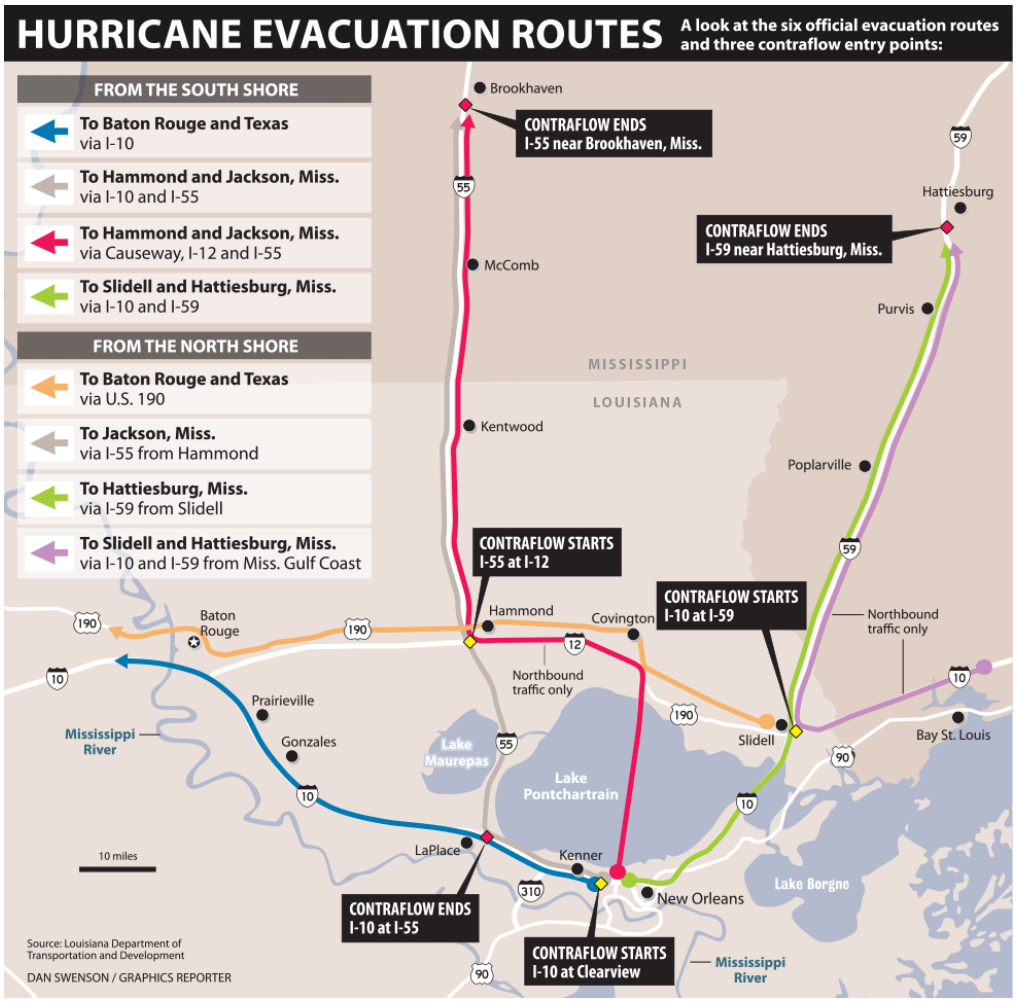

Figure 6.3: 2012 Greater New Orleans area contraflow map (source: NOLA.com | The Times-Picayune) (Swenson, 2013)

Unsuccessful Projects

Since 2012, a few amenities opened in the LNW, or are under construction to open in the near future, and others are still struggling to open. The Alfred Lawless high school was promised to open again to the residents of the LNW in 2011 (Vanacore, 2011). Unfortunately, it never saw the light of day, and according to the architect in charge of the project,

> *"this school project, and I have designed the school for that project: Alfred Lawless. […] and we had to change it several times to meet the Louisiana Recovery School District (RSD) requirements. The RSD doesn't*

want to build this, because they don't think that there should be a school that is not demographically appropriate." (NL9W_P2, 2012)

Another project that never became a reality is the skatepark by the Lower 9th Ward Village. Due to lack of funding and code violations, the park was never completed. The park was envisioned to be part of the recovery and the revitalization of the LNW (Lipinski, 2014).

Upcoming Projects

As for the new upcoming projects, the LNW now has its first CVS drugstore, which opened during the summer of the 2015. The drugstore replaces an abandoned service station and a residential property, and is located on N. Claiborne Avenue (Sayre, 2014). Also, the LNW will have a new fire station and a community center. The fire station will cost $4.1 million and the community center will cost $19 million. Both will replace the old structures that were destroyed by the hurricane. In addition, $44.9 million are being invested on street repairs in the LNW, and these funds are part of the FEMA Recovery Roads Program (Orleans, 2013). The LNW has also seen major streetscape projects to enhance accessibility and safety for the residents. The first phase of the project has been completed in 2013, and the second phase is currently underway (Orleans, 2013). These projects are all promoted and pushed forward by Mayor Landrieu. He is showing a lot of commitment towards the recovery and renewal of the LNW, and continues his efforts to build the Alfred Lawless School. Also, with the mayor's "place-based development strategy, the Lower Ninth Ward's recovery is benefiting from initiatives like the $52 million "soft second" mortgage homebuyer assistance program and Lot Next Door Program reforms." (Orleans, 2013) With this project, WhoDataNOLA.org and New Orleans Redevelopment Authority (NORA) identified vacant lots in the LNW for a program to help residents, who are interested in expanding their lots, to purchase vacant lots for $100 (refer to Appendix G).

There have been many improvements in the area, especially with the commitment of the local government. They are not enough to incite all the residents to return, but they are the first steps toward achieving a recovery of the LNW. In addition, in August

2015, the tenth anniversary of Hurricane Katrina took place, and the main focus was put on the improvements of the city, and more specifically the LNW. A memorial site has been created where the levees breached. This place will always be remembered as the turning point in the lives of the residents of the LNW. (Kleinschrodt, 2015)

6.6. Elements to Retain

This chapter focused on the results of the conducted fieldwork. The problem remains that governments and planners focus on the physical aspect of rebuilding, while they disregard the elements that brought the community together in the first place. In addition, the collected data answered to 'how' and 'why' place attachment and social networks render a community more or less resilient after the occurrence of a catastrophe. The results fall under four distinct categories: 1) exposing the recovery process in the LNW, 2) highlighting the cultural landscape as well as the different perceptions of the LNW, 3) determining the resilience of the LNW, and 4) portraying the continued efforts done in the LNW as well as the fears expressed by the stakeholders.

Firstly, the numbers depict the neighborhood as poor, uncared for, and lacking in resilience. Whereas the interviews show that the residents are nonetheless very implicated in the recovery of their neighborhood. Looking at the area through numbers only proved to be inconclusive, leading the author to use mixed methods, notably to conduct interviews and make field observations to give a realistic perspective of the conditions of the LNW.

Secondly, different perspectives surfaced when: 1) identifying the cultural landscape, 2) the reason people are attached to their neighborhood, and 3) what renders it a unique place. There was a discrepancy between the perspectives of the residents and the professionals in the way they view the area. While residents believe that the government does not want them to stay and they felt neglected, professionals showed a lot of involvement in the area. But with a bad economy, the large number of residents who have not returned, the level of devastation, and the corruption, it was challenging to rebuild the city as it was before. Therefore, even if the residents have a strong will and

are implicated in the recovery of the LNW; this initiative is not enough to render them resilient.

Thirdly, when it comes to evaluating the resilience of the LNW and its residents, it turns out that the residents show signs of resilience whereas the neighborhood does not. The types of data collected show two different realities. For the residents who have returned, it is their attachment to their homes and their social networks that contribute to their resilience, and that was clearly seen in the interviews and the intangible indicators. As for the neighborhood, the indicators show that the neighborhood is far behind in the rebuilding process, especially with the large number of non-returning residents. The interviews with the residents and the professionals show a certain level of commitment but the outcomes are slow due to the numerous obstacles.

Finally, the collected data points at a neighborhood and its residents as not resilient—even if the latter show a high level of commitment toward the rebuilding of the area—the LNW as well as the whole city show signs of recovery, and most importantly—hope. What will be a valuable element to study in future research is whether or not this hope helped increase their resilience or not. Residents are empowered and more organized than they were prior to Hurricane Katrina. This alone can add to the continued efforts of the people involved. Yet it is probable as well to see people loose faith and give up. Another study 10 years down the line can give another perspective of the LNW and its future.

In conclusion, it is through the process of identifying the cultural landscape and positioning it next to the concept of resilience that it became possible to start looking at the resilience of the neighborhood. And when it comes to evaluating the resilience of the LNW, it turned out to be problematic. From the collected data, the results indicate that neither the residents nor the neighborhood are resilient. This being said, it is important to point out that the residents are determined and the area shows signs of progress. Regardless, a few questions remain unanswered: how can the resilience of an area be evaluated if the residents and the neighborhood show different levels of resilience? How does this resilience evolve over time? These preoccupations lead to the fact that in

disaster research, the measuring and evaluation of the concept of resilience should be questioned. It also shows that more research needs to be done to properly evaluate the resilience of a geographic area as well as its residents.

Chapter 7: Discussion and Implications of the Study

7.1. Overview

This chapter is divided into four sections. First the research problem and question are presented again to remind the reader of the main issues addressed in this dissertation. Many elements are tackled throughout the chapters, and it is essential to highlight the problem again.

Second, the results are analyzed in the light of the problem and the main question. It is pertinent to show the importance of setting in place a specific research strategy, of using an approach that help design the study, and of applying a methodology that contributes to simplifying a complex and controversial case study.

Third, the author presents the general contributions and limitations of the study. Each research possesses these two qualities, without which research cannot advance.

Finally, the concept of resilience is revisited, but after the data has been analyzed. The author shows that resilience is a complex concept and measuring it should be something that is not taken lightly. Undertaking such a task must be done through a holistic perspective. Taking into account the cultural landscape when evaluating community resilience is a crucial element in disaster research and this study shows it. Looking at the cultural elements belonging to a community can show a different reality than the numbers alone. Therefore, it is very important to look at the concept through multiples lenses. Ultimately, because resilience is impacted by cultural elements, it becomes a social construction.

7.2. Revisiting the Research Problem

The majority of disasters are accompanied by substantial loss. This loss affects the different levels of society: the economic, the physical, the social, the environmental, the political, and most importantly human lives. With the growing number of people living in clustered cities, the consequences of these disasters are increasingly becoming debilitating. Early on in this document, the researcher states that the main problems

confronted in disaster research are: 1) in connecting resilience to the cultural landscape, 2) in using culture as essential in resilience building, and 3) in using qualitative data in the evaluation of a community's resilience. This dissertation's challenge is to tackle all three problems in order to answer the main research question. The latter interrogates the importance of taking into account place attachment and social networks in creating resilient urban communities.

Connecting culture to resilience is not established in the literature. And as presented in Chapter 2, both concepts of vulnerability and resilience have been used extensively in disaster research and management. This dissertation does not undermine the importance of these two concepts, but it adds another layer —the cultural landscape— to be taken into account. At a first glance, the relationship between the cultural landscape and resilience seems improbable, until they are both scrutinized through their respective indicators. In doing that, the author designed interviews to understand if elements of the cultural landscape can contribute to the resilience of a devastated community, such as in the case of the LNW post Hurricane Katrina. To establish these relations and to move forward in the study, the author used a mixed methods research design. The strategy was set in place so as to follow exploratory and explanatory approaches while using qualitative and quantitative data. This is important to highlight as most disaster related studies rely mainly on quantitative methods and data. By using this approach, the research was able to reach more insightful results.

7.3. Interpretation of the Results

7.3.1. Bridging between the Cultural Landscape and Resilience

As shown in Chapter 3, by looking at resilience's indicators and identifying the social ones, it became clear that the same indicators that affect social resilience are part of the cultural landscape. From that point onward, the relationship between both concepts is established, but how does it impact disaster research? This question is answered not only at the theoretical level, but also at the case study level. This research managed to establish this by utilizing the literature in identifying indicators and by

designing the interview questions so as they demonstrate the importance of place attachment, topophilia, and social networks in post-disaster management and recovery. The historical evolution of the city shows how the exclusion of the neighborhood became the primary reason behind its strong and unique cultural identity. In the results chapter of this document (Chapter 6), and more specifically in section 6.3.1, the elements of the cultural landscape contribute to residents' attachment to the neighborhood. They also identify with the LNW and the social networks that have been established over the generations. With all the devastation that happened, and with all the vulnerabilities they keep on facing, the residents who have returned do no accept to leave the area. Through the observations of the researcher, it is clear that the residents have a strong sense of belonging to the neighborhood and its social networks. Seven years after the Hurricane, the residents strongly believe that the LNW is coming back and their hopefulness was highlighted in their interviews. Using the LNW as a case study shows how important and relevant all these elements are in bringing back and in rebuilding a community. And even if the different types of data lead to proving that the neighborhood and its residents are not resilient, but it demonstrates the significance in using them for future assessments. After all, without strong communities, cities will no longer thrive.

7.3.2. Using Culture in Post-Disaster Rebuilding

It is evident in the literature that culture is not an element that is taken into account when post-disaster rebuilding is undertaken, and it was imperative to evaluate whether or not it is of relevance to consider it so as to foster resilient communities. Also, mixing types of data not only allowed to take the results further, but also it helped in answering the research question. In the example of the LNW, it turned out to be a complex case study as the historical evolution unraveled to be part of understanding both the problem and the solution. By understanding the evolution of both the neighborhood as well as the city, it turns out that the cultural mesh that defines the LNW is the backbone of the community's identity and the reason for its vulnerability. By being excluded—physically, economically, racially, and socially—from the rest of the city, the LNW's community grew stronger and closer. But also, this exclusion contributed greatly

to driving the neighborhood off the radar and to become a crime-ridden area. This exclusion played an important role in abusing and in ignoring it. It was abused by local authority and it was ignored by local officials, as it is shown in section 6.3. Over the years, the neighborhood was transformed from a mixed-income and racially mixed area, to a low income and majority African American area. This process shred away the core values of the LNW and the residents had to fend for themselves. In the interviews, many residents were looking back at the past and reminiscing about the time when the LNW was a safe and family-oriented neighborhood.

Through the researcher's observations, it is clear that the LNW is being rebuilt in a random type of patchwork. With the different NPOs involved in the neighborhood, the work is scattered and unorganized. The disparities between the two sub-neighborhoods are evident and they contribute to the slow rebuilding process. Yet these NPOs have one thing in common, and that is to take into consideration people's needs. The Make It Right Foundation proposed rebuilding homes with the same characteristics as the typical shotgun homes but with a more sustainable configuration. Also, this organization has a clear mandate to rebuild 150 homes in the same cluster of blocks. These are located on the western side of the neighborhood, north of Claiborne Avenue where the levees breached. The questions remain, how are residents going to maintain solar panels and the complex equipment that accompanies such type of buildings? And how are these clusters of green homes going to impact the architectural heritage and future of the area? Another element that came out of the interviews and of the researcher's observation, the NPOs played and continue to play a significant role in the healing process. In addition, the uneven rebuilding of the LNW will definitely have an impact on its future's architectural identity. Some people have rebuilt in the exact same way and others followed a more sustainable and green design with elevated structures. How will that impact the future identity of the LNW? Should the architectural and historical aspects of the neighborhood be ignored in order to bring back the community? The author believes that these elements are part of the cultural identity of the neighborhood. Thus, will this identity change over the course of history?

The approach used in this dissertation demonstrates the importance of taking into account cultural values and identity when rebuilding post-catastrophe. It is through the meetings conducted by NPOs that many residents were able to not only rebuild their homes, but also to have the capacity to move on with their lives. Before Hurricane Katrina, it was the churches and the backyard barbeques that gathered people. Seven years after, another form of social gathering was added, and that is the result of gatherings in and after meetings organized by NPOs. This research does not undermine the importance of setting urban policies, stabilizing the economy, and rebuilding infrastructures. It only underlines the importance of adding cultural identity and the elements of the cultural landscape to the list of priorities. As it appears in the LNW, it is imperative for people to gain back their cultural anchorage in order to recover from the devastation they have witnessed, which they are trying long and hard to put behind them.

7.3.3. A Methodology that Explains a Controversial Situation

As the data and the historical study of the LNW show, the situation in the neighborhood is quite controversial. It is a complex situation due to all the interwoven layers that contribute to its unique value, yet these layers are at the heart of the problem. On one hand, the LNW categorizes itself with having strong family values and a strong cultural identity. And on the other hand, it is the neighborhood that has the most difficulty in rebuilding and in having the majority of its residents return after Hurricane Katrina. By using primary and secondary sources, multiple conclusions surfaced. Statistics show one aspect of the situation, and it is the tangible and pragmatic side of the results. The numbers show that many residents have not returned and that many amenities are absent. And the interviews and observations highlight the many difficulties and obstacles that the residents faced and continue to face. Therefore, even the collected data reflects the controversial aspect of the situation. And that not only justifies the use of mixed methods, but also proves that this approach is instrumental in disaster research. Using such a methodology in circumstances as complex as in post catastrophe planning gives an extended vision of the economic, political, environmental, and social

statuses, which can give decision makers many opportunities in making better decisions in order to avoid major loss should any future calamities take place.

In addition, through the triangulation of the data, this dissertation reached an unexpected conclusion. The NPO meetings that were supposed to be helping people rebuild their homes, solve neighborhood related issues, and act like the connection between residents and city officials, ended up doing more that these tasks. These NPOs became the place where people came to vent and they felt safe to address any issue they needed to talk about. The meetings and the time spent after the meetings became a safe haven for the residents, thus they became part of the healing process. People were surrounded by others who had gone through the same ordeal and have lost as much as they did. These meetings also contributed at bringing neighbors that did not know each other closer. And if someone suspects any criminal activity on their neighbor's property while they are absent, then they feel mandated to call the police and report it. NPOs and the meetings that take place started with a specific mission, and ended up offering the residents much more. These organizations have created a new form of social interaction between the residents, thus a new form of social network that did not exist prior to Hurricane Katrina.

As stated in Chapters 1 and 2, the literature shows that the majority of disaster research uses quantitative methods to evaluate the resilience of a geographic area. And qualitative methods do exist in post-disaster studies but there is something essentially lacking. This absence is noted by the undermining of the cultural landscape when communities are rebuilt. In this research, the author proposes the addition of qualitative methods to approach the issue. It is important to underline the importance of using quantitative methods along side qualitative methods. This dissertation does not undermine the relevance of either method alone; it reinforces the usage of both in order to propose more cumulative and sustainable long-term solutions. As a result, the author is aware that mixed methods research may not be new to disaster research, but it is the approach proposed in this research that demarcates it from other post catastrophe projects. It is the use of the cultural landscape as a mean to understand what existed

before the calamity in order to understand people's needs and aspirations for a better and faster recovery process.

7.4. General Contributions and Limits of the Research

7.4.1. General Contributions of the Research

This dissertation aims to contribute to post-disaster research at the level of connecting the different concepts of vulnerability, resilience, and cultural landscape; and at the level of the methodology where different types of data are used to answer the research question. This research was able to do both as shown in the previous sections. Through the literature, a bridge was built between the concepts and the results reinforced the pertinence of building such connections.

While uncovering the links between vulnerability, resilience, and cultural landscape, two types of indicators revealed to be important. The literature focuses on tangible indicators in evaluating vulnerability and resilience. And when the author was looking for connections between the concepts, it became clear that intangible indicators were not taken into account in disaster research, as they are difficult to quantify. Therefore, this dissertation proposed looking at resilience—and more specifically community resilience—through intangible indicators. In the process, the study revealed that place attachment, social networks, memory, cultural identity, roots, and many more; affected community resilience. Yet these newly identified indicators are part of the cultural landscape. This research contributes at building bridges between different fields of research in order to enrich the existing literature in disaster. This strategy aims at complementing other post-disaster studies in taking into account intangible indicators in future post-disaster studies.

In addition, the approach used in this research permitted the testing of the proposed model on the specific case of the LNW after Hurricane Katrina. The model proposed in Chapter 3 focuses on the concept of resilience and how it is evaluated. The model uses not only qualitative and quantitative methods, but also focuses on the cultural landscape as a tool to better assess the needs of a devastated community. By

mixing the data, and scrutinizing the concepts of resilience and cultural landscape, the approach took the research in a unique direction where the results unraveled in the process and new information emerged. The latter is explained in detail in section 6.5 where all the stakeholders expressed hope.

7.4.2. Limits of the Research

With the many contributions this dissertation offers, yet it still holds a few limitations. Some of which would have been relevant to tackle and others allowed the research to take the form that it did. The limits of this research are mainly concentrated around the fact that time and money were limited. Consequently, it was not possible to conduct the same study on other neighborhoods in New Orleans in order to evaluate the different levels of resilience between the different neighborhoods. Doing a comparative study of the different areas would have allowed the researcher to apply the same approach to other parts of the city and evaluate how the indicators fluctuate. But by only concentrating on the LNW, the author was able to spend most of her time in the neighborhood and better understand the intricacies of the LNW. Another limitation was not having access to residents who have not returned. The researcher could not collect data about the latter so as to evaluate their level of attachment to the LNW. Especially that many moved to other cities or even states. Interviewing these residents could have added another perspective about the neighborhood and how they saw it before the storm. Yet focusing only on the residents who have returned allowed the researcher to see their level of commitment and engagement. Even if the numbers show that residents and the neighborhood are not resilient in 2012, but the interviews show that they both portray signs of resilience. The residents are highly implicated and involved in the process of rebuilding the LNW. Also, the city is more involved in the area since the administration changed. In addition, this keeps the door open to see how much progress they will eventually accomplish in the future; for example, in 2022 or in 2032. This research proves that resilience evolves over time and at the different scales of the city. And since the residents show signs of resilience, conducting the study ten or fifteen years later can lead to different results. The fact that the data shows different realities only

questions the relevance of trying to measure resilience. Furthermore, another limitation to point out about the interviews is the difficulty to gain people's trust. As it was very challenging to do so, the author managed to get open-ended interviews but could not collect any quantitative data pertaining to the interviewed residents. After the data was collected and analyzed, it did not seem pertinent to have this information, but it would have added another layer of data and the author believes it to be of value. Finally, the last limitation is evaluating the impact of the resilience of the LNW on the city. The study did not determine the effect of the LNW's resilience on the whole city, what are the implications of one neighborhood on the rest of the city? These questions indicate that this research is only the beginning of a bigger research initiative that needs to look at resilience through the cultural landscape and with a team of specialized professionals.

7.5. Revisiting the Concept of Resilience

7.5.1. Time, Scale, and Levels of Resilience

Using the LNW as a case study for this research proved to act as a filter to not only look at the resilience of the residents and the neighborhood, but also to look at the concept of resilience. In Chapter 3, section 3.3, the author highlighted the importance of differentiating between time and space, the different levels of resilience, and at the different geographical scales. The use of the LNW proved that the resilience of the individual was different from the household's, and from that of the neighborhood. As portrayed in figure 3.1, and in Table 5.3, at the individual level, the resilience of the residents of the LNW is different from one person to the other. Those who have returned showed a strong attachment to their neighborhood and to their social networks. And these are the elements that contributed to increasing their resilience. Also, among those who have returned, some are more resilient than others, some of them are involved in NPOs and committed to improving the whole neighborhood and rebuilding their homes higher (on stilts) and they have insurance. Others just want to get their lives back. Overall, the residents of the LNW show signs of resilience but are not fully there. Furthermore, they prove themselves to lack in resilience without their social networks because without the elements of the cultural landscape, the area does not prove to be

resilient. This is especially pertinent in the LNW because the residents who have returned and rebuilt their homes, proved that they based their decisions on the strength of their attachment to their homes and neighborhood as well as their social networks (family and church).

At the household level, different members of the same family show different signs of resilience. Some members of the same family decided to rebuild, whereas others decided not to, which causes family bonds to rupture. Also, some family members died during the storm, which broke down the family network. Others could not return due to the lack of schools, thus forcing them to stay in different cities in order to pursue the education of their children. These rifts between family members are affecting the number of residents who have returned, and are preventing others from returning.

At the neighborhood level, some areas in the LNW have proven to recover faster than others like the Holy Cross area, which benefitted from being located at a higher level than the rest of the neighborhood. The rest of the LNW was more severely damaged than the southern section, rendering it longer and costlier to rebuild and revitalize. But from the numbers, the observations, and the interviews, the LNW shows signs of recovery seven years after Hurricane Katrina, but is not resilient, as it has not adopted a functional equilibrium and lacks in basic amenities.

At the city level, each neighborhood in the city recovered at a different speed. From the author's personal observations, it was clear that most of the city had undergone more progress than the LNW. As the interviewed professionals pointed out, it was necessary to reach the city's population number that existed before the storm, and most of them looked at the future of the city with hopefulness and positivity. They also claimed that many lessons were learned, and that the city was attracting new and young professionals, which is a positive change because New Orleans has for long been known for its 'brain drain' that forced the young people of the city to leave in search for a better future elsewhere.

At the state and country levels, New Orleans received a lot attention from the rest of the nation because it exposed many issues that were ignored for decades. Being the

most costly disaster in the history of the United States, Hurricane Katrina caused major devastation and thousands of lives were lost in the process, but it opened the eyes of elected officials that they had to make the necessary changes to avoid such a disaster in the future. There is much work to be done yet, especially at the state and at the federal levels, but since Hurricane Katrina, the levees have proven to withstand and the disaster preparedness mentality is changing.

But how does the resilience of one neighborhood affect the resilience of the city? With the LNW being used as a poster-child and an image for the tragedy that the city went through, the area and its residents found themselves on the city's radar. After being neglected and set aside for decades, the LNW has finally found some attention and recognition. It will not be enough to erase the misconceptions that have been installed into the city's memory, but it can be the beginning of a positive change. Unfortunately, this recognition was at the cost of people losing their lives and everything they had.

Also, this proves that time is an essential element because resilience evolves continuously. The degrees of resilience of the area and its residents vary according to each specific stage: the moment the hurricane takes place, the moment people can return, the moment they start rebuilding, etc. Resilience proves to have different temporalities. These depend on the chronological evolution of the different events that take place: it starts with the beginning of the disaster, how it is managed, up until the geographic area finds a functional equilibrium. The level or the degree of resilience of a community or of a city changes with the different disaster temporalities. Before the Hurricane hit the city of New Orleans, the neighborhood of the LNW had already its resilience tested. When the levees breached in the early morning hours, it was before the eye of the storm made a landfall in the city, half of the area was underwater and homes were lifted off their foundations and many lives perished. It is at that specific moment that the temporalities of the Hurricane can be highlighted, they go as follows:

- At this specific temporality, resilience was null because it was the moment of shock happened.
- The following temporality is undergoing the storm and its winds.

- Once the storm passed, the temporality that follows is rescuing people and managing the big blow and the hole in the levees.
- Then, it was the proper maintenance of the levees and cleaning up the area.
- During this time, the area was closed off to its own residents and it took months for people to have access to their homes.
- Then came the rebuilding plans, the Road Home Program, and the NPOs.
- Some people decided to rebuild as their homes were, some decided to opt for more sustainable structures, and others could not manage to clear their titles to rebuild.
- For years, it was obstacle after obstacle for the residents, and up until 2012 some residents managed to move back in and other not.
- The following temporality was bringing some amenities to the area and improving roads and access to the area.

But what comes next is still unpredictable, as the future of the LNW remains unknown. With each of the temporalities stated above, the resilience of the residents and their neighborhood changes. Therefore, how can resilience be measured if it changes constantly? Is it an effective way to determine the resilience of a city, its neighborhood, and its residents every five years, ten years, or more? Can researchers take specific timespans and measure resilience? The residents of the LNW are in constant fight with time, especially as resources become scarcer with the years passing. However, it is through their commitment and their organization that things are changing. Since the data was collected in 2012, and up until 2015, many positive changes took place in the LNW, and this can only be the sign of their perseverance and their will to not give up. This evolution affects their resilience directly, and it only adds to the complexity of the concept.

Many elements have proven to affect the resilience of the area of study. When the tangible indicators were taken into consideration alone, the neighborhood had proven itself not to be resilient. The numbers are a reflection of a specific time, the year 2010.

The Data Center indicators are based on the U.S. Census Bureau, and they were collected in 2000 and 2010, while Hurricane Katrina took place in 2005. Hence, the numbers are a good indication of the drastic change that took place in New Orleans, and more specifically in the LNW. Since this data is only collected every ten years, then it will be pertinent to compare the 2010 numbers to the 2020 numbers and evaluate the evolution of the neighborhood and how it affects its resilience.

As for the intangible indicators, they show the level of attachment of the residents to their neighborhood, their culture, and the social networks. Through the interviews, it was possible to have a different perspective from the one portrayed by the quantitative data. The residents, who have returned, have proven to be perseverant and hard-working people in bringing back their neighborhood and community. They have not lost hope in the future of the LNW. The residents and their neighborhood have been receiving a lot of attention from media and from the city, some yielding positive results, some negative. As a result, the LNW was put back on the map at the city level and at the country level. Will Hurricane Katrina open a new chapter in the history of the LNW and of the city of New Orleans? Will it be less neglected, if so, how will that change the LNW?

It was imperative to look at resilience from a cumulative perspective because the numbers show a different reality than the interviews. The case of the LNW as well as the research approach have permitted to scrutinize the concept of resilience, and this reinforces the arguments proposed in Chapter 3, in which it states that resilience is a complex concept. The case study proved that resilience can change depending on: 1) the geographic scale at which the studied area is located (individual, neighborhood, city, or country), 2) the time between the moment the disaster took place to when the study is undertaken, and 3) the different levels of resilience.

Disaster researchers should take into account all the elements that affect resilience, and the concept must be looked at holistically in order to better assess the resilience of a community, a neighborhood, or a city. Not looking at the concept holistically will open the door to many misinterpretations, especially since this concept is increasingly popular among scholars. Many authors, as stated in Chapter 2, provide

different definitions to this highly controversial concept. Instead, researchers should not look at resilience with a reductionist lens, for the concept did not start in disaster research; it is a much older concept that was initially used in mechanics and psychology. Therefore, researchers must give it justice and acknowledge its complexity before looking at it from a narrow-minded perspective.

7.5.2. Resilience: a Social Construction

As mentioned in Chapter 2, the literature states that disasters and vulnerability are a social construction. This is due to the fact that with the growing number of people settling down in cities, the latter have become hubs of highly clustered urban fabrics. When disasters hit urban areas, they directly affect the people inhabiting the space. The vulnerabilities of the affected areas percolate from decisions made by humans, turning disasters into social constructions.

With Hurricane Katrina and more specifically in the LNW, it is clear that the devastation caused by the storm transpires directly from the decisions made over the years: developing a low lying area, building levees to expand the area, building the Industrial Canal and the MR-GO, and suffering from economic, social, racial, and physical segregation. As a result, the LNW turned inward and that created very strong bonds between the residents. Over the years, the residents grew more and more attached to their homes, their social networks, and their neighborhood. With a hurricane as devastating as Hurricane Katrina, the decisions made over the decades ended up creating a very vulnerable area. The vulnerabilities of the LNW are socially constructed by the decision-makers as well as by the residents. The decision-makers contributed to the exclusion of the neighborhood, and the residents reinforced this exclusion by shutting down from the rest of the city.

With a unique cultural landscape, the LNW stands out as a neighborhood. Being as neglected as it was before the storm, the LNW suffered from many misconceptions. The elements that constitute the cultural landscape are place attachment, memory, social networks, roots, and identity. What stands out the most is the topophilia that the residents have developed over the generations. When compared to older civilizations,

this emotional attachment was established rather fast and in a short span of time; it only took a few generations. And this can be due to many factors: being excluded from the rest of the city, being majority African American, and sharing similar Christian values. The people who occupied the space socially constructed the cultural landscape.

The process of starting off with natural disasters to then talk about the concepts of vulnerability, resilience, and the cultural landscape led this research toward social constructionism. The intangible elements, presented in this dissertation, play a role in encouraging people to return after the occurrence of a disaster, which is proven through the case of the LNW. These intangible elements reinforce the resilience of a community, and thus become important elements to consider in post-disaster situations. This research started by relating resilience to the cultural landscape with the use of indicators adopted from the literature. Then, the main element that stood out was the fact that the indicators are intangible, which sets forth the type of methodology used in this research. The used approach, and more specifically the conducted interviews, reinforced the relation between the cultural landscape and community resilience. And when the cultural landscape is the result of a social construction, then resilience is proven to be a social construction. This is demonstrated below in Figure 7.1, which summarizes the whole process of this research project and shows how the case study plays the role of a filter in terms of reaching results at the theoretical level and at the case study level.

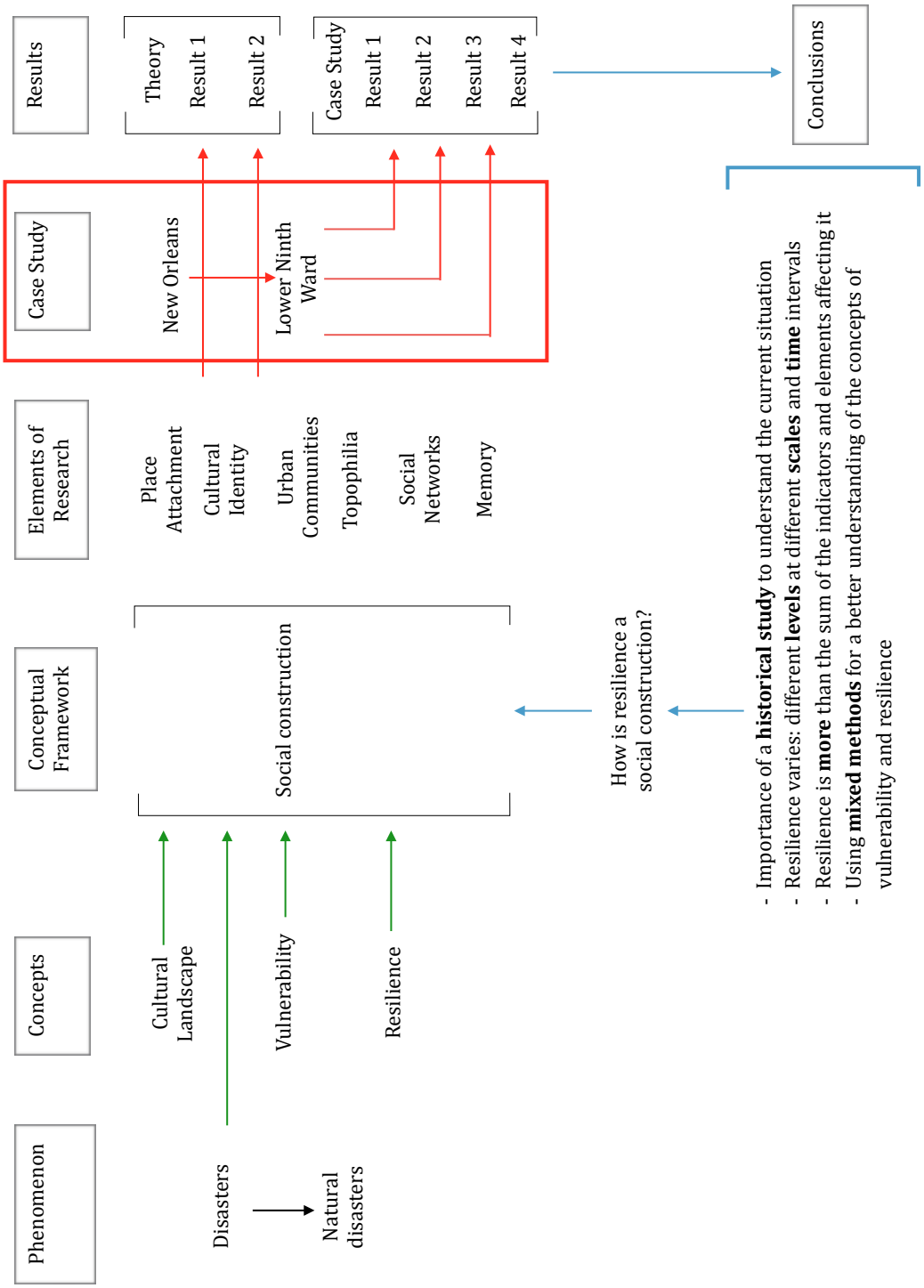

Figure 7.1: Graph showing the whole research process and how resilience is a social construction (source: author)

7.6. Elements to Retain

The objective of this chapter is to show how the research problem is tackled and how the results are interpreted. The latter were looked at from the perspective of the research question and they show how the different data contributed, in multiple ways, to reaching the different conclusions stated in the earlier sections. What is important to highlight is how the mixing and the interpretation of the data end up clarifying a very complex situation. Especially when put alongside these multiple layers: historical, social, cultural, political, economic, and environmental.

Also, it is important to acknowledge the limits and the contributions of any research as they draw the lines for future research. It is pertinent to underline that a research project undertaken by one researcher is not the same as a project lead by a group of researchers. One person confronts many limitations that a group can overcome, which is one of the main recommendations set forth by this research. Furthermore, it is the limits faced by the author that ended up drawing the path for her, and that process led to reaching more intricate results. This research reached results pertaining to the case study as well as the theory where the concept of resilience is re-evaluated to finally conclude that it is a social construction.

Chapter 8: Conclusion

When disasters strike, and after the chaos has settled down, the first thing that comes to people's mind is returning 'home'. When people face mandatory evacuation, they only take what is necessary, thinking that they will return to find everything in its place. But when the disaster causes unimaginable devastation, people end up losing their homes, their memories, their social networks, and their community. Most importantly, many lose their lives in the disaster.

A community (*Gemeinschaft*) is the result of "real and organic life" (Tonnies, 1957). Communities are part of a cultural landscape that has taken form over the generations. It is the immaterial result of an interactive relationship between people and their environment (refer to section 2.3.). This relationship is the outcome of the social networks combined with place attachment that people have established for generations with their homes, community, and neighborhood.

In this research, the main concepts of interest are resilience, vulnerability, and the cultural landscape. First, vulnerability is perceived as a state that is part of resilience, and is measurable. Second, resilience is a continuously evolving concept that changes with time and at the different scales of geography, which brings out its complexity. And third, the cultural landscape helps in better understanding this complexity by using intangible elements to evaluate resilience.

This dissertation sets in place a new resilience model to study post-disaster situations, where it is evaluated quantitatively and qualitatively. But the main element that makes it stand out is taking into account the cultural landscape to evaluate community resilience. This is done with a set of intangible indicators that are common to both concepts. This process led to not only establishing a relationship between the two at the theoretical level, but it also led to using a mixed methods design that took the results in a new direction. Also, it is imperative to understand resilience before dividing it into sub-components. Researchers ought to look at it holistically and assemble the pieces of the puzzle in order to have a cumulative and comprehensive perspective about it.

The focus is geared on the community of the LNW after Hurricane Katrina while using a mixed methods research design as a methodology. This allowed for a collection of a wide array of data (quantitative and qualitative) in order to answer the research question and to reflect on the concept of resilience. If community resilience is better understood through the lens of the cultural landscape, then more research needs to be conducted on the subject. The work done in the course of this dissertation is only the beginning of a bigger study that needs to be conducted by a multidisciplinary team of researchers and professionals.

The Investigative Process

This research is the result of an investigation that started back in 2006. Visiting New Orleans one year after Hurricane Katrina, and more specifically the LNW, brought forward many social injustice related issues. In the general scheme of things, the LNW was devastated beyond people's imagination. The series of events that percolated from the disaster and the rescue efforts kept people in shock for years to come. When people think about Hurricane Katrina, the first images that come to mind are snapshots of a flooded city, people trapped on their own roofs, and the superdome crammed with people in distress.

One year later, in 2006, many residents of the LNW were still trying to go back to their old neighborhood and rebuild their homes. Yet it was hard to understand why people wanted to return to an area that is continuously exposed to many elements that contribute to its vulnerability. The elements that exposed people to risk are the uneven topography, the levees that breached, and the exclusion of the neighborhood at the social, physical, and economic levels. After the hurricane, the residents wanted to return 'home' to the LNW and rebuild the neighborhood they once knew and had.

The main turning points for the neighborhood were in 1961 and in 1965. First, when segregation came to an end, and due to white-flight, the neighborhood lost the majority of its white residents, and it became a majority African American neighborhood. Shortly after, Hurricane Betsy hit the city and pushed the last of the white residents out of the LNW. Over the years, the residents formed strong social networks and became

part of their individual and neighborhood identity. But corruption was on the rise and the LNW was perceived as a poor and crime-ridden area by the outside world. As a result, residents kept on taking care of each other while the city lost more and more interest in the LNW.

When Hurricane Katrina hit in 2005, the storm destroyed more than the homes of this neighborhood, it destroyed the neighborhood's identity, social networks, landmarks, cultural landscape, and everything that it stands for. The loss experienced by the residents and the neighborhood was so great that the recovery process and the rebuilding process were very challenging (as shown in the interview extracts in Chapter 6). The obstacles faced by the residents accumulated one after the next, and seven years later, the neighborhood was only partially rebuilt. Because of many non-profits organizations, the corruption, and the lack of a consistent plan, the rebuilding process was done randomly and haphazardly.

Before the storm, the LNW had an architectural identity with the majority of its structures built like shotgun homes. Now, with the residents who built higher and those who did not; those who opted for green homes and others who did not, the LNW resembles a big puzzle with pieces that do not fit anymore.

Since 2012, the LNW has evolved, and the changes that took place since then are part of the recovery process. These changes contribute to building back the community and the neighborhood. The feeling of hope, and the feeling of accomplishment that transpires from the interviews conducted with the residents of the LNW (refer to section 6.5.), help in moving things along and "bouncing forward". New Orleanians do not wish to live in the shadows of Hurricane Katrina anymore. It will remain part of their history and it will not be forgotten, but they need to move on. A lot of people are focusing on the positive elements that have taken place during the recent years. To see their neighborhood and city go through a positive transformation has contributed to the healing process, but it does not necessarily defines either the residents or the neighborhood as being resilient. New Orleans cannot stagnate in the residues of Hurricane Katrina, and its residents are focusing on the lessons learned. Putting the

experience they have endured behind them was greatly emphasized in 2008 when Hurricane Gustave hit the city and the levees did not breach. This event contributed in increasing people's trust in the levees and the local and federal governments. With the events that took place since the data was collected, there is some positive progress in the area, enough to say that they area shows signs of resilience.

This research answered the following research question: If a relationship is established between the cultural landscape and the concept of resilience, then what is the role of place attachment and social networks in the creation of resilient urban communities in the Lower Ninth Ward after Hurricane Katrina? And by trying to answer this question, the concept of resilience is scrutinized from different angles. This research established a relationship between the cultural landscape and the concept of resilience at the theoretical level and at the case study level while using a mixed methods research design. Place attachment and social networks play a key role in inciting people to return to their homes and neighborhoods, because devastated areas did not rebuild themselves without the people who resided in them. If community resilience is better understood through the lens of the cultural landscape, then more research needs to be conducted on the subject. The work done in the course of this dissertation is the beginning of a bigger study that needs to be piloted by a multidisciplinary team of researchers and professionals.

The Concepts of the Cultural Landscape and Resilience

Scrutinizing resilience highlighted its complexity (with time and the scales of geography). By looking at the concept through the cultural landscape, it highlighted the gap in knowledge when it comes to relating the two. Culture was never considered when evaluating or measuring resilience in disaster research because it is challenging to quantify, which is acknowledged by researchers in the field like Cutter et al. (2008). In addition, this research underlines that culture is not taken into consideration and is undermined by planners and decision makers. Therefore, this dissertation looks at resilience from a new perspective, one that prioritizes place attachment and social networks in the rebuilding of a devastated community.

This research recognizes that the cultural landscape and its components can affect community resilience. The elements that constitute the landscape are an important contributor to the resilience of a devastated community. As presented in this dissertation, the numbers show that the community of the LNW ended up being not resilient, but the interviews show a different reality; one that demonstrates that because of the strong attachment and social networks, the residents have been able to rebuild parts of their neighborhood. Furthermore, it is important to take these elements into account in future research projects so as to determine how they contribute to the resilience of a devastated urban community. Therefore, the cultural elements should become part of the rebuilding process after the occurrence of a disaster. The intentions behind this research are to bring the cultural elements and the concept of resilience to light and to show their importance so planners, city officials, and governments do not undermine them.

General scope

This investigation started with a general review of the literature with a focus on the concepts of resilience, vulnerability, and the cultural landscape. Then relationships started appearing between resilience and vulnerability, and between resilience and the cultural landscape. As the literature proposes measurable indicators to quantify resilience, this research proposes a model that digs deeper and proposes an in-depth perspective about resilience. By combining the historical evolution of the city and the LNW with the mixed methods research design proposed in Chapter 4; it was possible for the researcher to find the reasons behind the late rebuilding process, and to unveil the discrepancies and gaps between the residents and the professionals. The research identifies the local cultural landscape and the reasons why people are attached to their neighborhood. Also, by collecting multiple types of data, the researcher understands better the resilience of the community and the neighborhood. And this is possible because of the choice of the methodology that allows reaching results at the case study level and at the theoretical level. This permitted revisiting the concept of resilience and a

relationship is established between resilience and the cultural landscape, and that confirms that resilience is a social construction.

This research provided a better understanding of the concept of resilience and to determine that it is constantly evolving, which makes it very challenging to measure over time. Consequently, the indicators collected in this study (refer to Chapter 3 for the list of indicators) are of great importance in evaluating the concept, but it is the interviews that helped understand the resilience of the community of the LNW. Also, the concept shows that it varies and changes according to time and to the geographic scales (the individual, the household, the neighborhood, the city, the state, and the country level). The LNW is only one neighborhood in the city of New Orleans, and its resilience must be integrated in the resilience of the city.

Research and Practical Recommendations

This research was able to establish two important facts: first, the presence of a relationship between resilience and the cultural landscape. Second, the cultural landscape is one of the many elements that contribute to the rebuilding of a community that underwent a disaster, especially in the case of the LNW post Hurricane Katrina. This study contributes to the disaster literature by taking into account: 1) tangible and intangible indicators in evaluating community resilience, and 2) to use these indicators in the rebuilding process and in bringing back communities together. Therefore, it is crucial that planners, governments, and decision makers take cultural values and identify them in order to use them as a tool to help in the long term rebuilding process. This will help communities rebuild themselves in a more just and sustainable way.

This dissertation intervenes at the theoretical level as well as the practical level. At the theoretical level, it questions the concept of resilience and whether is it used properly in how a community's resilience is evaluated. The theoretical contributions of this research are many and touch multiple disciplines. It bridges between disaster literature and landscape architecture especially with the importance of taking into account the cultural landscape while examining the resilience of a community. Also, it bridges between Urban Planning, Landscape Architecture, and Sociology, which

accentuates the much-needed multi-disciplinary aspect of research in post-catastrophes studies. This research shows the importance of using a case study to not only bring forward results on the physical level, but also at the theoretical level and this stresses the importance of bringing closer theory and practice. The case study played the role of a window through which the concept was looked at from multiple perspectives. What makes this research unique is looking at resilience from the cultural landscape perspective. The elements constituting the landscape contribute greatly to the resilience of a community, as their topophilia, their social networks, and their cultural identity play an important role is motivating people to returning. The will to return and rebuild helped set in motion the difficult, tiresome, and long healing process. This also underlines that resilience is a social construction. When it comes to a community that inhabits an environment, then the landscape and the elements constituting it are socially constructed. Resilience has confirmed to be more complex than what the literature states. When time, space, and scale of a geographic area are at stake, then resilience becomes more than the indicators that help evaluating it.

At the practical level, it comes and inserts itself among the different stakeholders that are involved in the recovery process. This research sets the course for a new set of rebuilding tools while taking into account the cultural landscape. These tools are designed to assist governments, professionals, and communities in better planning the recovery process when a city has been utterly devastated by a calamity. Auto-organization is a key element in setting those tools in place. At the government level, post-disaster recovery policies need to be set in place in order to manage chaotic situations. These policies need to conform to proper disaster prevention and management. The best way to design such policies is by learning from previous experiences. And this particularly pertinent in the case of New Orleans and the LNW as hurricanes are recurring events. At the professional level, the main element is to reach a level where the concept of resilience is operationalized with the incorporation of a resilient plan. The foundation 100 Resilient Cities [22] proposes a 'city resilience

[22] 100 Resilient Cities: http://www.100resilientcities.org/#/-_Yz40MTI1MydpPTEocz5j/

framework' where it defines the different components of the framework. It proposes four dimensions, 12 drivers, and 7 qualities[23] under which cities around the world can identify their areas of weakness, and accordingly contribute and improve the resilience of their cities. Among the qualities that they propose, the elements of culture and social networks are implied indirectly but they do not surface. By using the 100 Resilient Cities model and incorporating the cultural landscape, as proposed in this study, then each city can develop its own resilient plan. Therefore, experts and planners need to work on setting up rebuilding plans so as to tackle elements layer by layer. These layers will be undertaken by more specialized domains like engineers, architects, and others; as well as community leaders. New zoning, building codes, and evacuation routes need to be updated. Engineers take responsibility of structural stability and improvement. Architects work on taking into account history, memory, and topophilia to develop designs that are not only sustainable but also respect the historical value of the properties while preserving the memory of place. Community members play the role of representing people's wishes; they also help in by improving neighborhoods in order to preserve the cultural landscape and all the elements that are part of it. In addition, social scientists need to be part of the process so as to assess the evolution of the recovery process from a socio-cultural standpoint. This will help identify whether new trends have emerged or if people hold on to old habits and traditions. At the community level, locals should be empowered and auto-organized when a disaster strikes. The more empowered and informed a population is, the stronger it is when facing a catastrophic event.

The tools proposed in this research should be used as the result of a common effort between the different stakeholders especially in cities or countries with recurrent natural disasters like: New Orleans, California, Haiti, Japan, and many more. Working and planning *a priori* of a calamity, prevents major catastrophic results and devastation *a posteriori*. Since humans do not possess the power to stop calamities from taking place,

[23] For more information, consult the following website: http://www.100resilientcities.org/resilience#/-_Yz40MTI1MydpPTEocz5j/

and cities will continue to grow; then the best way to look at them is to minimize their consequences. For example, the damage caused by Hurricane Katrina could have been avoided if proper planning of levees, transportation, secondary refuge, and proper evacuation were made before an event as such could have taken place. Another element to consider is trial and error as disasters are never similar and they rarely strike in the same way. As humans are concerned, it is only through learned lessons that better and more sustainable practices can be reached, especially in the case of recurring disasters.

This research recommends that collaboration must take place at the different levels of stakeholders and in a multi-disciplinary fashion. With cities being webs of complex layers, it takes a very versatile team to help propose a series of solutions. How this research is generalizable is through its approach and not its application. The approach of working with the different stakeholders, consulting a multi-disciplinary group of experts, and using local knowledge must be the base for developing a coherent recovery plan. The plan must take into account not only the rebuilding of the infrastructure and the economy, but also the cultural landscape and how it can be restored even if it has changed. As for the applicability of such a study, the type of disaster and its location will determine the 'how to'. According to these two factors, what needs to be highlighted is the local context must be considered as the constant factor, and the different experts can tackle the layers that constitute the city as the variables that change from an urban context to the next.

Towards a new direction

This type of research targets a large audience; it is aimed toward researchers (from multiple disciplines), urban planners, government official, and anyone who is interested in post-disaster community resilience. When the researcher was facing obstacles getting interviews with the residents, it was because the residents wanted fast and real solutions to their rebuilding problems. Unfortunately, many researchers and people of interest who passed by the LNW made many fake promises, and researchers should be very clear about their intentions and how their work can help the devastated community. In this research, the author made sure not to give any false hope to the

people who generously gave their time and agreed to sit-in for an interview. It was crucial from the beginning that this research project uncovers the underlying issues behind the late rebuilding process, and the importance of giving the cultural landscape a place in post-disaster rebuilding. Most importantly, it was made clear to the residents that the results of this dissertation will contribute to the long-term aspect of disaster research.

Understanding resilience presented an opportunity to take into account the cultural landscape and to apply it to future research projects. This research opens the door to a wide variety of future projects that involve cities, communities, and disasters. In addition, it lays the ground to re-consider the concept of resilience and try to look at it from a holistic perspective. Furthermore, considering the different levels of geography and how resilience can change according to the different scales will only generate more research that can focus on how time and the different scales affect resilience while integrating it at a multi-disciplinary level. From a practical perspective, this study can be used by professionals as well as by academics to set in place community rebuilding tools based on the elements of culture. Connecting the cultural landscape to resilience is what makes this dissertation unique from a theoretical and practical perspective. This research can be replicated onto other disaster research projects, like the plan proposed by 100 Resilient Cities, while taking into account multiple factors: the type of disaster, the local context or geographic area, the affected community, and its cultural landscape. By taking into account culture in any resilient plan, this research contributes to post-disaster rebuilding at the theoretical level as well as at the practical level, and it leads to more sustainable solutions in order to built a better and strong future. As for the approach—using mixed methods research design and taking culture into account when evaluating resilience—remains the constant element throughout any study that follows the tracks of this research.

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L9W_R&NPO6. (2012) *Interview with L9W_R&NPO6/Interviewer: N. Toueir*.
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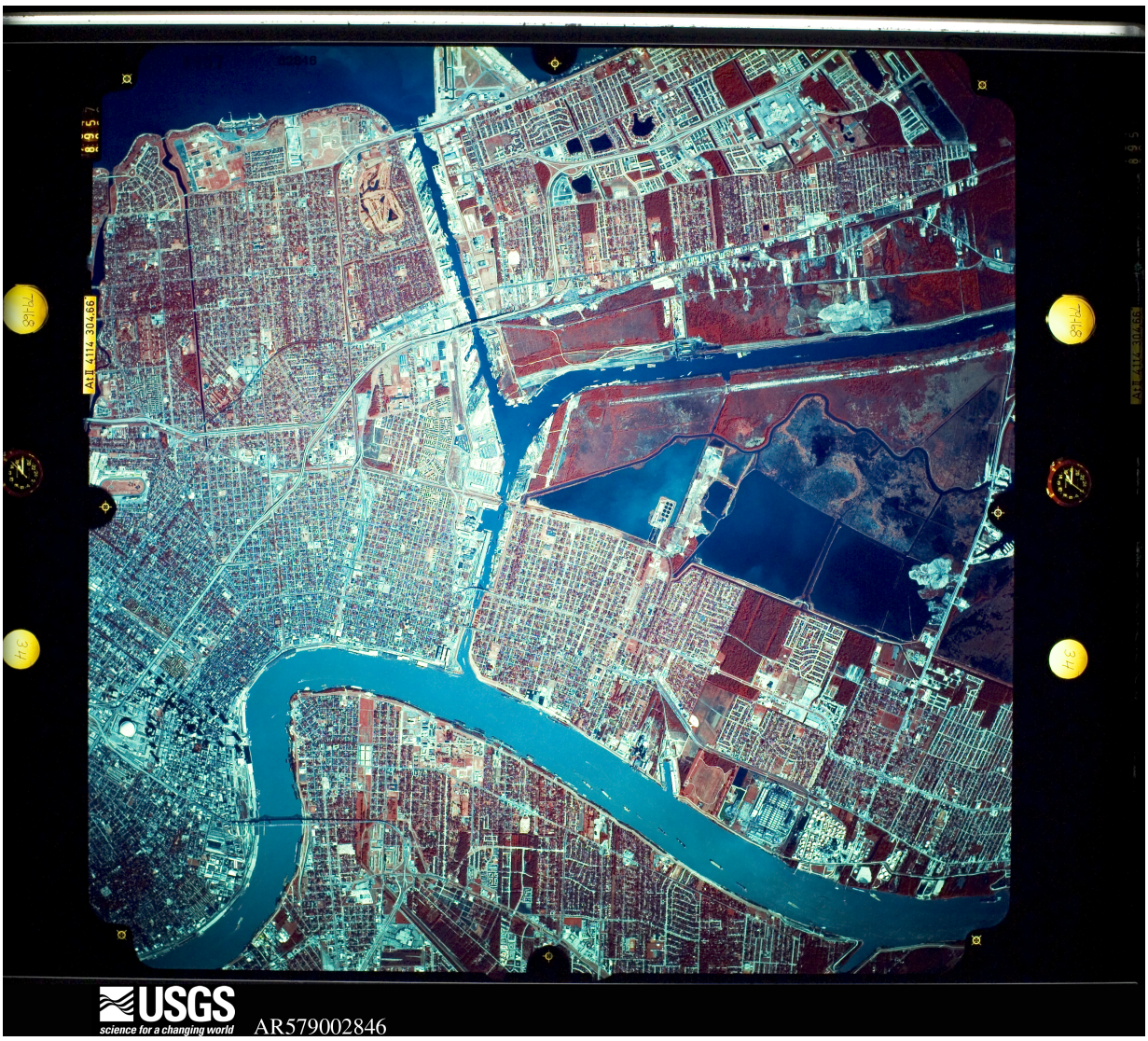
Appendix A: Satellite images of the LNW provided by the Regional Planning Commission

(a) 1952 - 1998

(b) 1979



(c) 2006

Appendix B: Certificate of Completion with the National Institute of Health (NIH)

(a) Nada Toueir (Ph.D. Candidate)

Certificate of Completion

The National Institutes of Health (NIH) Office of Extramural Research certifies that **Nada Toueir** successfully completed the NIH Web-based training course "Protecting Human Research Participants".
Date of completion: 03/21/2012
Certification Number: 892301

(b) Prof. Isabelle Thomas (Associate Professor at University of Montreal)

Certificate of Completion

The National Institutes of Health (NIH) Office of Extramural Research certifies that **Isabelle Thomas-Maret** successfully completed the NIH Web-based training course "Protecting Human Research Participants".

Date of completion: 03/28/2012

Certification Number: 896577

University of Montreal's Ethics Board Approval

Université de Montréal

Comité plurifacultaire d'éthique de la recherche (CPÉR)
Facultés de l'aménagement, de droit, de musique, des sciences de l'éducation et de théologie et de sciences des religions

26 mars 2012

Nada TOUEIR
Candidate au doctorat
Institut d'urbanisme, Faculté de l'aménagement

OBJET : Certificat d'éthique

Madame Toueir,

Le *Comité plurifacultaire d'éthique de la recherche* (CPÉR) a étudié le projet de recherche intitulé « La relation entre l'attachement au sol, la mémoire et la résilience. Le cas de la Nouvelle-Orléans après l'ouragan Katrina » et a délivré le certificat d'éthique demandé suite à la satisfaction des exigences précédemment émises. Vous trouverez ci-joint une copie numérisée de votre certificat; copie également envoyée à votre directrice de recherche et à la technicienne en gestion de dossiers étudiants (TGDE) de votre département.

Notez qu'il y apparaît une mention relative à un suivi annuel et que le certificat comporte une date de fin de validité. En effet, afin de répondre aux exigences éthiques en vigueur au Canada et à l'Université de Montréal, nous devons exercer un suivi annuel auprès des chercheurs et étudiants-chercheurs.
De manière à rendre ce processus le plus simple possible et afin d'en tirer pour tous le plus grand profit, nous avons élaboré un court questionnaire qui vous permettra à la fois de satisfaire aux exigences du suivi et de nous faire part de vos commentaires et de vos besoins en matière d'éthique en cours de recherche. Ce questionnaire de suivi devra être rempli annuellement jusqu'à la fin du projet et pourra nous être retourné par courriel. La validité de l'approbation éthique est conditionnelle à ce suivi. Sur réception du dernier rapport de suivi en fin de projet, votre dossier sera clos.
Il est entendu que cela ne modifie en rien l'obligation pour le chercheur, tel qu'indiqué sur le certificat d'éthique, de signaler au CPÉR tout incident grave dès qu'il survient ou de lui faire part de tout changement anticipé au protocole de recherche.

Nous vous prions d'agréer, Madame, l'expression de nos sentiments les meilleurs,

[redacted]

PL/ca

Pierre Lapointe
Président
Comité plurifacultaire d'éthique de la recherche
Université de Montréal

c.c. Gestion des certificats - BRDV
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Université de Montréal

No de certificat
CPER-12-017-D

Comité plurifacultaire d'éthique de la recherche (CPÉR)
Facultés de l'aménagement, de droit, de musique, des sciences de l'éducation et de théologie et de sciences des religions

CERTIFICAT D'ÉTHIQUE

Le Comité plurifacultaire d'éthique de la recherche (CPÉR), selon les procédures en vigueur et en vertu des documents qui lui ont été fournis, a examiné le projet de recherche suivant et conclu qu'il respecte les règles d'éthique énoncées dans la Politique sur la recherche avec des êtres humains de l'Université de Montréal.

Titre du projet	**La relation entre l'attachement au sol, la mémoire et la résilience. Le cas de la Nouvelle-Orléans après l'ouragan Katrina**
Étudiant requérant	**Nada TOUEIR** [redacted] Candidate au doctorat Institut d'urbanisme Faculté de l'aménagement Université de Montréal
Direction	Isabelle THOMAS-MARET Professeure agrégée Institut d'urbanisme Faculté de l'aménagement Université de Montréal
Financement	Non financé

MODALITÉS D'APPLICATION
Tout changement anticipé au protocole de recherche doit être communiqué au CPÉR qui en évaluera l'impact au chapitre de l'éthique.

Toute interruption prématurée du projet ou tout incident grave doit être immédiatement signalé au CPÉR.

Selon les règles universitaires en vigueur, un **suivi annuel** est minimalement exigé pour maintenir la validité de la présente approbation éthique, et ce, jusqu'à la fin du projet. Le questionnaire de suivi est disponible sur la page web du CPÉR.

[redacted]
Pierre Lapointe, président
Comité plurifacultaire d'éthique de la recherche
Université de Montréal

26 / 03 / 2012
Date de délivrance

01 / 12 / 2013
Date de fin de validité

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www.scedu.umontreal.ca/recherche/ethique.html

Université de Montréal

Comité plurifacultaire d'éthique de la recherche (CPÉR)
Facultés de l'aménagement, de droit, de musique, des sciences
de l'éducation et de théologie et de sciences des religions

March 26th, 2012

Nada TOUEIR
Doctoral candidate
Institut d'urbanisme
Faculté de l'aménagement
Université de Montréal

OBJECT : Research Ethics Approval

Dear Mrs. Toueir,

The purpose of this letter is to confirm that the enclosed ethics certificate (*Certificat d'éthique)* number CPER-12-017-D applies to your project entitled "The Relationship Between Place Attachment, Memory and Resiliency. The Case of Post-Katrina New Orleans"/« La relation entre l'attachement au sol, la mémoire et la résilience. Le cas de la Nouvelle-Orléans après l'ouragan Katrina ».

All the documents and information submitted for evaluation were studied by the Multi-faculty's Research Ethics Board (*Comité plurifacultaire d'éthique de la recherche - CPER*). This ethics certificate is a statement that your project complies with the norms and regulations on research ethics for projects involving human participants in application at the Université de Montréal.

This letter also confirms that you have made the required annual follow-up reports in order to maintain the validity of the certificate.

Best regards,

[redacted]

PL/ca

Pierre Lapointe
President
Comité plurifacultaire d'éthique de la recherche
Université de Montréal

c.c. Gestion des certificats - BRDV
Isabelle Thomas-Maret
Sylvie Beaudoin
p.j. Certificat CPER-12-017-D

adresse postale
C.P. 6128, succ. Centre-ville
Montréal QC H3C 3J7

Faculté des sciences de l'éducation
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Télécopieur : 514-343-2283
cper@umontreal.ca
www.scedu.umontreal.ca/recherche/ethique.html

University of New Orleans' Ethics Board Approval

RE: IRB_Application and Documents

From: **UNO Institutional Review Board** (unoirb@uno.edu) You moved this message to its current location.
Sent: Fri 4/13/12 2:55 PM
To: Nada Toueir (nada.toueir@umontreal.ca)
Cc: Isabelle Thomas-Maret (isabelle.thomas.maret@umontreal.ca); Michelle M Thompson (mmthomp1@uno.edu)

University Committee for the Protection

of Human Subjects in Research

University of New Orleans

Campus Correspondence

Principal Investigator: Michelle Thompson

Co-Investigator: Isabelle Thomas-Maret, Nada Toueir

Date: April 2, 2012

"The relationship between place attachment, memory, and resilience: The case of post-Katrina New Orleans"

06Mar12

Your proposal was reviewed by the full IRB. The group voted to confirm the approval of the University of Montreal's Multi-faculty's Research Ethics Board and to approve your proposal. Your project is now in compliance with UNO and Federal regulations and you may begin conducting your research.

Please remember that approval is only valid for one year from the approval date. Any changes to the procedures or protocols must be reviewed and approved by the IRB prior to implementation. Use the IRB number listed on this letter in all future correspondence regarding this proposal.

If an adverse, unforeseen event occurs (e.g., physical, social, or emotional harm), you are required to inform the IRB as soon as possible after the event.

Best of luck with your project!

Sincerely,

Robert Laird, Ph.D., Chair

Committee for the Protection of Human Subjects in Research

Appendix C: Sample of Consent Form

Université de Montréal

Example of Consent Form

CONSENT FORM

Research Title: The Relationship between Place Attachment, Memory, and Resilience. The Case of the Lower Ninth Ward in Post-Katrina New Orleans.

Researcher: Nada Toueir, PhD Candidate, Urban Planning Institute, Faculty of Environmental Design, University of Montreal.

Research Director: Isabelle Thomas-Maret, Associate Professor, Urban Planning Institute, Faculty of Environmental Design, University of Montreal

Co-Researcher: Michelle Thompson, Assistant Professor, Planning and Urban Studies, University of New Orleans

A) INFORMATION FOR THE PARTICIPANTS

1. **Research Goals:** To understand the role place attachment and informal social networks in the creation of stronger and more resilient urban communities in the case of the Lower Ninth Ward after Hurricane Katrina.

2. **Participation:** Interviews will take place with residents of the Lower Ninth Ward, and any person (non-profit organizations, community leaders, and urban planners) involved in the Lower Ninth Ward in the City of New Orleans. If you decide to volunteer, you will be asked to participate in one or two interviews at a place you find convenient. You will be asked several questions, some of them about your experience before/during/after Hurricane Katrina, others will be about the rebuilding process and how you identify with your neighborhood if you are from the Lower Ninth Ward. The interviews will be recorded only with your permission. You will not be asked to state your name on the recording. The interview will take approximately 1 hour.

(If applicable) With your consent, your child will be asked to participate in the same interview and to answer similar questions about their experience regarding Hurricane Katrina.

3. **Confidentiality:** Your and /or your child's answers to interview questions will be kept confidential. Once transcribed, all recorded interviews will be deleted. Each participant will be assigned a random numerical code and only the supervising researcher or anyone mandated to this task will have the list of participants and their attributed numbers. Furthermore, the key code linking your name with your number and all the collected data will be kept under lock. No information of any sort about you or your child will be published and at no time will your actual identity be revealed. The transcript, without your name, will be kept until the research is complete. Personal data will be kept for 7 years after this project, and then deleted.

4. **Research Results:** The data you provide will be used for this thesis and in any articles for publication, and may be used as the basis for future articles or presentations. Your name or any information that would identify you in any publications or presentations will not be used or shared at any point of this research.

5. **Advantages and disadvantages:** If you are a resident of the Lower Ninth Ward, this is a moment for you to tell your story about your experience during Hurricane Katrina and your sense of belonging to your neighborhood. Some of the questions may however bring back upsetting memories and emotions; therefore, feel free to share them with the interviewer at any time. If you are not a resident of the Lower Ninth Ward, this interview will help in the understanding of the rebuilding process. Counsel will be available if needed.

6. **Right to Withdraw:** Your and/or your child's participation are on a voluntary basis, and you may withdraw from the study at any time without prejudice or having to explain your decision. You may do so by informing the supervising researcher that you no longer wish to participate (no questions will be asked). A phone number is supplied on this form. You may also omit any question during the interview, but continue to participate in the rest of the study. Any data collected before withdrawal will be deleted.

B) CONSENT

Consent for adults

Adults: By signing this consent form, I am indicating that I fully understand the above information and I agree, after reflection and due delay, to participate in this study. I declare having gotten answers to my questions, and fully understand the nature of this research and whatever pertaining risks, advantages and inconveniences. Also, I am aware that I can withdraw at any moment by verbally informing the interviewer.

Signature: _____ Date: _____

Adult Name: _____

Consent for minors (if applicable)

Parent/Guardian (if applicable): By signing this consent form, I am indicating that I fully understand the above information and I agree that my child, after reflection and due delay, may participate in this study. I declare having gotten answers to my questions, and fully understand the nature of this research and whatever pertaining risks, advantages and inconveniences. Also, I am aware that my child can withdraw at any moment, with or without any valid reason, by verbally informing the interviewer.

Minor's consent: The following research project has been clearly explained to me and I accept to participate. I am also aware that I can withdraw at any given time, with or without a valid reason.

Signature: _____ Signature: _____

Adult Name: _____ Minor Name: _____

Date: _____ Date: _____

By signing this form, I declare I have explained the goal, nature, benefits, risks and disadvantages of the study and I have answered the questions to the best of my knowledge and belief.

Researcher's signature: _____ Date: _____

Name: _____

If you have any questions about this study or to withdraw your child from the study, please contact Nada Toueir, PhD Candidate at Université de Montréal, phone [redacted] email: nada.toueir@umontreal.ca

Any complaints about your participation in this research can be directed to the ombudsman at the Université de Montréal, phone [redacted] or email ombudsman@umontreal.ca **(the ombudsman accepts collect calls).**

If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, please contact Dr. Ann O'Hanlon at the University of New Orleans [redacted]

A copy of the consent form should be signed and handed over to the participant

Appendix D: Samples of Interview Questionnaires

Sample of a Quantitative Interview Questionnaire for residents

A) LIFE AND HOUSING BEFORE KATRINA

Background information:

1. Prior to Katrina, how long had you lived in New Orleans? *Please check appropriate box.*

☐ fewer than 5 years ☐ 6 -10 yrs. ☐ 11 - 20 yrs. ☐ more than 20 yrs.

`

2. How long have you lived in this neighborhood?
☐ fewer than 5 years ☐ 6 -10 yrs. ☐ 11 - 20 yrs. ☐ more than 20 yrs.

3. Is your family originally from New Orleans?
☐ Yes ☐ No

4. How many family members lived in New Orleans prior to Katrina?
☐ fewer than 5 ☐ 5-10 ☐ 10-20 ☐ more than 20

5. Where in New Orleans were you living when Katrina struck?

Street Address:
Name of Neighborhood:

6. Did you live in a:
☐ House
☐ Apartment
☐ Public Housing
☐Assisted Living/Retirement Home
☐ Other:

7. Did you own or rent? *☐ Own ☐ Rented*
If you owned, did you have a mortgage? *☐ Yes ☐ No*
Did you have insurance? *☐ Yes ☐ No*
If yes, please check one: ☐ Flood ☐ Homeowners ☐ Both

8. Did you get any help from any organization or person? *☐ Yes ☐ No*
If yes, which organization:

9. How many people (including yourself) lived in your household prior to Katrina?

10. Did you have any children under the age of 18 in your care? *☐ Yes ☐ No*
If yes, were they attending school in New Orleans? ☐ Yes ☐ No
Name of school(s):

11. What was your living situation like prior to Katrina?
Employed____ Student____Retired____ Disabled____Unemployed____Caregiver____

12. Describe your work situation now:
☐ I'm unemployed.
☐ I've returned to my pre-Katrina job.
☐ I have a new job in New Orleans (Orleans Parish).
☐ I have a new job outside of New Orleans (Orleans Parish). Where?
☐ Other_____

B) LIFE AND HOUSING AFTER KATRINA

13. After Katrina, were you able to evacuate with your family?
Yes_____ No_____
If no, where did you stay? _____
If yes, where did you relocate?_____
Temporary shelter___ Rental_____ House_____ Relative_____

14. Where else have you lived since you left New Orleans?
Please list in order, first to most recent:
City/State:
City/State:

15. Please describe your current housing. *Please check one:*
☐ Returned to my pre-Katrina home
☐ Staying with friends or relatives nearby
☐ Renting an apartment or home within the region while I repair my home
☐ Other_____

16. How satisfied are you with your current living situation?
☐ Very satisfied ☐ Satisfied ☐ Somewhat satisfied ☐ Not satisfied

17. How many people (including yourself) live in your current household?

18. What condition is your house/apartment in New Orleans in now? *Please check the best answer:*
☐Removed debris
☐ Gutted and prepared for rehab
☐ In the process of rehabbing
☐ Rehabbed and re-occupied

19. Do you envision moving back into the house or apartment you lived in before Katrina?
☐ Yes ☐ No ☐ Not sure/Don't know

Homeowners
If you have not begun restoring your home, what are your future plans?
☐Sell as is
☐ Rehab and sell
☐ Rehab and return to live

Renters

If you wish to return, have you spoken to your landlord? ☐ Yes ☐ No
Is your landlord repairing your apartment? ☐ Yes ☐ No ☐ Don't know
Are the proposed rents affordable to you ☐ Yes ☐ No
Is your landlord selling the building? ☐ Yes ☐ No ☐ Don't know
If you can't return to your old apartment, would you like to rent another unit in the area ☐ Yes ☐ No

Sample of a Qualitative Interview Questionnaire for residents

☐ Old Resident ☐ New Resident

Identify the cultural landscape (Before Katrina)

- What initially attracted you to this neighborhood?
- How did you relate with this neighborhood?
- Did it feel like home?
- Did you move around in the city or have you been in the same house?
- What, in your opinion, made this neighborhood special?
- In your own words, how do you describe your neighborhood before the storm?
- What did you like the most about your neighborhood? And what did you like the least about your neighborhood?
- Were there any landmarks that you associated with? Are they still around?
- How did you feel about the levees before the storm?

Identify the cultural landscape (After Katrina)

- What brought you back to this neighborhood?
- How do you relate with this neighborhood now?
- Does it feel like home?
- Did you move around in the city or did you return to the same house?
- What, in your opinion, makes this neighborhood special?
- In your own words, how do you describe your neighborhood after the storm? And now, 7 years later?
- What do you like the most about your neighborhood? And what do you like the least about your neighborhood?
- Are there any new landmarks that you associate with?
- Do you feel safe with the new levees?

******

Understanding the strength of place attachment and informal social networks (Before Katrina)

- What was your relationship with your neighbors?
- How often did you see them?
- Can you give me an example of a time when neighbors got together? Tell me about that.
- How often did such things take place?
- Did you attend church services?
- Was your church close by?
- Did you take part of any church-related activities? How about cultural activities? Can you talk a little about this?
- Were there shops and businesses you would go to frequently?

- Were there places you would go to socialize or just hang out? Who would you go with?

Understanding the strength of place attachment and informal social networks (After Katrina)

- What is your current relationship with your neighbors?
- How often do you see them?
- Can you give me an example of a time when neighbors get together? Tell me about that
- How often do such things take place?
- Do you attend new church services?
- If yes, is your church close by?
- Do you still take part of any church-related activities? Cultural activities? Can you talk about how things changed?
- Are there new shops and businesses you go to frequently?
- Are there places you would go to socialize or just hang out? Who do you go with?

******

The role of memory and place attachment in creating resilient communities

a. Coming back after the storm
   - Did you think about not coming back? Why did you?
   - When did you return?
   - Were there any complications to coming back?
   - What was your first priority when you returned? Tell me about that.
   - In what condition was your home?
   - How much were you able to salvage?
   - What had been the biggest challenge(s) since your return? And did you overcome it?
   - Are you part of any community organization?

b. The rebuilding process
   - Have you rebuilt your home? If not, how far along are you?
   - Did you take part in any of the planning committees?
   - Did you have any help in rebuilding your home?
   - Who helped you? And what were your expectations?
   - How did you manage to finance rebuilding your home?
   - How did the plans proposed by the city affect you?
   - What is the single most important thing that you would like the recovery planning process to achieve? Anything else you wish to share?

c. Hurricane Betsy
   - Do you remember Hurricane Betsy? If yes, what do you remember?

- If no, did people tell you stories about it? If yes, what were these stories?

d. Life after Katrina
   - How would you describe your life since you returned to New Orleans?
   - How could you describe your neighborhood?
   - Since Katrina, where are the places that people get together to socialize? How is it different from before the storm?
   - What do you think about the rebuilding process in the Lower 9th Ward?

e. Life now
   - You've been through challenging times, what keeps you going?
   - How did you handle the stress?
   - Were you surrounded by supportive people?

Today's Date: *Month: Day: Year:*
Your Name:
Current address: City/State: Zip:
Phone(s): **email:**
Gender*: ☐ Male ☐ Female* **Age:**

Sample of a Qualitative Interview Questionnaire for Minors

Identify the cultural landscape

- What, in your opinion, makes this neighborhood special?
- In your own words, how do you describe your neighborhood? Before and after Katrina
- What did you like the most about your neighborhood? And what did you like the least about your neighborhood?
- What are the fun activities that you do around here?
- Do you attend the same school or a new one? How do you feel about that?

Understanding the strength of place attachment and informal social networks

- Do you have friends in the neighborhood?
- How often do you see them?
- When you see your friends, what do you do with them? And where do you hang out? How often?
- Did you attend church services?
- Was your church close by?

The role of memory and place attachment in creating resilient communities

a. Coming back after the storm
    - Do you remember Hurricane Katrina?
    - How was your experience of coming back after Katrina?
    - In what condition was your home?
    - Did you help your family or your neighbors? How?

b. Hurricane Betsy
    - What do you know about Hurricane Betsy?
    - Did people tell stories about Betsy? If yes, what were those stories?

Today's Date: *Month: Day: Year:*

Your Name:
Current address: City/State: Zip:
Phone(s): **email:**
Gender*: ☐ Male ☐ Female* **Age:**

Sample of a Qualitative Interview Questionnaire for Community Leaders

Role of the community leader and identifying the cultural landscape

- How do you define your role in this community?
- What is your contribution to the residents of the L9W?
- Are you from the L9W? How long have you been here?
- Do you have family here?
- How to relate with this neighborhood?
- How would you describe your neighborhood before and after Hurricane Katrina?

Understanding the strength of place attachment and informal social networks

- What have you done to help people return?
- How do you keep in touch with people of your congregation or cultural group?
- How would you define your relationship with the members of your congregation or cultural group? Are you a symbol of leadership/mentorship or a friend?
- Do people come to you for advice?
- Are you affiliated with any community organization? If yes, which?
- In what state was your church/establishment after the Hurricane?
- How would you describe the returning after the Hurricane?
- How would you describe your community before and after the Hurricane?
- Do you organize social events? How often? What kind of events?
- How do you encourage people to get involved?
- Does the community give back to your congregation or cultural group? How would you describe that?
- Would you consider your community to be resilient or not? Why?

The role of memory and place attachment in creating resilient communities

Coming back after the storm

- Can you tell me briefly what you remember from Hurricane Katrina?
- How was your experience of coming back after Katrina?
- In what condition were your home and your church?
- Did you help your family or your neighbors? How?
- Did you get any help? Can you talk a little about that?
- How did you manage rebuilding your home and your church at the same time?

- What was the most challenging and difficult task to achieve after the hurricane?

Hurricane Betsy

- What do you know about Hurricane Betsy? Did you witness it?
- Did people tell stories about Betsy? If yes, what were those stories?

Today's Date: *Month: Day: Year:*

Your Name:
Current address: City/State: Zip:
Phone(s): **email:**
Gender*: ☐ Male ☐ Female* **Age:**

Sample of a Qualitative Interview Questionnaire for Non-Profit Organization members

Role of members involved in the non-profit organization

- How long have you been working with this organization?
- How long has this organization been in place?
- How would you describe your role in the organization?
- Can you talk a little bit about the kind of work you are involved in?
- What are the main barriers or problems that you face, short term and long term?
- How many active members are in your organization?

Involvement in the community

- How do you help the L9W's community?
- How would you describe the role of the organization in the community?
- How would describe the L9W now?
- And how would you describe the progress done since this organization began?
- How would you describe the barriers that the community faces?
- How do you envision the future of the L9W?
- How many homes did you help rebuild?

Today's Date: *Month: Day: Year:*

Your Name:
Current address: City/State: Zip:
Phone(s): **email:**
Gender*: ☐ Male ☐ Female* **Age:**

Sample of a Qualitative Interview Questionnaire for Urban Planners (Academics and Professionals)

- Can you talk a little about yourself, what do you do?
- How would you describe the city before the hurricane? And after?
- Can you talk a little about the plans that have been proposed over the years after Katrina?
- Were you involved in these plans?
- What do you think about the UNOP plan?
- In your opinion, is it the most suitable plan for the city of New Orleans?
- How would you describe the impact of this plan on the L9W? How about at the community level?
- Where do you see the city in 10 years? 20 years? 50 years?

Today's Date: *Month: Day: Year:*

Your Name:
Current address: City/State: Zip:
Phone(s): **email:**
Gender*: ☐ Male ☐ Female* **Age:**

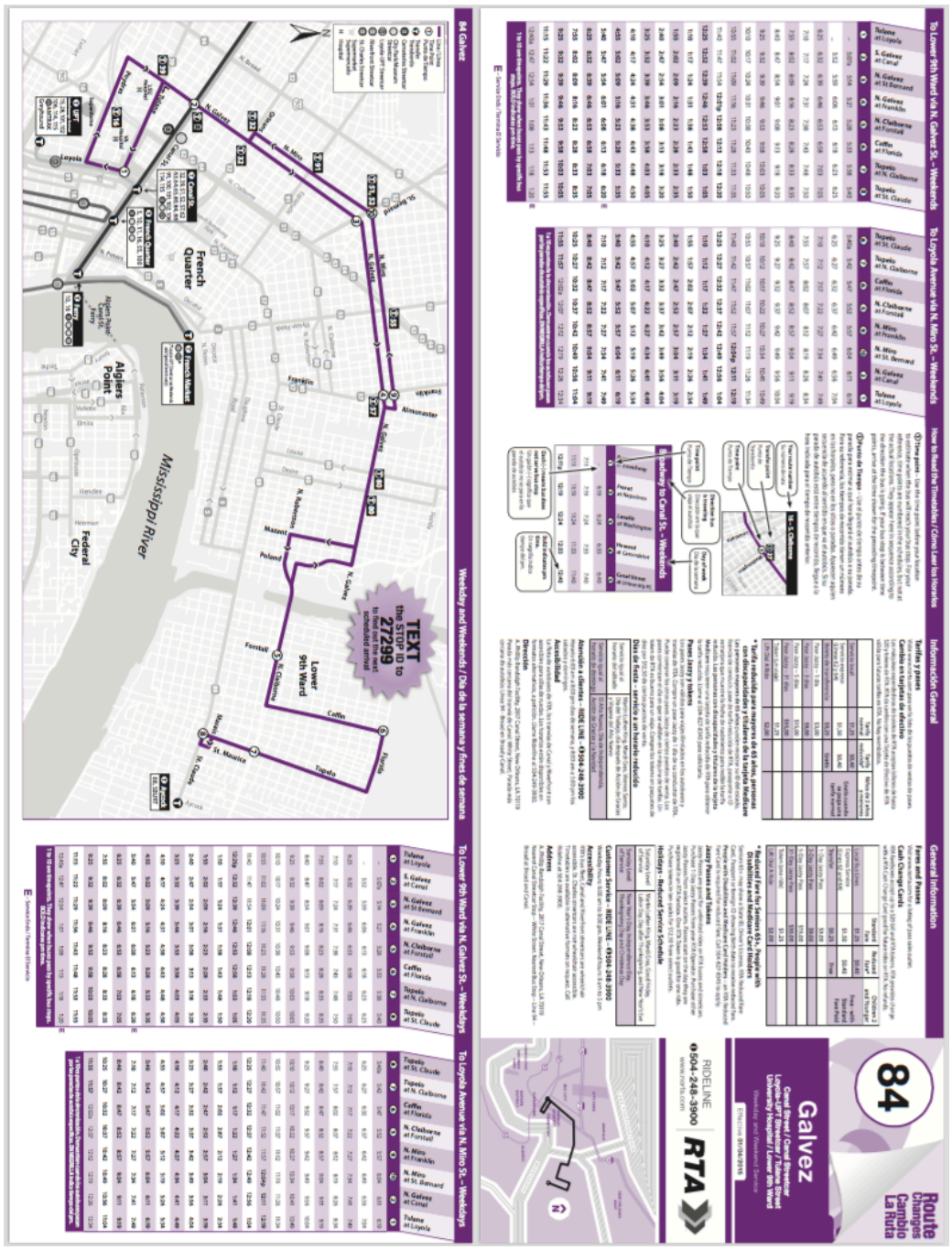
Appendix E: Images of the LNW Architecture


(a) Steamboat houses in the Holy Cross area (taken by the author, 2012)

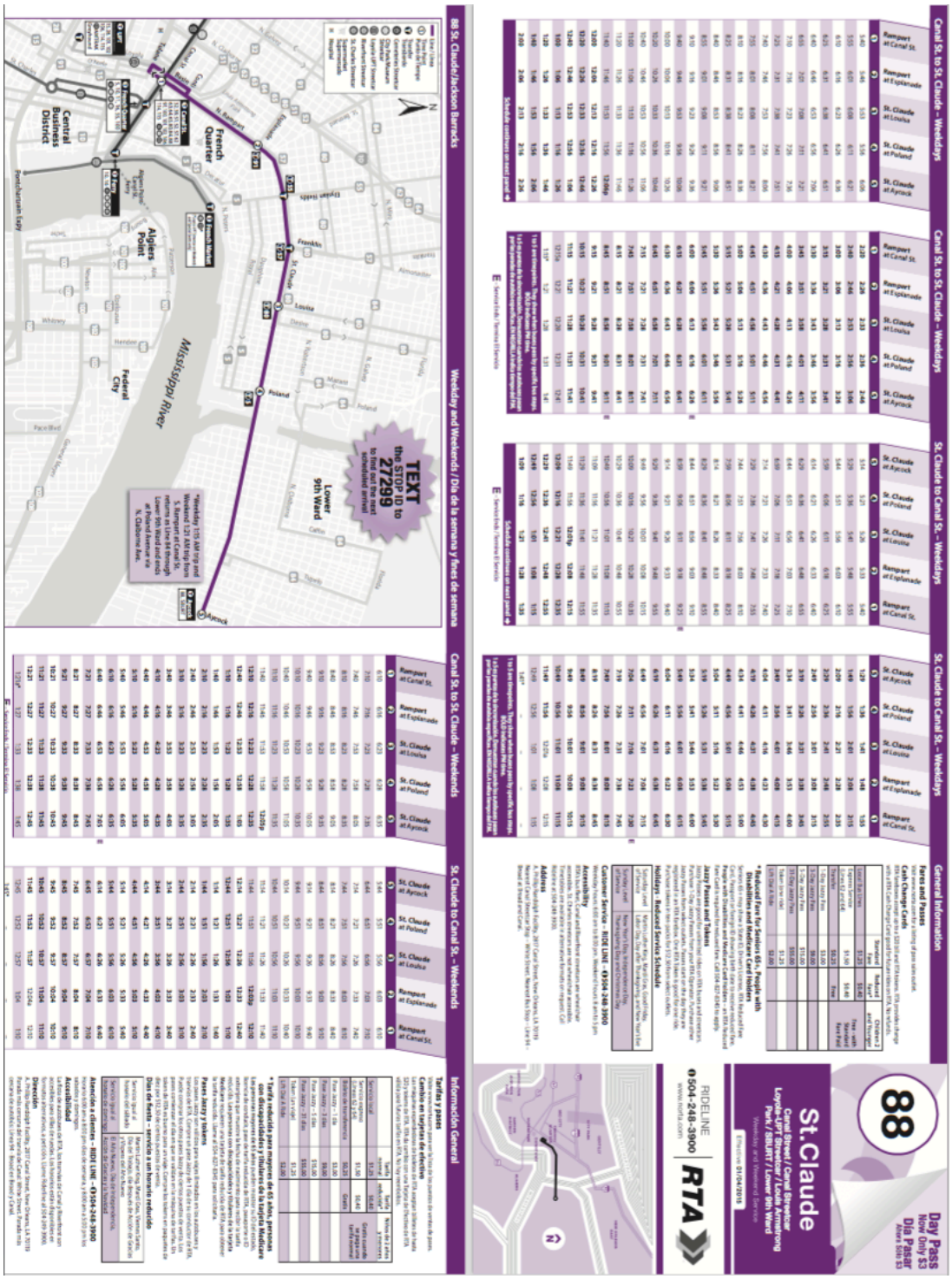

(b) Shotgun houses in the Holy Cross area (taken by the author)

Appendix F: Maps of bus routes going to and from LNW (taken from the New Orleans Route and Transit Authority)

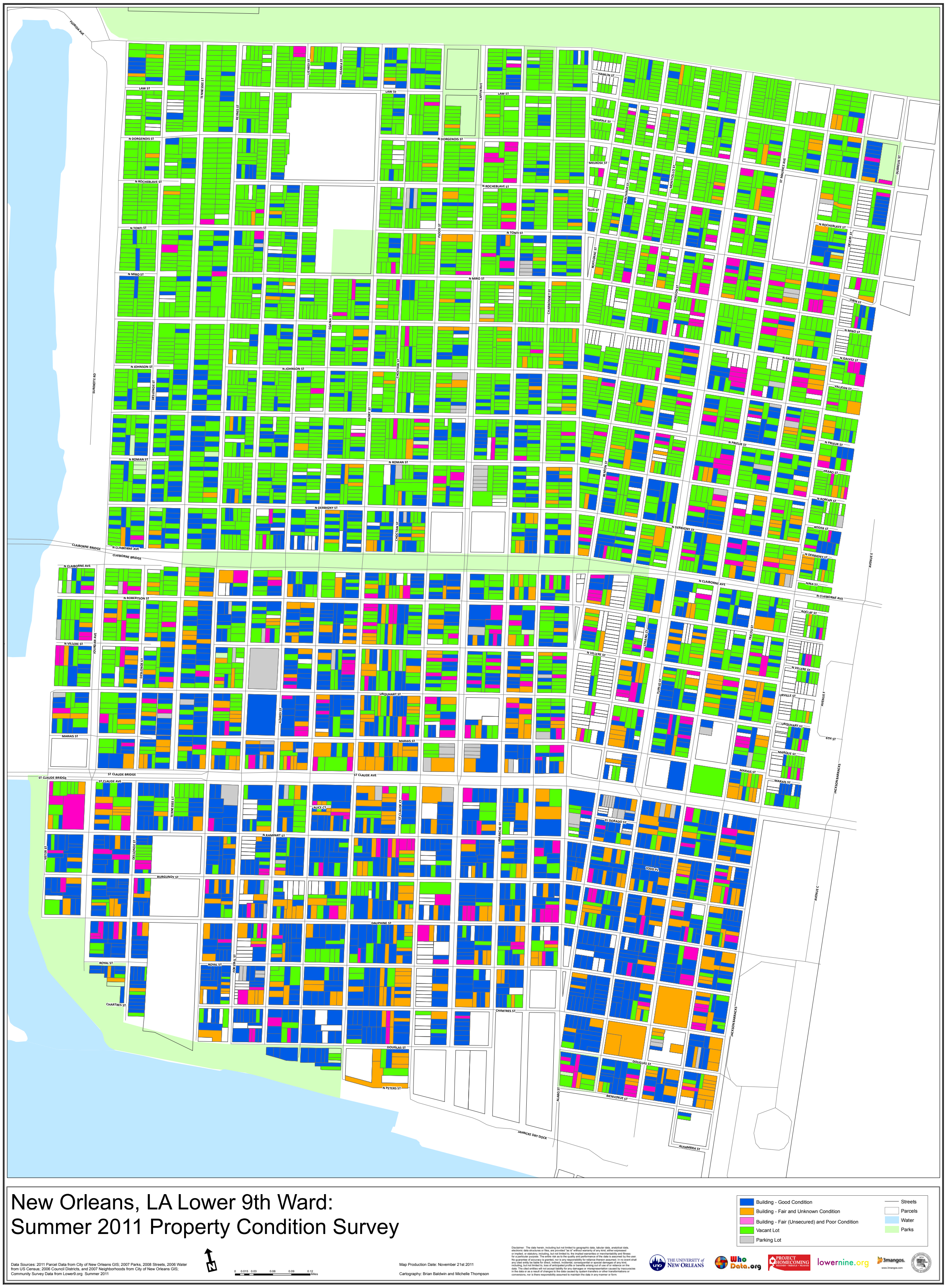
(a) Bus Route 84



(b) Bus Route 88

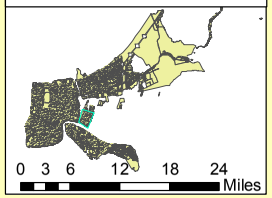


Appendix G: WhoDataNOLANOLA Maps of the LNW


New Orleans, LA Lower 9th Ward:
Summer 2011 Property Condition Survey
Building - Good Condition
Building - Fair and Unknown Condition
Building - Fair (Unsecured) and Poor Condition
Vacant Lot
Parking Lot
Streets
Parcels
Water
Parks
Data Sources: 2011 Parcel Data from City of New Orleans GIS; 2007 Parks, 2008 Streets, 2006 Water from US Census; 2006 Council Districts, and 2007 Neighborhoods from City of New Orleans GIS; Community Survey Data from Lower9.org Summer 2011
N
0 0.015 0.03 0.06 0.09 0.12 Miles
Map Production Date: November 21st 2011
Cartography: Brian Baldwin and Michelle Thompson
ST CLAUDE AVE
N CLAIBORNE AVE
JAHNCKE DRY DOCK
ALHAMBRA ST
BIENVENUE ST

New Orleans Redevelopment Authority's Property in the Lower 9th Ward and Holy Cross

New Orleans, LA



- NORA Inventory
- Parks
- Parcels
- Streets

Metadata:

City of New Orleans: <data.nola.gov> 2014 GIS data:
NOLA_Parcels_20140221.shp, NOLA_Addresses, NOLA_Street_Centerlines.shp, NOLA_Parks_20110818.shp; Wing, T. (2014, August 7). A NORA public records request released 2/27/2015.

N

Project Overview:

The properties identified in this map are part of the New Orleans Redevelopment Authority's (NORA) inventory based upon the information collected from a public records request. NORA's properties in the Lower 9th Ward and Holy Cross total 805.

Cartography:
Derreck Blake Deason
Dr. Michelle M. Thompson

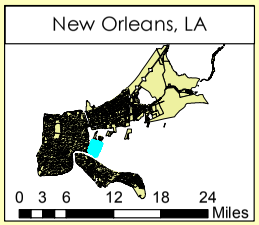
WhoData
University of New Orleans
Department of Planning and Urban Studies
April 22, 2015

WhoData.org

THE UNIVERSITY of NEW ORLEANS

New Orleans Redevelopment Authority's Proposed $100 Lots for Sale:

Lower 9th Ward and Holy Cross



Legend

- $100 NORA Lots
- Parcels
- Parks
- Streets

Metadata:

City of New Orleans: <data.nola.gov> 2014 GIS data: NOLA_Parcels_20140221.shp, NOLA_Addresses, NOLA_Street_Centerlines.shp, NOLA_Parks_20110818.shp; Wing, T. (2014, August 7). WGNO/ABC property list as of 8/7/2014 http://wgno.com/2014/08/07/narato-sell-more-than-600-lots-for-100-each/

Project Overview:

The lots identified in this map are part of the New Orleans Redevelopment Authority's (NORA) inventory. Based upon the information collected from https://tribwgno.files.wordpress.com/2014/08/available-lower-ninth-ward-properties.pdf NORA's properties total 600; however, only 550 are posted in this data set. This map showcases 92% of the available properties. A proposed constitutional change is under consideration to allow the city of New Orleans to sell empty lots in the Lower 9th Ward for $100 and will go before voters statewide Nov. 4, listed on the ballot as 'Proposed Amendment No. 13'.

Cartography:
Derreck Blake Deason
Dr. Michelle M. Thompson

WhoData
University of New Orleans
Department of Planning and Urban Studies
October 30, 2014