Reflections on Recovery:

Analyzing disaster recovery frameworks for the cities of Seattle and Wellington through a lens of reflexive sociology

Samuel Ripley

A thesis submitted in partial fulfillment of the requirements for the degree of:

Master of Urban Planning

University of Washington

2017

Committee:

Jan Whittington

Bob Mugerauer

Program Authorized to Offer Degree:

Urban Design and Planning

-Abstract-

REFLECTIONS ON RECOVERY: ANALYZING DISASTER RECOVERY FRAMEWORKS FOR THE CITIES OF SEATTLE AND WELLINGTON THROUGH A LENS OF REFLEXIVE SOCIOLOGY

By Samuel Ripley, 2017, 119 pages

Chair of the Supervisory committee: Jan Whittington

Recovering from catastrophic disasters forces communities to ask deep and difficult questions about identity- do they want to rebuild what they had before? Do they even know exactly what that was? Or would they want to change and become something different, hopefully something better. This thesis examines disaster recovery planning frameworks in the cities of Seattle and Wellington, and compares how they promote reflectiveness- a quality which indicates forethought and investigation. The reflectiveness of recovery plans is examined using three indicators: Incorporation of scientific and technical studies, understanding and use of local knowledge, and the use of assessment methods or other metrics for directing improvements. In particular, older and current iterations of recovery frameworks are compared, demonstrating a strong shift towards more reflectiveness. I also use interviews with disaster recovery professionals to provide further context and background that is often not captured in draft frameworks.

Table of Contents

List of Tables and Figures

Acknowledgements

Considering that reflection and forethought are key elements of my thesis, it's only appropriate in my mind that I am thorough in acknowledgements. Though my name is first on the title page, any great effort is many people in the making. In recognition of that truth, I have the following words of gratitude to offer, pale though they are in comparison to all the support I've received.

Thanks to the professionals who kindly gave their time to answer my questions about disaster recovery. Your names are anonymized in the interview citations, but if I have conned you into reading my final draft, know that your insights were invaluable. Thanks to my thesis committee, Jan Whittington and Bob Mugerauer, for your guidance on this academic journey, and for your patience in sticking with this wayward MUP after I took a job in a different hemisphere mid thesis. Thanks to the innumerable educators in my life for encouraging life-long learning, and the employers who've given me the chance to put my passions for studying disasters into practice. Thanks to my family for always pushing me to pursue my education, and for the ever so polite reminders to actually finish my degree. Finally, thanks to my fellow MUPs for creating a support network and a means of keeping each other grounded, especially when one of us got a little unhinged.

Acronyms

CBD: Central Business District

CDEM: Civil Defence Emergency Management

CEG: Coordinating Electives Group

CEMP: Comprehensive Emergency Management Plan

CERA: Canterbury Earthquake Recovery Authority

CRTF: Community Recovery Task Force

ESF: Emergency Support Function

GNS: Geological and Nuclear Sciences

LTRO: Long Term Recovery Organization

NDRF: National Disaster Recovery Framework

RSF: Recovery Support Function

SDRF: Seattle Disaster Recovery Framework

SHIVA: Seattle Hazard Identification and Vulnerability Analysis

SOEM: Seattle Office of Emergency Management

WREMO: Wellington Region Emergency Management Office

Chapter 1- Introduction

The purpose of this thesis to examine how disaster recovery planning promotes reflection and iterative improvement in future planning frameworks. The reflectiveness of recovery plans will be examined using three indicators: Incorporation of scientific and technical studies, understanding and use of local knowledge, and the use of assessment methods or other metrics for directing improvements.

My thesis is comprised of two primary elements. The first is a comparison of disaster recovery planning in the cities of Seattle, United States and Wellington, New Zealand. Through this comparison I explore the ways in which the two cities' respective approaches to recovery planning encourage both government and communities to take risks and engage opportunities to build resilience. My comparison of recovery planning in the two cities looks at current practices, however I am also delving into past iterations of recovery planning to look at the direction recovery planning is heading. Another way to to put it: I am looking at Seattle's recovery planning in the past and present, Wellington's past and present, and then comparing where the two have found common themes and challenges. My reasoning is that looking back at what was helps to contextualize why cities make changes in prioritization, and possibly illuminates the key reflections that lead to big decisions.

Seattle and Wellington are appropriate choices to compare both in their baseline similarities and current political interest in recovery. These cities have comparable hazardscapes, with earthquakes posing the greatest threat. Both are major regional hubs for both economy and culture, with large increases in daytime population on top of the highest permanent population in

the region. There is also an aspect of opportunity that sways my choice to compare the two cities. Wellington and Seattle join an increasingly large cohort of cities making recovery planning a priority, and both are allocating resources to move forward. The same can be said of Seattle and Wellington's commitment to making communities active stakeholders in recovery planning, and not just intended beneficiaries of a top down process.

I cast my comparison through a lens of 'reflectiveness'. Reflectiveness is the trait of self-examination and application of knowledge that allows people and organizations to change in constructive ways. My understanding of 'reflectiveness' began with the writings of French sociologist Pierre Bourdieu on 'reflexivity.' Bourdieu began his exploration of reflexivity as a way of describing self-reflection among sociologists, and the necessity to be conscious of the influence that their research may have on subjectivity. A reflexive sociology would be one that examines its methods and aims honestly and critically, rather than one that builds on concepts for the sake of an image of progression.

Reflectiveness is one of the core aspects used by The World Bank and the Rockefeller Foundations 100 Resilient Cities program in their assessments of resilience. As used in the World Bank and Rockefeller programs, reflectiveness helps to examine why some communities learn and grow during disaster recovery, while others repeat the construction of vulnerability. The World Bank and Rockefeller frameworks include qualities such as robustness or redundancy which describe capacity, and flexibility and inclusion describing how resources are connected and utilized. The programs use multiple qualities as facets to help characterize the complexity of cities, but reflectiveness caught my interest above others. Robust infrastructure helps protect the

things we already decided were worth protecting, and redundancy allows us a degree of flexibility if something does break- important to be sure, but not what I chose as the focus of my thesis. Reflectiveness is intriguing to me because it is a key element of social dynamics in cities, and in my mind the one that sparks the most potential for positive change. Reflectiveness in our personal life sometimes takes courage, because intrinsically to reflect on the wisdom of our choices is to admit the possibility of being wrong. The value in doing so is that we can learn from our mistakes, as well as understand our strengths to create more opportunities for success. Above all, reflectiveness empowers the will to make difficult but potentially vital changes. Writ large on the level of whole communities and cities faced with disaster, reflectiveness may influence whether a city bounces back to how it was pre-disaster, or bounces forward into a more resilient state.

Disasters bring about great suffering and deep personal loss, but they can also reveal inspiring levels of altruism and create opportunities for communities to fix long-standing problems. The common way we characterize disaster- loss, strife, and pain- there is of course truth to all of this. These more obvious negatives help to explain why our relationship with catastrophe is often thought of as one purely of loss, rather than one with potential for positive change. And change is just what's called for in altogether too many cities. While the future course that cities need to take is not always clear, the general need for decreasing the occurrence and severity of disasters is hard to deny.

The problem is that a general need to decrease the occurrence and severity of disaster does not easily translate to specific and legally adopted policies. While governments increasingly

acknowledge the need for resilience, the ways in which those governments actually work towards reducing vulnerability ranges in both conception and priority. So, the question remains how to move forward? Given the limited scope of a Master's thesis I will not reach an answer worthy of Truth with a capital T, but we can make a start by exploring and illuminating how cities can go about reflecting on the past and present, and empowering communities to have a greater sense of agency in pre and post disaster recovery planning processes.

Recovery plans have the potential to empower a range of stakeholders because they require an examination of a region's drivers of disaster: the science of potential hazards, the cause of vulnerabilities, and a vision for what they strive for post-disaster. Investigating these drivers builds valuable knowledge, and in theory more power to effect change. Planners and policy makers have a great deal of power to influence the outcomes by deciding who gets to sit at the table when recovery decisions are being made. Whether or not recovery planning processes actually empower community voices is highly influenced by authority's recognition of communities as partners to work with rather than people to manage.

My intent in this document is to explore what the current literature on defining and measuring resilience says, alongside relevant theory and research into how people and groups can learn about themselves, and apply all of that to a comparison of how recovery planning in Seattle and Wellington encourages reflectiveness. I will end by suggesting conclusions and recommendations, both for practitioners and researchers.

Finally, I did say that this thesis was *two* things, and from my perspective indeed it is. The first part is the analysis, the findings, all of the rationale listed above- all of the bits you'd expect to find in a thesis. The second part of this thesis-about-reflectiveness is actually my own reflection, and to some degree of projection on where recovery planning as a field is going, and where radical change in governance structures may be able to be part of an overall planning structure for cities to implement positive change. I will explore this through a concluding section on transformation and ethics in recovery.

So, that's the preamble. If you are interested in exploring how disaster recovery frameworks can enable reflectiveness and change pre and post disaster, and how local governments can better position themselves to engage directly with communities to inspire reflection, then I invite you to read on.

Chapter 2- Literature Review

My literature review is organized into principal categories of theory, empirics and practice. Theory covers the conceptions of reality- the explanations of how a thing might be, while empirics drives how to measure it and verify theory. The separation between the two is useful but largely artificial, as theory is retroactively shaped by the validations of empirics, and empirics cannot be carried out without some theoretical conception that gives a clue where and how to start measuring. Still, the literature takes on a more narrative frame when moving from the theories to the empirical studies and onward to the last step of practice. Practical applications show how jurisdictions apply theory and research, and how strictly or loosely they adhere to the levels of veracity typically required of other research. Sub sections within the three primary sections are used to help better show the conceptual connections I have made.

Theory

The main bodies of theory I have chosen to focus on help connect disaster recovery with science and how it is interpreted, reflexivity and related concepts, cultural cognition, and resilience. Starting with science, my exploration of theory looks at how science is approached from the perspective of a practitioner, and how scientific theory is used by non-scientists and practitioners in other fields. Next, I explore sociology perspectives on self-identity and learning through reflexivity, and the ways science and sociological perspectives are framed through the concepts of cultural cognition. Finally, I explore differing definitions of resilience, and how a varied interpretation of resilience can help or hinder planning.

Science

The valuation and communication of science matters to resilience because it drives how research moves forward, and often what ultimately is absorbed by non-scientists. One of Bourdieu's oft stated interests was in seeing sociologists apply a stronger degree of scientific rigor, and in particular one that did not emphasize theory over empirics or vice versa. Bourdieu decries claiming adoption of scientific methods in name but without a full understanding of their value, calling such behavior "methodological fetishism". Bourdieu warns that "The sophistication of techniques of observation and proof can, if it is not accompanied by a redoubling of theoretical vigilance, lead us to see better and better fewer and fewer things."[1] Bourdieu thought that a holistic viewpoint of science in sociology needed to be considered with context of historical precedence. He makes this point quite clearly in stating that "the separation of sociology and history is a disastrous division, and one totally devoid of epistemological justification: all sociology should be historical and all history sociological."[2]

"Intellectual history shows that a science that is controversial, alive with genuine (i.e. scientific) conflicts, is more advanced than one where a soft consensus reigns, predicated on elastic concepts, vague programs, editorial truces and edited volumes."[3] Bourdieu is saying that it is the very nature of science as a method and a process that sets it apart from fields that are based more on hierarchical yet more arbitrary decision making. Science is science because it is scientific, though we could say the same at least in part for other fields that strive to incorporate the precepts of science into their own decision making structure. Bourdieu writes that "A field is all

[1] Bourdieu and Wacquant, *An invitation to reflexive sociology.*
[2] Ibid.
[3] Ibid.

the more scientific the more it is capable of channeling, of converting unavowable motives into scientifically proper behavior. In a loosely structured field characterized by low level of autonomy, illegitimate motives produce illegitimate strategies and, furthermore, strategies that are scientifically worthless."[4] Bourdieu describes a valuable autonomy in science, but the autonomy of a scientific field is not to be confused with the autonomy of a decision maker who sits at the top of a hierarchy. Rather, using mathematics as an exemplification of high autonomy, Bourdieu states that "...a top mathematician who wants to triumph over his opponents is compelled by the force of the field to produce mathematics to do so…"[5] Though the influence of ego in the practice of science may construe objectivity, the intent at least is to organize around a meritocratic core.

Reflexivity

Science is a methodology for people to examine the world, and doing so in a way that can be replicated by others with the intent of verifying and building upon previous work. However, most people are not scientists in the sense of being trained professionals, and even among professional scientists there is no guarantee that they would be inclined or able to apply their professional methodologies in scenarios of daily life. No doubt we all do *have* a way of relating and navigating, scientific or otherwise. Bourdieu used a term for describing the way an individual relates to their world as 'Habitus'. Habitus as Bourdieu describes it is "...what you have to posit to account for the fact that, without being rational, social agents are reasonable- and

[4] Bourdieu and Wacquant, *An invitation to reflexive sociology.*
[5] Ibid.

this makes sociology possible."[6] Bourdieu explains that the average person is not stupid or completely delusional solely because they have internalized notions that run counter to other forms of analysis. Our collective pattern-seeking behavior as humans pushes most people to make decisions and build frameworks about our world, and if we start with incorrect information then it is not unreasonable to come to incorrect conclusions.

Bourdieu also describes a concept complimentary to habitus, that of nomos. Nomos is "a legitimate principle of division which can be applied to all the fundamental aspects of existence, defining the thinkable and the unthinkable, the prescribed and the proscribed, it must remain unthought. Being the matrix of all the pertinent questions, it cannot produce the question that could call it into question."[7] What Bourdieu is saying is that once an archetypal construct is accepted, it becomes extremely challenging and perhaps impossible to take an outside view of it without changing that internal viewpoint. Bourdieu also called nomos "a thesis which, because it is never put forward as such, cannot be contradicted, has no antithesis."[8]

Pierre Bourdieu's theory and research into the concept of people being reflexive, and the components of sociology like habitus and nomos are a very useful theoretical framework, but others add to the idea of reflexivity theory to great effect. Caetano, in summarizing a breadth of writing on the subject, states that reflexivity is indeed to be considered as something of a general human trait. It is inherent as a possibility, but the actual emergence of reflexive behavior is tied to other aspects of stability in an individual's life. I take this to mean that while the average

---

[6] Bourdieu and Wacquant, *An invitation to reflexive sociology.*
[7] Bourdieu, *Pascalian meditations.*
[8] Ibid.

human is capable of rendering reflections about their existence, the eminent question is why should they bother? Caetano's postulate that the views of reflexivity as held by herself and other sociologists agrees with the notion that the way people perceive themselves is connected to how knowledge and information are perceived- but more so in contemporaneity. The implication as stated by Caetano is that "social and individual reflexivity were non-existent, or very limited, in previous social arrangements, since strong social integration and trust in social ties did not favour its development."[9]

Caetano agrees with Bourdieu on the importance of considering history, stating that "...Restricting the broader definition of reflexivity to specific socio-historical conditions is too limiting as it fails to take into account all the dimensions of the concept. Independently of their temporal context, social relations are permeated by mechanisms of reflexivity."[10] Referencing an ongoing modern trend for societies to become less traditional, Caetano points out that it isn't really accurate to put discrete boxes around different social groups. While many individuals do self-identify as belonging to particular social groups, Caetano advises that it it doesn't work to put individuals as "belonging indisputably and solely to one or to a limited number of social groups" because their "...identities are historically constructed by means of an ongoing and never fully finished process."[11] The sometimes contradictory nature of the social relations which individuals pursue mean that at certain points, individuals make choices which constrict the development of one social identity in favor of another. Caetano's point here is summarized by her statement that "The empowerment of agency does not occur in an institutional vacuum; it

[9] Caetano, "Reflexivity and social change."
[10] Ibid.
[11] Ibid.

takes place in dynamic contexts of pluri-socialization, which both constrain and enable human action." This pluralization means that although their personal identity may drive incline them towards a variety of choices, the world around them influences their ability to make choices.

Cultural Cognition

Dan Kahan's work on cultural cognition and how prior knowledge can affect future learning is important for understanding the theory behind how an individual might process new information, and also how they might select entirely new sources of information. One key concept which is explained before Kahan proceeds into his work is the notion of Bayesian Learning. Kahan summarizes the idea by stating that on an extreme level, an individual could assign absolutely no probative weight when presented with a fact that contradicts their beliefs. This individual is then incapable of changing their mind, since they will "necessarily dismiss all contrary evidence, no matter how well founded, as lacking credibility." Somewhat less extreme and much more common, an individual might simply assign less probative weight to evidence contradictory to their beliefs. This person may actually ultimately change beliefs, "...but only after being furnished with more evidence than would have been necessary if she had not discounted any particular item of contrary evidence based on her mistaken starting point."[12] Kahan's reframes the significance through another study, citing that "A person who employs Bayesian updating is more likely to correct a mistaken belief, and do so sooner, if she has a reliable basis exogenous to her prior belief for identifying the probative force of evidence that contravenes that belief."[13]

---

[12] Kahan et al, "Cultural cognition of scientific consensus."
[13] Rabin and Schrag, "First impressions matter."

If an individual actually recognizes their bias in assigning false probative weight, they would then conceivably consider abdicating part of their beliefs in favor of aligning to the the views of experts such as scientists. However, another problem arises in that the way a person decides someone else is credible enough to be considered expert is also subject to bias of character traits of the experts, like perception of an expert being friendly or detached or arrogant or any number of traits which may rub someone the wrong way. This is compounded even further by another bias in selecting only expert opinions that we already agree with, or overestimating the worth of a minority of experts in a given field "...because the same predisposition that informs [prior assessment] will also be unconsciously shaping [the] ability to recognize and assign weight to all manner of evidence, including the opinion of scientists."[14]

The idea of cultural cognition is that through the types of Bayesian processes described above, "Scientific consensus" in the public arena doesn't mean the same thing as it does to other scientists. Partly this could be attributed to different ways in which the word is used (like agreeing on something through discussion- reaching consensus.) According to Dan Kahan's work on cultural cognition, scientific consensus is often treated as a single fact- a single data point so to speak- rather than a term that describes the total review of facts by scientists. "...What most scientists believe is simply another empirical fact no different from any other that bears on a disputed question of risk."[15] When the breadth of consensus is compressed into a single point, it becomes much easier to argue and much more susceptible to "...the same social psychological mechanisms that shape individuals' perceptions of every other manner of fact".[16] The

[14] Zimper and Ludwig, "On attitude polarization under Bayesian learning with non-additive beliefs."
[15] Kahan et al, "Cultural cognition of scientific consensus."
[16] Ibid.

compression of many scientist's interpretation of a larger puzzle into merely one of it's constituent pieces makes it easier for individuals to falsely intuit it's meeting.

Science, reflexivity and cultural cognition all play a role in examining disaster recovery. The hazards that are responsible for triggering disasters- such as earthquakes and storms- are investigable and to some degree predictable through scientific inquiry. However, people's experiences and personal ways of relating to information make a large degree of difference in how recovery progresses. Recovery planners benefit from understanding theories of how experience and perspective may impact the way people view plans, even if plans are made using scientifically sound reasoning.

Resilience

Some of the sociological concepts outlined above, including cultural cognition, indicate that past experiences and a variety of personal frameworks impact how we understand concepts. 'Resilience' is a concept germane to recovery planning, but one that can be defined and used in a variety of ways. This sub section of theory explores the different ways resilience is defined, why particular definitions might impact recovery planning, and how certain definitions might be measured at the level of communities.

Definitions of resilience

C.S. Holling was one of the first to publish a definition of resilience, defining it as the "measure of the persistence of systems and of their ability to absorb change and disturbance and still

maintain the same relationships between populations or state variables."[17] The lexicon of resilience definitions has filled up a good bit more in the last four decades though, now including engineering and sociological frameworks as major categories, and plenty of room for splitting hairs in between. Fridolin Simon Brand and Kurt Jax compile many definitions that show the breadth of how resilience is conceived of in other bodies of research, marking the range from early ecological definitions to hybridized definitions that account for people. These sociological definitions of resilience provide a broader perspective that includes human actions, such as "The ability of groups or communities to cope with external stresses and disturbances as a result of social, political, and environmental change."[18] What matters most from the myriad definitions and what is ultimately most useful to recovery planning is difficult to say with finality. However, it seems that in general, frameworks for resilience which empower a range of social actors may fit best with planning ethos' that favor equity. As Brian Walker and C.S. Holling state, "In the end, the collective capacity of social actors to intentionally manage resilience determines whether they can successfully avoid evolving into an undesirable system state or regime, or succeed in crossing back into a desirable one."[19] Further study of resilience will likely generate further specific and potentially useful ways of defining the concept, but for recovery planning, including the social actors in the definition of resilience empowers those actors when it comes to implementation.

[17] Holling, "Resilience and stability of ecological systems."
[18] Adger, *Building resilience to promote sustainability.*
[19] Walker et al, "Resilience, adaptability and transformability in social--ecological systems."

Resilience as a boundary object

How a concept is defined can help or hinder the way that concept is understood and used by different audiences. 'Boundary objects' act somewhat akin to the Rosetta Stone, facilitating communication across a gap and allowing for some degree of translation. Boundary objects enable a concept to be shared by multiple disciplines, but not always with a consistent fidelity.[20] The value in this is that although the exact use of a term like 'resilience' does not stay 100% consistent across groups, people can still talk about it with a reasonable degree of understanding. The danger is that since inclusiveness is favored at the expense of confidence in definition, boundary objects can leave things a little lost in the translation. Boundary objects get people to the table, but they don't guarantee that specific policies can be made, since different parties likely vary in their exact understanding of the concept at hand. Perhaps worse, boundary objects can mask abject misunderstandings or present the opportunity for guile based on a discrepancy in understanding between parties. In the world of policymaking, two parties might agree that resilience is key, but conceive of it in different lights, thus making any agreement potentially problematic or null when it comes to implementation.[21]

Kathleen Tierney discusses the possibility for negative and positive effects of boundary objects in her research relating resilience to economic modalities. Tierney unpacks resilience as a "...social construct that in both theory and practice meshes seamlessly with broader processes of neoliberalization, supports particular types of civil society–state relationships, envisions particular kinds of at-risk subjects, and privileges specific types of solutions to the problem of

[20] Star and Griesemer, "Institutional ecology, 'translations' and boundary objects."
[21] Brand and Jax, "Focusing the meaning(s) of resilience."

disaster vulnerability."[22] Tierney acknowledges that some communities have proven to be more resilient than others, but she argues that the precise reasons why are not clear, and encourages "...risk reduction experts to take a closer and more critical look at the practical consequences of the use of resilience rhetoric within existing systems of political–economic relations." Tierney states that loosely defined use of the term 'resilience' "...can be used to legitimize the activities of groups with very different interests…", as evidenced by often conflicting groups such as multinational firms, governments, faith-based organizations and academics all using 'resilience'.

Measuring community resilience

Louis Anthony Cox Jr. provides a good framework for thinking about the challenges of decision making in a resilience context. "Making communities, rather than individuals, the protagonists in efforts to model and improve risk management decisions..." seems to be a promising treatment of the issue of scale in disaster management, as is categorizing community resources as different types of capital, much as we would in business or government. Cox Jr. establishes a reasoning for the usefulness of community-level analysis by saying that "The healthy functioning of the community over a range of stresses, including responses to and recovery from occasional rare catastrophes, depends largely on how well its members can adapt together to changing circumstances."[23] Cox's reasoning frames how adaptation can be measured through behavior and access to resources, but is more theoretical and does not detail actual studies.

[22] Tierney, "Resilience and the Neoliberal Project Discourses, Critiques, Practices."
[23] Cox Jr, "Community resilience and decision theory challenges for catastrophic events."

Kathleen Tierney and Michel Bruneau through the Multidisciplinary Center for Earthquake Engineering Research describe a method of measuring resilience which uses four separate domains: Technical and physical systems, organizations and institutions that manage those systems, social domains encompassing community characteristics, and local/regional economies. "Understanding the attributes and dimensions of resilience provides guidance for defining and achieving acceptable levels of loss, disruption, and system performance.[24] Using different domains allows comparison of different needs within the domains that could otherwise be hidden or averaged out by looking at the resilience of everything at once.

Theory connections to Recovery

Reflexiveness and the related concepts of habitus and nomos serve as a theoretical base from which to examine recovery planning. Future sections of this literature review will cover the empirical tie-ins to recovery, and how they are used in practice, however I have found it helpful to start by looking at theoretical mechanisms to describe the most elusive component of recovery planning: people. Accepting that disaster recovery is a time of change for large populations, it is thus useful to look sociological frameworks for how people might navigate or resist change. Starting with Bourdieu's idea that while people are not rational in the sense of utilizing perfect information and perfect methods for decision making, they are indeed reasonable- meaning that for better or for worse they use what they have available.

[24] Tierney and Bruneau, "Conceptualizing and measuring resilience."

Empirics

Following theory, my empirical literature review encapsulates the uses of the sociological tool of 'phronesis', research into post-disaster behavior, and a selection of case studies of disaster recovery. I use phronesis as a research methodology appropriate to recovery planning, while research into disaster behavior and case studies of recovery contextualize some of the challenges and opportunities observed in disasters.

Phronesis

My methodology echoes the practice of phronesis, described by Bent Flyvbjerg, "Phronetic planning research is an approach to the study of planning based on a contemporary interpretation of the classical Greek concept phronesis, variously translated as practical wisdom, practical judgement, common sense, or prudence."[25] Phronesis "...puts the emphasis not on particular research methods or types of data, but on producing research that can enhance [the method] by increasing understanding in specific contexts as opposed to questing after the ghost of an abstract knowledge of law-like processes."[26] The authors of Real Social Science also stipulate that in the use of phronesis, "the question is not 'which method?' but 'what matters'." This process inherently recognizes and attempts to account for a lack of data controls that is pervasive in many scientific disciplines, but still makes use of what is available to provide an investigation of reality that is tied to context, so that what is produced is useful to the people studied. Hence, phronesis can be described as 'value-rational'.[27] [this should be one footnote, with the contents

[25] Flyvbjerg, "Phronetic planning research."
[26] Sanford and Schram, "Phronetic social science."
[27] Landman, "Phronesis and narrative analysis."

of the note separated by a semicolon] The four value-rational questions that motivate the phronetic approach are:

- Where are we going?
- Who gains and who loses, and by which mechanism of power?
- Is this development desirable?
- What, if anything, should we do about it?

These questions are the crux of Bent Flyvbjerg's reasoning for why the methodologies of the 'natural sciences' are not always appropriate for the social sciences. Flyvbjerg finds that the natural science push for pure objectivity is not appropriate for social science because human behavior- the focus of social science- too often must blend the line between subject and object. Isolation of variables is difficult and often unachievable at the standard that natural science would require, thus an alternative that embraces the use of rich context is more appropriate for social science.[28] Indeed, Flyvbjerg accepts Bourdieu's idea that behavior and action are tied to the context in which the actors being studied make their decisions. Following a natural science model would mean that context-dependent elements be excluded, but echoing Bourdieu's ideas, Flyvbjerg agrees that this exclusion erroneously strips the elements that help to explain the human behavior being studied in the first place. The methodology that Flyvbjerg argues for does not denounce the objectivity of the natural sciences, but rather states that the overuse of rules and logics is damaging to social science when they exclude the phenomenon of human behavior that are not yet predictable by theory. Flyvbjerg also argues that rules and logic are best used as

[28] Flyvbjerg, *Making Social Science Matter*.

strong guidelines, stating that in his assessment the overuse of rules and logics has been more problematic than their restraint.

The phronetic method as a research framework starts with questions of value in concert with quantitative measures of related factors. Researchers applying the method as described in by Bent Flyvbjerg in Making Social Science Matter incorporate Flyvbjerg's value questions to make sense of power structures. In Real Social Science, Tricia Olsen, Leigh Payne and Andrew Reiter's chapter on amnesty proceedings in Brazil uses a phronetic analysis to ask if declarations of full amnesty instead of court trials yielded a benefit within the context of Brazil, even though internationally most human rights researchers advocate moving away from pure granting amnesty. The researchers ask "Would Brazil be in a better situation today, in terms of human rights and democracy, if it had implemented the internationally promoted transitional justice mechanisms?" Researchers relied on the phonetic question of "Who wins and who loses...when particular transitional justice paths are taken. And in what ways are these different paths desirable?"[29] Phronetic inquiry into the ramifications of decision in justice is an important analog to the equity implications of recovery planning- Poorly rendered decisions will create winners and losers.

[29] Olsen et al, "Amnesty in the age of accountability."

Disaster Behavior

Kathleen Tierney's review of research points to an overwhelmingly pro-social behavioral default during disasters. This supports the notion that communities are important players in recovery planning, and should be counted on as useful allies instead of a further hazard to be managed and contained. Tierney points to two major takeaways that have practical implications for how communities plug in to the early phases recovery process.[30]

First, it is important to recognize and engage local communities and groups that emerge in the context of disasters as full partners in disaster response activities.

Second, official response agencies must avoid taking actions that undermine the ability of residents of disaster-stricken communities to engage in self-help activities in the aftermath of disasters.

In contrast, Ted Steinberg's book Acts of God discusses the history of disaster in the United States through the context of directly managed damages, but more importantly Steinberg covers the history of human behavior's influence on creating vulnerabilities. Steinberg's research into historical records from more than a century of U.S. disaster history supports his argument that seeing disasters as inevitable and random is at best, objectively wrong, and at worst, masks the role that humans play in engineering their own peril. Despite the generally downward trend in lives lost during disaster, at the time of publishing the first edition of the book, Steinberg sadly correctly predicted Hurricane Katrina. Steinberg states "A dreaded direct hit by a storm of [category 4] would likely turn New Orleans into a huge lake 20 feet deep, with mass death a very

[30] Tierney, "Disaster response: Research findings and their implications for resilience measures."

real possibility."[31] Steinberg's work supports the need for reflective analysis to prevent the same events being repeated, as the author often cites how obfuscations of truth led to repeat disasters.

Because recovery planning involves a significant degree of decision making, either pre, during, or post, how people interpret new information is critical. Research into cultural cognition shows that for many, the previous conceptions of any number of other factors affect how new knowledge is uptaken. Dan Kahan's research using made-up scientist personalities to promote actual research suggest that bias can enter the process in all steps.[32] Starting with a given cultural audience, Kahan explored the effect of a more hierarchical cultural group versus more egalitarian, which ended up having an effect on how scientific 'facts' were viewed. For instance, amongst more egalitarian cultures, people are more likely to believe the test statement that humans cause climate change, whereas hierarchical groups are less likely to agree.

In considering what degree of responsibility communities should be given in disaster recovery, it is important to note that research indicates that most communities exhibit prosocial behavior in disaster environments. Research by Enrico Quarantelli and many other bodies of research beginning after World War 2 indicate that thieving and looting are rare, and in fact in many communities not a single case of theft occurs after disaster. According to Quarantelli, the places where antisocial behavior is most likely to occur are in communities with "...very high everyday rates of stealing and weak social sanctions against such behavior." [33]

---

[31] Steinberg, *Acts of God.*
[32] Kahan et al, "Cultural cognition of scientific consensus."
[33] Quarantelli, "Looting and antisocial behavior in disasters."

Disaster Recovery Case Studies

Research findings of cities with similar hazard profiles to Seattle and Wellington are an important comparison for exploring how recovery efforts may unfold. While many hazards may trigger minor recovery efforts, earthquakes are the primary trigger for catastrophic disaster recovery in both cities.

The 1989 Loma Prieta earthquake severely damaged homes and infrastructure in the Bay Area of California. Research done by Mary Comerio at UC Berkeley "describes the housing losses that occurred as a result of the Loma Prieta earthquake and the attempt to provide emergency, temporary, and housing recovery services."[34] Comerio's research estimates how many housing units suffered significant damage, and how many of those units constituted affordable housing. Comerio also provides a narrative of local reaction to funding priorities for housing recovery, and recommendations for future recovery efforts.

The Canterbury earthquakes in the February 2011 event and aftershocks near Christchurch created significant recovery challenges. Subsequent decisions made to cordon the City's Central Business District displaced 50,000 jobs, but was commonly viewed as a necessary decision.[35] In research published in Earthquake Spectra, Stephanie Chang, Josh Taylor, Kenneth Elwood, Erica Seville, Dave Brunsdon and Mikaël Gartner interviewed key stakeholders in the Christchurch recovery process to assess reaction to cordoning off the Central Business District and the long term benefits of doing so. Interview responses indicated that the three most significant recovery

[34] Comerio, "Housing repair and reconstruction after Loma Prieta."
[35] Chang et al, "Urban Disaster Recovery in Christchurch."

decisions were: “the early establishment of the recovery agency CERA; the residential zoning and associated Government decision to buy out several thousand homes on the worst liquefaction-affected lands; and the decision to maintain the cordon around the CBD for an extended period of time.”[36] Although interviewees represented a broad selection of interests, the decision to cordon the CBD was universally supported. Interview responses also indicated that capital flight, insurance issues, social dislocation and building regulation changes were viewed as major challenges.

Seattle has seen transformative recovery events in its own past worthy of comparison. Seattle’s most transformative disaster recovery effort to date followed the 1889 fire which destroyed 25 city blocks and prompted significant investment and reconstruction.[37] Significant investment and an unexpected growth in population in the years following the fire contributed to Seattle’s growth from a lumber town into Washington’s largest city. New ordinances established to mitigate fire shifted construction from wood to brick and stone and required internal division walls. These decisions were an active regulatory response to the disaster aimed at preventing future calamity, but also had the effect of increasing future earthquake risk by mandating less flammable but more seismically unstable structures.

[36] Chang et al, "Urban Disaster Recovery in Christchurch.”
[37] HistoryLink, “Seattle’s Great Fire.”

Empirical connections to recovery

Phronesis, a methodology for sociological research that connects empirics with a sense of praxis, is highly appropriate for investigating recovery planning. Recovery planning

Finally, case studies of disaster recovery also provide context to what has unfolded in cities and communities faced with severe earthquakes. Learning from these examples are an invaluable source of lessons to draw on for future recovery efforts, and unfortunately are one of the most important catalysts for encouraging cities to improve their capacity for recovery.

Practice

Pertaining directly to my review of recovery planning, my review of literatures of practice includes actual recovery plans as well as other applied frameworks of resilience.

Trauma Informed Community Building

According to Bridge Housing Corporation and The Health Equity Institute, cities planning with communities affected by trauma need to shift strategies to better work with survivors of stressful and threatening experiences.[38] Trauma can be a cumulative factor brought on by the daily stresses of poverty, or an acute event-driven experience. Trauma may be related to negative facets that nonetheless fall within business-as-usual, but trauma is always a component major disasters. Disasters often bring both acute experiences such as the physical reaction to ground

[38] Weinstein et al, *Trauma Informed Community Building.*

shaking during earthquakes, as well as chronic conditions such as the cumulative effects of prolonged displacement, joblessness, and coping with personal losses. Communities affected by trauma are often resistant to community building efforts and outreach from local governments or nonprofits. Trauma-affected communities typically exhibit reduced social cohesion and trust, negative reactions to community building campaigns because of previously unmet promises from outside organizations, and a sense of disempowerment and lack of vision for a better future because day-to-day experiences mask any progress that may be occurring. Bridge Housing and the Healthy Equity Institute recommend a number of principles to empower community building in areas impacted by trauma, including:

- **Do No Harm:** Be aware of past and current trauma and promote activities, programs and services that avoid re-traumatizing individuals and the community.
- **Acceptance:** Meet residents where they are, accept the realities of the community conditions and set expectations accordingly. TICB recognizes that residents in trauma affected communities cope in a variety of ways and participate in activities for a variety of reasons.
- **Community Empowerment:** Recognize the importance of self-determination to encourage community investment and that everyone can play a supportive role.
- **Reflective Process:** Take a sustained approach over multiple generations to improve outcomes in a trauma impacted community. TICB engages in an ongoing reflective practice that responds to new developments and knowledge, and is constantly adjusting to meet the needs of the community and the overall vision for the neighborhood.

TICB principles are meant to reflect a conceptualization of communities as socio-ecological systems, "...which portrays the interconnectedness of individuals with the social and environmental dynamics that influence them including interpersonal, community and system factors." Conceptualization of community needs that acknowledges the interplay between people and their surroundings fits well with the needs of recovery planning. For my research, it is important to have perspective on where asking reflective questions might remind communities of past tensions and failures, and how one-size-fits-all approaches in engaging with communities both pre-disaster and post-disaster can expose underlying trauma.

Disaster recovery guidance and frameworks

The following represent samples of practitioner guides for recovery and examples of planning frameworks either drafted or currently in use.

American Planning Association, Disaster Recovery Next Generation

The American Planning Association's updated publication on disaster recovery planning provides an honest look at best practices in recovery and how urban planners can support a robust recovery process.[39] The report's primary focus is to provide an ideological vision for where recovery planning needs to shift, provide examples of available and novel tools, and when possible give examples of recovery plans and how they were implemented. The major themes repeated throughout the report are the importance of engaging communities in a transparent

[39] American Planning Association, *Planning For Post-Disaster Recovery: Next Generation.*

planning process, and committing to pre-disaster planning that is sustained and reviewed with an eye for improvement.

The report is broken down into sections covering visioning and anticipation of disasters, realistic expectations of what recovery looks like, state and federal recovery frameworks, crafting goals and policies, planning process and implementation, and potential actions that position communities for better recovery. While the report cites research into the sociological dimensions of recovery and numerous case studies containing individually relevant information, it is formatted to create a solid pathway for urban planners to make an entry into recovery planning, and to a lesser extent provide guidance on how to involve emergency managers and policy makers.

The APA report is specifically useful because it is comprehensive in covering both content and suggestions for implementation. The structure of the report creates a concise way for planners to think about recovery and offers practical ways to get started, including a survey different frameworks. This is a valuable sounding board for my examination of the Seattle and Wellington frameworks, both are part of the 'next generation' of more comprehensive and inclusive disaster recovery frameworks described by the APA.

SPUR frameworks

SPUR's mission advocating for progressive government in the San Francisco bay area includes significant involvement in disaster planning. SPUR's housing recovery guide, "Is San Francisco Safe to Stay" explores the risk factors for population displacement from earthquakes and

recommends pre- and post-disaster strategies for cities to increase their resilience.[40] SPUR qualifies what earthquake-resilient housing looks like, states how much of the housing stock needs to be resilient, and discusses actions cities need to take to get there. SPUR's housing recovery guide helps to pull back resilience as a fuzzy concept or a boundary object, because it applies a degree of goal setting and targets that could conceivably become budgeted work plans for the City of San Francisco. The recovery guide is a good example of where reflectiveness can lead in terms of peeling back vulnerabilities and identifying meaningful goals for change, and helps to provide context for how Seattle and Wellington could further add specificity and a research base to goals identified in their respective disaster recovery frameworks.

National Disaster Recovery Framework

FEMA developed the National Disaster Recovery Framework (NDRF) as a response to Presidential Policy Directive 8, which asks what a prepared nation looks like. The NDRF is primarily applicable for federal agencies in structure, but also establishes concepts and processes that local jurisdictions can use for recovery planning and "...provides a flexible structure that enables disaster recovery managers to operate in a unified and collaborative manner."[41] The NDRF defined a number of concepts, most notably core recovery principles, roles and responsibilities of recovery coordinators and other stakeholders, a coordinating structure that facilitates communication and collaboration among all stakeholders, guidance for pre- and post-disaster recovery planning and; the overall process by which communities can capitalize on

[40] SPUR, *Is San Francisco Safe to Stay?*
[41] FEMA, *National Disaster Recovery Framework.*

opportunities to rebuild stronger, smarter and safer. The NDRF defines the core principles as follows:

- Individual and Family Empowerment: All community members must have equal opportunity to participate in community recovery efforts in a meaningful way.
- Leadership and Local Primacy: [FEMA] recognizes that local, State and Tribal governments have primary responsibility for the recovery of their communities and play the lead role in planning for and managing all aspects of community recovery.
- Pre-Disaster Recovery Planning: Pre-disaster recovery should include actions that will significantly reduce disaster impacts through disaster-resilient building practices.
- Partnerships and Inclusiveness: Partnerships and inclusiveness are vital for ensuring that all voices are heard from all parties involved in disaster recovery and that all available resources are brought to the table.
- Public Information: Clear, consistent, culturally appropriate and frequent communication initiatives promote successful public information outcomes.
- Unity of Effort: A successful recovery process requires unity of effort, which respects the authority and expertise of each participating organization while coordinating support of common recovery objectives.
- Timeliness and Flexibility: A successful recovery process upholds the value of timeliness and flexibility in coordinating and efficiently conducting recovery activities and delivering assistance.
- Resilience and Sustainability: A successful recovery process promotes practices that minimize the community's risk to all hazards and strengthens its ability to withstand and recover from future disasters, which constitutes a community's resiliency.

- Psychological and Emotional Recovery: A successful recovery process addresses the full range of psychological and emotional needs of the community as it recovers from the disaster through the provision of support, counseling, screening and treatment when needed.

The function of the NDRF as a guide for implementation is limited, given the wide span of state, county, tribal and municipal power structures across the United States. This U.S. focus also limits applications for implementation in New Zealand. However, as the NDRF contains guidance on how to approach recovery with community voices in mind, as well as high-level ideas on connection resilience to recovery planning, it does have value as a tool for scoping thinking. As a national document, localities can draw on the NDRF to help scope visioning and as a way to strongly send the message that pre disaster recovery- a possible vehicle for reflectiveness- is a valuable use of resources.

Seattle recovery frameworks

Emergency Support Function 18 (ESF-14) is a precursor to Seattle's current recovery plan development. ESF-14 is an annex to the larger Comprehensive Emergency Management Plan (CEMP), and acts as a guide "...to build a framework for decision-making to manage the disaster recovery process effectively." ESF-14 also includes points on "...anticipating resources needs, establishing procedures, and identifying a range of strategies and policies to guide recovery activities…."[42] Three major sectors of recovery are described in the ESF:

[42] City of Seattle Office of Emergency Management, *Comprehensive Emergency Management Plan Annex: ESF-14.*

- **Economic-** "involves economic impact assessment to the city and the business community, support to small businesses from federal and other sources, and economic revitalization planning"
- **Infrastructure-** "includes repair and reconstruction of the physical plant facilities, infrastructure, utilities, communications and other life-line services"
- **Human Needs-** "encompasses disaster-related community outreach, long-term housing, health (physical and mental), human services, assistance to non-profit disaster for which no existing programs provide assistance.

ESF-14 is still included as an active annex to the CEMP because it is useful in standing up recovery resources in the immediate response phase as necessary, but is lacking in much of the formal process that can be relied on during hectic post-disaster environments. ESF-14 contains the caveat that "It is NOT the intent of this document to anticipate all possible contingencies resulting from potential disasters. Rather, the purpose is to establish a flexible framework from which, at the time of a disaster, City managers will assess recovery needs and develop recovery strategy based on the nature and scope of the event."

The current draft of the Seattle Disaster Recovery Framework (SDRF) is a key piece of evidence from planning practices, but as it is examined thoroughly in my analysis section, the following is an overview of the Framework's goals and highpoints. The SDRF is divided into three main sections covering 1) introductory definitions and summaries of process, 2) governance and coordination protocols for how the SDRF is meant to be used, and 3) descriptions of important duties, split into seven Recovery Support Functions.

The draft Seattle Disaster Recovery Framework shares the Federal Emergency Management Administration's definition of successful recovery, setting the mark for success when a community "...[reestablishes]..its infrastructure, public services, economy and tax base, housing, social fabric, and a sense of stability... [that creates] a new 'normal' that is better able to withstand the next disaster."[43] The SDRF also includes a vision statement for how recovery will take place. "Following a disaster, we will rapidly restore the community and the economy and rebuild the city. This will be done by fully engaging and leveraging our whole community and coordinating across all sectors. We will use disaster recovery efforts to make Seattle more resilient, more sustainable, and more aligned with community ideals and aspirations." Section 2, Governance and Communication, describes the presumed roles and responsibilities of major public and departments, including responsibilities for elected officials. Section 2 also includes a description of Seattle's strategy for engaging communities, guidance on conflict resolution, and an ongoing strategy for maintaining the SDRF over time. Section 3 details the Recovery Support Functions (RSF). RSF as a means of organizing responsibilities are adapted from Emergency Support Functions (ESF) from response-phase planning. RSFs are divided into:

- RSF 1: Community Coordination and Capacity Building
- RSF 2: Economic Recovery
- RSF 3: Health, Social Services and Education
- RSF 4: Housing

[43] City of Seattle, *Draft Seattle Disaster Recovery Framework.*

- RSF 6: Natural and Cultural Resources
- RSF 7: Buildings and Land Use

Section 3 describes the purpose and responsibilities of each RSF, a description of the decision making framework and protocols for information sharing between RSFs, planning assumptions (likely starting points for each RSF), guiding principles for how recovery should proceed, key questions and challenges, and an extensive list of goals and strategies split into immediate, medium and long-term timelines.

As a complete framework, the SDRF is one example of the kinds of plans eluded to in guidance such as the National Disaster Recovery Framework or the APA's Disaster Recovery: Next Generation reports. This is a primary reason for choosing to review the Seattle framework as part of my thesis, the bulk of the analysis is included in Chapter 5: Seattle Analysis.

Wellington recovery frameworks

Previous iterations of recovery frameworks for the Wellington Region were included as an annex to the Civil Defence Emergency Management Group Plan (Group Plan.) The recovery annex focuses primarily on impacts to economy, infrastructure and immediate social needs, framed primarily as welfare impacts and short term considerations.

The draft Wellington Strategic Recovery Plan creates a scalable organization structure for incorporating a range of disaster impacts and intensities. The framework is explored in depth in chapter 6: Wellington Analysis, but will be highlighted here. This framework is divided into a

concept of operations section, which covers the powers and structure that support recovery as well as the impetus to closely align and partner recovery efforts between levels of government and a range of stakeholders. The core structure of the framework establishes five Recovery Environments to cover the direct work programs associated with recovery, and four Recovery Support Services which are embedded across the Environments to build better cooperation and share finite resources.[44]

The five Recovery Environments are:

- Built
- Economic
- Social
- Cultural
- Natural

The four Recovery Support Services are:

- Planning, Information Management, and Monitoring Innovation
- Financing, Resource Allocation and Logistics
- Innovation and Risk Reduction
- Communications and Community Engagement

[44] Wellington Regional Emergency Management Office, *Draft Wellington Region Strategic Recovery Plan.*

The framework recognizes that depending on the extent of the disaster, any given event may not require every Environment or Support Service. Or alternatively, a disaster spanning multiple cities may require different Environments or Support Services. Finally, the framework acknowledges that catastrophic events are likely to require a bold restructuring of governance, as was the case with the formation of the Canterbury Earthquake Recovery Authority (CERA), the long term recovery organization formed in 2011 in response to earthquakes in Christchurch, New Zealand. The final section of the Wellington framework begins exploring potential models for a Wellington-appropriate long term recovery organization, including forms and a basic assessment of legal powers used in CERA.

King County Recovery Planning Whitepaper

King County's ongoing recovery planning process also highlights regional priorities for recovery, and is at a stage of engaging regional partners rather than formalizing process. The initial analysis contained in the Resilient King County White Paper sets some of the guiding principles and major challenges for the region, and delineates five major categories for analysis- Lifeline Infrastructure, Building Stock, Commerce, Health and Social Services, and Natural and Cultural Resources.[45] Damage analysis is included, but the figures are based off of a block level GIS analysis and are useful only as a way to scope the issue of recovery and get more partners involved, not as a basis of specific actions.

[45] King County, *Resilient King County.*

The primary use of including the King County paper is that it helps contextualize some of the differences between the Seattle and Wellington disaster recovery frameworks. Wellington's framework is intended to eventually include the Regional Council area and nearby cities, though spatially and in terms of population this level of coverage is more similar to the City of Seattle. The governance at the Regional Council level more approximates County governance in the United States, so some frameworks to bridge the discrepancies between the two country's structures is useful.

Resilience frameworks

The following are frameworks for analyzing resilience, primarily in the context of city systems.

World Bank

The World Bank's framing of the different facets of resilience cover social, infrastructural and institutional capacities. In their report on resilience in the Vietnamese city of Can Tho, the World Bank breaks down the different facets as follows (as quoted from report):[46]

- **Robustness-** Robustness deals with the strength of the system, its reliability, and its ability to absorb and withstand disturbances. An important aspect of robustness is proper operations and maintenance to ensure that systems are functioning properly.
- **Reflectiveness-** Resilient urban systems examine, learn, and evolve based on their past experiences and new information. Managing resilience requires regular assessment of the performance of systems and adjustment to changing circumstances.

[46] World Bank, *City Strength.*

- **Redundancy-** Redundancy means that there are provisions for spare capacity or back-up systems that enable continuity of service or functionality in the event of a disturbance or increase in demand.
- **Coordination-** Coordination between systems and agencies means that knowledge is shared, planning is collaborative and strategic, and responses are integrated for mutual benefit.
- **Diversity-** Diversity means that services can be supplied in a number of ways, including using distributed resources or multifunctional equipment, with different exposures to hazards. If one service channel gets disrupted, another can be used. Spatial diversity – distributing assets across a city, or even beyond the city – may help ensure they are not all affected by a single geographical event such as a flood.
- **Inclusiveness-** Consultation and engagement with a wide range of stakeholders, including the most vulnerable groups, ensures that systems are more resilient by considering a wider range of vulnerabilities, risk management capacities, and localized information. Equity in access to infrastructure and services underpins social cohesion and opportunity.

My research utilizes reflectiveness as a critical concept in examining resilience through recovery planning. For Can Tho, reflectiveness is assessed through factors like the City's capacity to monitor changes in its environment and direct urban growth accordingly, carry out damage assessments post-disaster, implement policy and design changes based on knowledge learned from past disasters, and alter infrastructure investments.

100 Resilient Cities program

The Rockefeller Foundation's 100 Resilient Cities program grants money and framework development support for member cities to develop internal understanding of their risks, and to create their own locally-focused resilience strategies. The City-Resilience Framework, developed by Rockefeller Foundation and Arup International Development, is the main tool used to assess and catalyze a city's entry into the overall program. The City-Resilience Framework uses four categories: the health and wellbeing of individuals (people); infrastructure & environment (place); economy and society (organization); and, finally, leadership and strategy (knowledge).[47] These four categories are broken down into specific indicators, such as continuity of critical services for infrastructure & environment, or integrated development planning for leadership & strategy. Sub categorizations are also viewed through the lens of qualities -- aspects of cities that would likely be seen in visioning statements for other plans. The qualities as described within the Framework are:

- **Reflectiveness-** use past experience to inform future decisions, and will modify standards and behaviors accordingly.
- **Resourcefulness-** people and institutions are able to recognize alternative ways to use resources at times of crisis in order to meet their needs or achieve their goals.
- **Robustness-** design is well-conceived, constructed and managed and includes making provision to ensure failure is predictable, safe, and not disproportionate to the cause.
- **Redundancy-** spare capacity purposively created to accommodate disruption due to extreme pressures, surges in demand or an external event.

[47] Arup International Development, *City-Resilience Framework.*

- **Flexibility-** the willingness and ability to adopt alternative strategies in response to changing circumstances or sudden crises.
- **Inclusiveness-** emphasize the need for broad consultation and 'many seats at the table' to create a sense of shared ownership or a joint vision to build city resilience.
- **Integration-** processes bring together systems and institutions and can also catalyze additional benefits as resources are shared and actors are enabled to work together to achieve greater ends.

Although these categorizations and qualities are useful in that they give cities a running start on understanding resilience and developing their local strategies, the City-Resilience Framework is also part of an ongoing buildout of a Resilience Index. "The purpose of the City Resilience Index is to provide cities with a robust, holistic and accessible basis for assessment so that they are better placed to make investment decisions and engage in urban planning practices…"[48] The Rockefeller framework provides a repeatable high-level structure for cities to develop their own contextualized strategies. For an individual city, the results of how the frameworks are used likely vary greatly depending on the needs of each city, and where they choose to focus. For instance, earthquakes are an applicable risk to some cities, or drought for others. The intent of the framework, through use of the seven qualities, is to try and find areas of focus that increase resilience more broadly than mitigating a single hazard. Looking at resilience from a qualities framework applies to recovery, which while a single hazard may precipitate recovery, restoring and improving cities and communities includes addressing a wide range of factors.

[48] Arup International Development, *City-Resilience Framework.*

Wellington Region Emergency Management Office Community Resilience Strategy

The Wellington Region Emergency Management Office (WREMO), in recognition of the Wellington region's high earthquake risks, began a proactive community outreach strategy in 2012 to engage community members and empower them to play a leading role in responding locally to disasters, ultimately continuing that leadership into the much longer recovery process. WREMO's community engagement process values input from citizens, and acknowledges their primacy in planning for disasters. The Community Resilience Strategy is predicated on "...proactively engaging with diverse communities, supporting local ideas and existing structures, and facilitating various opportunities that lead to increased connectedness and preparedness."[49] WREMO's outreach strategy is founded on a set of defined community engagement principles, which include:

- **Listen first:** Understand and abide by the interests and needs of individuals, organizations and communities before offering specific solutions.
- **Support local ideas:** Each community generates unique and innovative ideas to their challenges. The Resilience Team will encourage and support local initiatives.
- **Encourage ownership:** Facilitate activities that enhance resilience while still maintaining the responsibility of preparedness on the individual, organization and/or community.

[49] Wellington Region Emergency Management Office, *Community Resilience Strategy.*

- **Focus on end-users:** Resilience activities must be meaningful, applicable and easy to adopt. Public messaging and related tools will be framed in a manner that supports positive outcomes.
- **Be informed by evidence:** Draw upon current good practices in Community Development and Emergency Management, and incorporate the evidence into expert advice, project development and facilitated activities.
- **Innovate:** Think differently and experiment to develop better outcomes.
- **Engage proactively:** Actively seek out community leaders and follow up on opportunities to bring people together.
- **Be inclusive:** Include a cross-section of diverse stakeholders in a decisionmaking process, with particular emphasis on vulnerable communities.
- **Be transparent:** Be clear about intentions and all proposed activities.
- **Be hospitable:** Provide a friendly and welcoming environment when people come together. Appropriate food and beverages should always be provided.
- **Collaborate:** Team up with community leaders, other practitioners and researchers from the outset to develop great resilience solutions together.
- **Act ethically:** Act in a manner that reflects the Golden Rule maxim and is in line with the Greater Wellington Regional Council's Code of Conduct.
- **Have fun!** Treat every single engagement as an opportunity to have fun. Good energy creates great outcomes.

WREMO's strategy and commitment to community members as experts in their own lives instead of beneficiaries of expert advice applies to pre-disaster recovery planning by attempting

to investigate potential recovery actions and match those actions to community needs and desires. Focusing on positive relationship building also creates a history of partnership and a positive reputation that cannot be created instantaneously in the post-disaster environment. As a regional emergency management entity, WREMO likely has a role in facilitating the development of further iterations of recovery plans.

Summary

In order to deeply explore how disaster recovery planning can be a vehicle for reflective thinking, and ultimately positive changes that increase resilience, my literature review covered the following:

1. **Theories of science, reflexivity, cultural cognition, and resilience.** By connecting how science is uptaken, and how people may view and interact with their surroundings in fundamentally different methods than traditional science, my research opens my understanding to how reflection might be encouraged or dissuaded. Specifically, by researching cultural cognition and differing conceptualizations of resilience, I have a sharper focus to view through my thesis how disaster recovery planning can encourage open thinking and reflection.
2. **Empirical research using phronesis, studies of disaster behavior, and disaster recovery case studies.** Starting with phronesis as a methodology that connects objectivity and praxis, my review connects the large body of research indicating that people tend to act prosocially during disasters as rationale to invite more open engagement with pre-disaster recovery planning. I also use disaster recovery case studies

(with a broader focus that just people's behavior) to help contextualize the challenges that recovery frameworks are meant to address.

3. **Practice and implementable publications on disaster recovery and assessing/encouraging resilience.** I continue my review by looking at existing frameworks of disaster recovery that have been developed for Seattle, Wellington, and other related publications that relate to specific elements of recovery such as housing and community engagement. Finally, I conclude my review by looking at publications that apply frameworks for assessing resilience in a way that may benefit practitioners and lead to implementation of work programs.

The existing literature covered in my review provide good coverage of social theories and study of behavior that influence implementation of recovery plans. The literature also covers practical guidance and frameworks for municipalities to develop recovery plans. However, what is missing from the sources I reviewed is a good framework for connecting and engaging communities to recovery planning, most notably in a way that encourages reflective thinking. I aim to begin bridging these two areas in my thesis, and provide good questions that would direct any future literature review on the subject.

Chapter 3- Methodology

My methodology centers on a comparative analysis of recovery planning in Seattle and Wellington. This comparison takes current qualities as well as changes over time of how the two cities approach recovery planning. My analysis will use interviews with six key stakeholders that have a role in developing recovery plans (or an assumed role in implementing these plans) to the existing available recovery frameworks. Using interview data and existing planning documents, for both Seattle and Wellington respectively I will attempt to answer the overarching question: **Is the city promoting reflectiveness through recovery planning?**

Comparability of Seattle and Wellington

Seattle and Wellington are appropriate choices to compare for a number of reasons. There are certain differences as might be expected comparing cities in two separate countries, but overall the similarities yield strong possibility for lessons learned by comparison. My choice in comparing Seattle and Wellington is based the following:

1. Wellington and Seattle are comparable in geologic and meteorological risks. Both have shallow crustal faults that cross urbanized areas, relatively close subduction zone faults that may generate tsunamis, river systems with urbanized flood plains, developed hillsides, potential for high winds and rainfall, and distant but potentially disruptive volcanic impacts.[50]

[50] Wellington Region Emergency Management Office, *Group Plan 2013 – 2018.*

2. Both cities have similar infrastructure vulnerabilities from partially raised major highways that cross fault lines, a large number of existing structures that are vulnerable to ground shaking, and harbor fronts built on reclaimed land that is vulnerable to tsunami and liquefaction.[51]
3. Both cities are economic and cultural hubs for their respective regions, with large populations of an estimated 206,000 in Wellington and 608,000 in Seattle.[52] Though individually the populations differ significantly, they each represent their respective regions strongest economic draw, with daytime commuter swells entering the city.
4. Recovery planning is a rapidly growing priority in both cities, as is an expanding focus on community engagement in planning processes. Initial scoping research indicates that while both cities have emergency priorities in recovery, processes and programs in place differ, thus there is a potential opportunity to share what works and what doesn't.
5. As a practical reason, my professional networks in Seattle and Wellington facilitate access to interviews and other resources within local government, and provide an increased contextual understanding of how plan development works in the two cities. Staff from the respective Seattle and Wellington emergency management offices have expressed interest in research relating to recovery planning practices, and are curious to learn from comparisons to other cities tackling similar problems.

---

[51] Wellington Lifelines Group, *Restoration Times Report.*
[52] ID New Zealand, "Wellington City population forecasts."; City of Seattle, "Population and Demographics."

Phronesis as a model for disaster recovery research

While my question aims to demonstrate evidence (or lack thereof) for reflectiveness in recovery planning, the validity of asking the question is drawn from Phronesis in other research. 'Phronesis' is the term given by Aristotle to the concept of 'practical wisdom'- which may be thought of as a contextualized investigation of social structures with the added goal of achieving some degree of praxis. Another framing is that phronetic research is meant to help guide action at moments of choice.[53] This is appropriate for investigating a new generation of recovery plans, which explore the capacities and tendencies of government and community before a disaster as a way of promoting informed decisions in the a post-disaster environment. As a comparison to phronesis used in other sociological studies, "The most developed phronesis guides action *before* the moment of choice, in the prior choices of which relationships and forms of capital to invest in with what degree of seriousness."[54]

Phronetic methodology, as described by social science researcher Bent Flyvbjerg, revolves around four questions.[55]

1. Where are we going?
2. Who gains and who loses, and by which mechanisms of power?
3. Is this development desirable?
4. What if anything should we do about it?

[53] Flyvbjerg, *Making Social Science Matter*.
[54] Frank, "The feel for power games."
[55] Flyvbjerg, *Making Social Science Matter*.

Flyvbjerg's questions anchor research to the notion that what currently is may be worthy of change. The question of value is embraced in this methodology rather than eschewed. "By definition, phronetic planning researchers focus on values and, especially, evaluative judgements."[56] Such an approach is appropriate for the case of recovery planning as well, because the decisions of how to rebuild communities are far from value neutral. Swinging too far towards embracing value may also mean coloring the results of investigation prematurely.

Indicators of Reflectiveness

I will group evidence of reflectiveness under three indicators, informed by the descriptions of reflectiveness from World Bank and the Rockefeller 100 Resilient Cities Foundation. The indicators are:

1. **Use of scientific/technical knowledge:** *New studies revealing previously unknown or poorly understood aspects of aspects of hazard science, building engineering, investigation of system function and capacity provide perspective on what might happen to the physical landscape during disaster.*

2. **Use of community knowledge:** *Learning from local history and current interests provides insights about how communities view themselves, and is important for stakeholder alignment between government and community.*

[56] Flyvbjerg, "Phronetic planning research."

3. **Promote assessment of recovery planning:** *Iterative improvements as pre-disaster planning moves forward and deep-dive investigation following events requiring use of recovery planning are form checks against misinterpretation of knowledge and highlight previous unknowns.*

The three indicators above will serve as my primary points of comparison between iterations for each cities plans, and as a comparison between the two. While recovery planning could be assessed on a wide variety of indicators, as long as the same indicators are applied to all of the data studied the comparisons remain valid within the scope of this thesis.

Interviews

I have developed six questions to be asked of professionals with an explicit role in recovery planning, three in Seattle and three in Wellington respectively. By interviewing professionals rather than community members about recovery, I am assuming that responses will allow for a simpler high-level reflection of the values of professional institutions, rather than the myriad of individual values reflected in communities. These questions are designed to support my overall research question and three sub indicators by providing a structured and repeatable line of questions, which should provide comparable answers. The interview questions used in this study are:

1. Could you describe your agency's conceptualization of recovery planning, as it has been done in the past and also aspirationally for future efforts?
2. What (if any) are the events that triggered significant recovery for your agency?

3. How did recovery planning become a priority for your agency?
4. How have your agency's decision makers been involved in recovery planning?
5. How has your agency involved members of the public in recovery planning?
6. How will your agency vet it's recovery planning efforts before a disaster, and is there a process for capturing what happens during/after a disaster with an eye on improvement?

The interview questions mirror the kinds of information typically highlighted within planning documents (explaining process, goals, outcomes) while allowing the professionals being interviewed to expand as they see fit, with the hopes of capturing information not expressly written in plans. The highest value of the interview questions is in establishing an informal (meaning: previously undocumented) idea of how staff involved in recovery planning in Seattle and Wellington conceived of recovery in the past, and how they enacted or planned to enact recovery prior to current conceptions. This is valuable because each city's work in recovery is driven by contextual factors such as local government structure and public support for disaster planning.

Structure for Comparison

By constructing a comparison, my idea is not to create absolute projections of recovery planning, nor to set polished solutions to how Seattle or Wellington must act to become more resilient. Such goals would be considerably more complex than is possible in the scope of my analysis or feasible with my available time and resources. Instead, my aim is to discover if recovery planning might become a viable tool for encouraging communities and governments to reflect on current disaster risks, and leverage new reflections as a way to diminish those risks in the future.

Using information from interviews and planning documents, I will construct a timeline for both cities to visualize how recovery prioritization has progressed, with key milestones such as events which required use of recovery plans, events in other jurisdictions which precipitated discussion in Seattle/Wellington, and more formal steps such as development and adoption of plans. This timeline will be helpful as a way to see the progression of prioritization and where certain events have impacted how city officials approach recovery.

In order to structure information from planning documentation and interviews beyond just when they happened, for each of my reflectiveness indicators, for each indicator I will collate evidence from interviews, evidence from documentation, and include a synthesis statement. Following these indicator summaries, I will follow with discussion in greater detail including other evidence of why changes in reflectiveness may have occurred.

Subjects Review

With regard to human subjects review issues, I my research has been approved for an exemption. In accordance with the guidelines set by the University of Washington, my interview questions stay within the bounds of inquiry about professional organizations and are anonymized in the published thesis, and thus will not create conflicts of interest, reveal potentially damaging private information, or otherwise harm reputation.

Chapter 4: Results

My results are divided into three primary sections. One to look at Seattle, one for Wellington, and one to compare themes across the two. For each city, it is important to discuss the antecedents that broadly shaped things up to the point where my analysis picks up the trail. For example, major disaster events in the past which influence how cities view recovery. Then, I use three indicators of reflectiveness to compare prior and current disaster recovery frameworks, organized in tables and discussed in greater detail in text.

Seattle

An early example of Seattle's history of disaster is the 1889 fire which destroyed 25 city blocks, prompting significant investment and growth in the city during reconstruction, as well as a stark change in building codes from predominantly wood to brick and stone.[57] This shift was meant to mitigate fire risk, but had the unintentional effect of increasing risks from earthquakes. The understanding of Seattle's seismic risks has grown in complexity since 1889, and the modern analysis of local hazards pays due respect to earthquakes.[58] However, highlighting structural vulnerabilities is not the same as remediating them, and many unreinforced masonry structures still exist in Seattle. Some of these very bricks famously made headlines after the 2001 Nisqually earthquake, particularly in Pioneer Square where unreinforced masonry is a prominent building type.[59]

[57] HistoryLink, "Seattle's Great Fire."
[58] City of Seattle, *Seattle Hazard and Vulnerability Analysis.*
[59] HistoryLink, "Earthquake registering 6.8 on Richter Scale."

With regards to recovery, "[the 2001 Nisqually earthquake] was first time Seattle had to form interdepartmental teams and really drill into process" and proved to be "…an eye opener even though it wasn't a huge event."[60] However, even with that event in recent memory, Seattle's investment in planning capacity focused more on response. "[The Hanukkah Eve storm of 2006] was the watershed event", prompting Seattle to spend five years concentrating on response until "the national preparedness goal (PPD 8) came out, which was the trigger to move on from response and start doing some real work in recovery."[61] In the intermediary, Seattle had developed an annex to the City's primary emergency management plan (discussed later in this section) but as interviews acknowledge, "keeping [the annex] in the response plan [acts] almost as a springboard, so that during response you have some people gearing up for recovery."[62] While the 1889 fire, Nisqually earthquake, and Hanukah Eve storm were significant local events, the shift to more robust recovery frameworks came from external earthquakes in other cities. "Chile, Christchurch, Japan- they all happened in a short timeframe, and City Council asked for a briefing about what Seattle would do."[63]

Comparing previous plans to current works, the City of Seattle has made impressive strides in clarifying the roles of a range of partners in recovery planning, primary goals and operating assumptions, and the values that drive rebuilding a city into something better. There is undoubtedly more work ahead, however the current draft of the Seattle Recovery Framework

[60] Interview subject 1, Interview by author.
[61] Interview subject 2, Interview by author.
[62] Interview subject 1, Interview by author.
[63] Ibid.

(SDRF) gives solid footing to improve processes, and begin pulling a theoretical process into the light of day through practice and policy.

Reflectiveness Indicators

Using the three primary indicators introduced in Chapter 3- Methodology, the following presents a basic breakdown of elements that support reflectiveness in the ESF-14 Annex to the Comprehensive Emergency Management Plan, and the newer Draft Seattle Disaster Recovery Framework.

Table 1- Disaster recovery frameworks for Seattle. Blue text is used to show increases in reflectiveness within the scope of that indicator. Red text shows a lack of reflectiveness or a null change from previous to current recovery frameworks. Some elements are split between blue and red text, showing a partial or incomplete change.

	City of Seattle Frameworks	
Indicator	Previous: Annex to Comprehensive Emergency Management Plan	Current: Draft Seattle Disaster Recovery Framework
Use of scientific/technical knowledge: *New studies revealing previously unknown or poorly understood aspects of aspects of hazard science, building engineering, investigation of system function and capacity provide perspective on what might happen to the physical landscape during disaster.*	Recovery annex developed after observing the effects of the 2001 Nisqually earthquake. Incorporates Seattle Hazard Impact and Vulnerability Analysis (SHIVA) as the basis for determining realistic events in Seattle.	Incorporates new hazard studies and simulations of the Seattle fault, including Tsunami modeling of local seismic events. Scope of framework informed by projections of infrastructure outages from major earthquakes, such as Resilient Washington Objectives in multiple Recovery Support Functions cite a nominal commitment to further study interactions between systems, including infrastructure and land use

Use of community knowledge: *Learning from local history and current interests provides insights about how communities view themselves, and is important for stakeholder alignment between government and community.*	Use of community knowledge not included in development of annex. No process for pre-disaster engagement.	Impetus for developing framework driven by political and citizen interest in how Seattle would deal with events like the Canterbury Earthquakes or Hurricane Katrina. Development of draft framework included stakeholder workshops with broad representation from academic, professional and community organizations. Representatives from community organizations and businesses included as part of the workshops to shape framework objectives. Plan calls for use of community representatives as co-directors of different recovery sectors, alongside government employees. Includes specific objectives for discovering and disseminating community knowledge during disasters, and engaging during post-disaster recovery planning. Pre-disaster objectives include cultivating relationships with community leaders and include them in further pre-disaster planning. Unclear on how input from stakeholders engaged in draft framework development were incorporated
Promote assessment of recovery planning: *Iterative improvements as pre-disaster planning moves forward and deep-dive investigation following events requiring use of recovery planning are form checks against misinterpretation of knowledge and highlight previous unknowns.*	Nominally recognizes that lessons learned will follow from any major disaster, but does not propose methodology for capturing lessons. Does not include a continual review process for re-engaging stakeholders or adapting lessons derived from case study of disasters in other cities.	Suggests that Recovery Support Function co-chair roles should have a structure for meeting twice a year, but does not affirm how frequent communication and partnership could be encouraged. Does not include a continual review process for re-engaging stakeholders or adapting lessons derived from case study of disasters in other cities.

Comparing Iterations of Seattle Recovery Planning

There are two primary documents with an explicit role in how Seattle will handle recovery. The first is the Emergency Support Function 18 (ESF-14) annex to the Seattle Comprehensive Emergency Management Plan (CEMP). The CEMP is the primary document describing Seattle's emergency management capabilities and protocols, and previously acted as the primary repository for recovery planning both short term leading out of response and the longer term processes. The second, the Seattle Disaster Recovery Framework, expands considerably on what ESF-14 by building on the guidance of the National Recovery Framework and using stakeholder workshop outcomes to build objectives for a Seattle context. The newer framework asks more questions than ESF-14, and attempts to answer many, but exists as a new tool rather than a wholesale replacement.

The structure of ESF-14 supports logistical requests for resourcing and mobilizing assets early in a disaster and acts as an early bridge from response. In this regard, it delivers on more technical objective-oriented tasks, and sets assumed responsibilities for a variety of positions within Seattle's governance structure.[64] ESF-14 fits within a more response oriented emergency management structure, and as such it is most effective in the early stages of post-disaster recovery where response activities are ongoing but agencies need a springboard to start moving towards recovery.[65] The timing of how cities begin shifting resources from response to recovery is important, though determining milestones for that timing is an ongoing challenge for recovery planners.[66] The pre-positioning of resources and creation of Mutual Aid Agreements-

[64] City of Seattle Office of Emergency Management, *Comprehensive Emergency Management Plan Annex: ESF-14.*
[65] Interview subject 1, Interview by author.
[66] American Planning Association, *Planning For Post-Disaster Recovery: Next Generation.*

commitments for cross-jurisdictional assistance made prior to disaster- are a cornerstone of regional emergency management response, though not sufficient for the length of time and breadth of area that recovery often requires.

ESF-14 does state that it is not intended to "…anticipate all possible contingencies resulting from potential disasters." However, in the same paragraph it states "…at the time of a disaster, City managers will assess recovery needs and develop recovery strategy based on the nature and scope of the event."[67] ESF-14 uses the word "flexible" to describe this framing. Flexible is not an inaccurate choice of word given the lack of complete information at the onset of a disaster, however it does make it easier for decision makers to leave the practice and expansion of recovery capabilities to sit at a non-committal level. Avoiding a commitment to pre-disaster planning is not unique, staff capacity and political will are tangible barriers to taking on new planning measures of any kind. Other cities may view pre-disaster planning as too complicated to undertake, or the issue of disaster recovery simply too massive to prepare for in advance.[68] ESF-14 does open the way forward for many of the broader issues of recovery, citing recovery as "a complex process, requiring a systems-approach. No problem exists in isolation; for example, housing restoration, economic rebuilding and infrastructure repair are all intrinsically interrelated."[69] ESF-14 does begin to iterate further on what inter-related systems are, though stops at the broad categories of "economic, infrastructure, and human needs."[70]

---

[67] City of Seattle Office of Emergency Management, *Comprehensive Emergency Management Plan Annex: ESF-14.*
[68] Abramson et al, "Planning for Long-Term Recovery Before Disaster Strikes."
[69] City of Seattle Office of Emergency Management, *Comprehensive Emergency Management Plan Annex: ESF-14.*
[70] Ibid.

Moving from ESF-14 to the newer SDRF, there is a considerable expansion from operational focus to long term considerations. The SDRF also includes a vision statement for how recovery will take place. “Following a disaster, we will rapidly restore the community and the economy and rebuild the city. This will be done by fully engaging and leveraging our whole community and coordinating across all sectors. We will use disaster recovery efforts to make Seattle more resilient, more sustainable, and more aligned with community ideals and aspirations.” Section 2, Governance and Communication, describes the presumed roles and responsibilities of major public and departments, including responsibilities for elected officials. Section 2 also includes a description of Seattle’s strategy for engaging communities, guidance on conflict resolution, and an ongoing strategy for maintaining the SDRF over time. Section 3 details the Recovery Support Functions (RSF). RSF as a means of organizing responsibilities are adapted from Emergency Support Functions (ESF) from response-phase planning. RSFs are divided into:

- RSF 1: Community Coordination and Capacity Building
- RSF 2: Economic Recovery
- RSF 3: Health, Social Services and Education
- RSF 4: Housing
- RSF 6: Natural and Cultural Resources
- RSF 7: Buildings and Land Use

The City’s organization of recovery planning sectors into Recovery Support Functions (RSFs) helps to set guidelines for responsibility and capability, and creates some pathways towards pre and post disaster sharing of information by having delineated representatives for each RSF on the CRTF. Using RSFs also mimics federal frameworks established in the National Disaster

Recovery Framework,[71] which may prove beneficial in coordinating catastrophic response and recovery efforts with state and federal agencies. However, while RSFs make sense as an organizational framework, in reality each RSF will be trying to draw from limited resources, and there is a real possibility that in large and complex events people will be pulled in multiple directions.[72] Nearly half of the total page content within the SDRF is dedicated to the Recovery Support Functions, and within that a large portion of each RSF's section is made up of listing priorities and fleshing out objectives. Input for priorities came through workshops with core planning team members (Seattle Emergency Management staff and consultants hired for the SDRF) and an expanded partnership of other City of Seattle employees, neighboring jurisdictions, community organizations, businesses and academics. (As a point of disclosure, long before I decided on this thesis topic, I was fortunate enough to attend two of the workshops as a participant, but my experiences are supplemented with a short recap of the process contained with the SDRF[73]) Workshop participants split into RSF focus groups based on their expertise, and discussed issues and potential priorities for recovery that they felt should be included. The resultant list of RSF priorities in the current SDRF draft includes an exhaustive list of issues shared at the workshops. There is a certain logic to including so many concerns in the framework, given that cities are complex to begin with, and overly reducing to too few objectives risks glazing over some of that complexity. Recovering something as complex as a large city will involve many issues and needs, given the number of facets to the built environment and all the people that make use of it. One piece that remains unclear is how

[71] FEMA, *National Disaster Recovery Framework.*
[72] Interview subject 1, Interview by author.
[73] City of Seattle Office of Emergency Management, *Draft Seattle Disaster Recovery Framework.*

objectives were filtered, or if much of what was produced from the workshops was included wholesale.

Some of the recovery goals and strategies identified within the SDRF are complementary. For example, RSF1 Goal 2.1 "Coordinate with other RSFs to plan for Recovery Information Centers and Recovery Services Hubs" fits well with RSF 2 Goal 3.1 "Establish a system of posting needs and available resources."[74] Committing to the creation of hubs where people can get a picture of what's going on in their area facilitates the gathering and sharing of information for multiple recovery functions. However, though each section describing the goals and responsibilities of RSFs begins with a commitment to cooperation between departments, some of the goals listed may be contradictory in execution. The goals themselves are not necessarily the issue, rather the issue is how all the objectives fit together. The word 'prioritize' comes up approximately 40 times throughout the description of RSF objectives. Each of these goals may actually be important, however the implication of a priority is that it is held as having an ordinal nature. At present, priority of objectives within RSFs, and across RSFs, does not fit into a comprehensive structure for choosing which objectives might be completed in lieu of others.

Examples of reflective language are found right from the outset, citing the importance of community agency and input where possible, and how that fits into the other uncertainties associated with disasters. Just a few pages into the document, under the heading of the SDRF notes that "Because of the dynamic nature of disasters all pre-planning must be flexible and

[74] City of Seattle Office of Emergency Management, *Draft Seattle Disaster Recovery Framework*.

ready to take into account the new realities of a disaster."[75] Acknowledging that disaster recovery is complicated from the outset moves the needle a bit towards the idea that a strong framework is one that can adapt as information changes. Of course, ESF-14 also states that disasters are complex and that there will be much to be decided after the specifics of a particular disaster event are measured. What makes the SDRF language intriguing is that statements about flexibility are found in tandem with objectives that focus on the need for the City (and community partners) to coordinate efforts.

Involving community members affected by disaster in their own recovery process agrees with the ethical stance of the CEMP, which cites the importance of an inclusive and equitable application of planning.[76] Though there is much more to be done in terms of aligning recovery frameworks and comprehensive plans, sharing some core values is a start, particularly as Seattle is already undertaking some of the necessary investigation into possible factors leading to disproportionate impacts, analyzed as part of the Seattle 2035 Comprehensive Plan.[77]

The SDRF goes a long way in improving how the City of Seattle as an organization conceives of recovery needs, and how community knowledge fit into decision making. These increases in capabilities are worth celebrating as a way to energize the City to keep moving forward in developing a good understanding of how the framework will be used among City staff and decision makers, and how members of Seattle's communities can understand their agency in recovery.

---

[75] City of Seattle Office of Emergency Management, *Draft Seattle Disaster Recovery Framework.*
[76] City of Seattle Office of Emergency Management, *Comprehensive Emergency Management Plan.*
[77] City of Seattle, *Seattle 2035: Growth and Equity Analysis.*

Interviews and the text of the SDRF itself show a clear change in how the City views recovery. The SDRF shows that the City of Seattle recognizes the need for ongoing, community-focused mechanisms that target vulnerabilities before disaster, and empower making positive changes to the built environment and social structures after disaster. Interviews with staff involved in the framework's development show that some of the reasoning and understanding of the need to shift to a more comprehensive recovery model had been ongoing, however actions taken were piecemeal or subject to changes in leadership.

Wellington

Wellington is in a unique position in that it is relatively close to the ongoing recovery in Christchurch, yet will face different challenges and leverage different strengths based on local geography, infrastructure and community demographics. These aspects overlay with Wellington's own unique history of disaster to set the antecedents for the City's recent and current planning efforts. In 1855, not long after Wellington was founded, a massive earthquake drastically affected the landscape of the region. "The magnitude 8.2 earthquake has had a profound impact on the development of Wellington city. Land raised from the harbor – along with additional reclamations – forms much of modern Wellington's central business district."[78] Development along the newly raised land put future structures at risk of earthquakes because of

[78] NZ History. "Massive earthquake hits Wellington."

the loosely consolidate soil beneath, and increased the exposure to the threat of tsunami by densifying the potential tsunami inundation areas.[79]

Prior to the 2011 Christchurch earthquakes, other parts of New Zealand have been heavily influenced by earthquake- notably "the 1931 [Napier] earthquake that was the start of Civil Defence."[80] The Canterbury earthquakes, interchangeably called the Christchurch earthquake, marked a massive awakening in the need for recovery planning in New Zealand. As one interview respondent noted, "It was a major city that was affected and immediately you realized "woah." A lot of things were manufactured there, and the rest of the country started running out of things. I think that the scale of that event, we really started to say we need to look into this in more detail. We have to have a proper plan."[81] And yet, while the Canterbury Earthquake Recovery Authority (CERA) launched into existence post-quake, it was not until 2016 that the Wellington Region Emergency Management Office received funding to launch a robust recovery planning process. While recovery plans existed in more limited capacities, the reasons for delaying greater input is partly explained in another interview. "As we recognized, response and recovery are two very different sets of challenges, consequently the way we approach recovery planning in the past was limited to getting a template and filing out some very basic information, and having a quote end quote recovery plan. I think that was the recognized deliverable."[82] The specific triggers for opening up funding for recovery planning are not as clear. It seems to have been somewhat of a slow burn, with an unclear threshold. On one hand, it was perhaps long

[79] Wellington Region Emergency Management Office. *Group Plan 2013 - 2018*
[80] Interview subject 4, Interview by author.
[81] Ibid.
[82] Interview subject 5, Interview by author.

accumulation of emergency managers and others looking at the challenges in Christchurch, culminating with "Those that started observing with interest [realizing] that a lot of those challenges had unanswered questions in Wellington and that there is a need to start thinking about that pre disaster."[83]

Staff at Wellington Regional Emergency Management Office (WREMO) are using a model similar to that of Seattle with respect to a pre/post disaster approach and divisions of responsibilities and authorities, but with a different structure for how specific planning groups are organized.[84] The specifics are likely to differ. New Zealand does not have a model of Recovery Support Functions for Wellington to use as a basis, as Seattle has done using the National Recovery Framework. The disadvantage is that the standard used in Wellington is developed based on a collection of other city practices, and thus is more experimental.

The Wellington Strategic Recovery Plan is designed to be scalable, and to recognize autonomy where possible. The scalability is predicated on the logic that while it is difficult to predict the exact extent and impacts of disasters, there are certain thresholds of assistance. In other words, if a single city council can handle an event within its own resources, it may still choose to activate components of its recovery plan, even though a declaration of emergency is not needed. Building upward in scale, the Wellington framework includes potential levels of activation for multi city events, regional and even national events, and shows a concept of operations for how different Council units fit into a regional structure. The idea being that a clearer structure that allows

[83] Interview subject 5, Interview by author.
[84] Ibid.

councils to understand- and prepare for- how they can exercise autonomy, and where they may benefit from hierarchy.[85]

Reflectiveness Indicators

Using the three primary indicators introduced in my methodology and as used in the previous section analyzing Seattle, the following is a basic breakdown of elements that support reflectiveness found in the recovery annex to the Wellington Civil Defence Emergency Management Group Plan, and the newer draft Wellington Strategic Recovery Plan.

Table 2- Disaster recovery frameworks for Wellington Region. Blue text is used to show increases in reflectiveness within the scope of that indicator. Red text shows a lack of reflectiveness or a null change from previous to current recovery frameworks. Some elements are split between blue and red text, showing a partial or incomplete change.

Indicator	Wellington Region Frameworks	
	Previous: Annex to Group Plan	Current: Draft Wellington Region Strategic Recovery Framework
Use of scientific/technical knowledge: *New studies revealing previously unknown or poorly understood aspects of aspects of hazard science, building engineering, investigation of system function and capacity provide perspective on what might happen to the physical landscape during disaster.*	(Scope is intentionally limited to smaller scale events, excluding major earthquakes as a national response rather than regional)	Impetus for regional recovery framework drawn heavily from assessments of potential infrastructure impacts and outage times as assessed through the Wellington Lifelines Group.

[85] Wellington Regional Emergency Management Office, *Draft Wellington Region Strategic Recovery Plan.*

Use of community knowledge: *Learning from local history and current interests provides insights about how communities view themselves, and is important for stakeholder alignment between government and community.*	Nominal mention of engaging community post disaster, but structure of plan puts resources into out-going public information rather than information gathering from communities. Use of community knowledge not included in development of annex. Aggregates all non-government sectors as 'community', rather than recognizing the breadth of groups that could be involved. No process for pre-disaster engagement. States that recovery should be driven at the local level by communities, but no process for integrating non-government stakeholders into post-disaster decision making.	Representatives from community organizations and businesses included as part of the workshops to shape framework objectives (Note: This is stated within the draft framework as the next step in the development process, though has not yet been carried out.) Plan calls for use of community representatives as co-directors of different recovery sectors, alongside government employees. Framework includes a specific Recovery Support Service in the concept of operations devoted to community engagement and communication. Adds a 'Cultural' Recovery Environment to structure, citing the importance of self-determination by communities and cultural groups in recovery. Pre-disaster objectives include cultivating relationships with community leaders and include them in further pre-disaster planning.
Promote assessment of recovery planning: *Iterative improvements as pre-disaster planning moves forward and deep-dive investigation following events requiring use of recovery planning are form checks against misinterpretation of knowledge and highlight previous unknowns.*	Subject to a plan audit every three years, but no structure for changing scope of plan. Does not include a continual review process for re-engaging stakeholders or adapting lessons derived from case study of disasters in other cities.	Nominally recognizes the need for pre-disaster planning to be ongoing and iteratively feed into official recovery plans. Does not include a continual review process for re-engaging stakeholders or adapting lessons derived from case study of disasters in other cities.

Comparing Iterations of Wellington Recovery Planning

The most well documented precursors to the current Wellington framework are from the 2008 Wellington Region Civil Defence Emergency Management Recovery Group Plan (Wellington Group Plan), a comparable document to the Seattle Comprehensive Emergency Management Plan (CEMP) mentioned in the last section. The scope and intent of the Group Plan and the CEMP are similar- to outline the vision, authority, and objectives for emergency management activities as a whole, with specific annexes for things like recovery. In the Wellington Group Plan, the focus on recovery is welfare actions such as the provision of basic food, water, shelter, and medical care.[86] The reasons for focusing on these actions relates to a lack of clarity on the powers and role of local government in major recovery efforts, as understood prior to events such as the Christchurch earthquakes. While the broader effects of disaster to economy and long term well-being may have been known, the way to integrate these into a framework usable by local government had not been attempted.[87] The reasons are likely an issue of scope. Without a clear mandate to undertake certain planning activities, government agencies, and perhaps particularly emergency management agencies which tend to be small departments, lack incentive to devote budget and personnel to recovery.[88]

The development of the Draft Wellington Strategic Recovery Plan aims to remediate many of the challenges of scale and interdepartmental cooperation. The draft framework positions WREMO as a convener and facilitator for planning, but attempts to improve the process for organizing the

---

[86] Interview subject 4, Interview by author;
Wellington Region Emergency Management Office, *Group Plan 2013 – 2018*
[87] Interview subject 4, Interview by author.
[88] American Planning Association, *Planning For Post-Disaster Recovery: Next Generation.*

many players involved in recovery. The aim of the new framework is to create an organizational hierarchy that sets roles for a select few such as designated recovery managers in local councils and at the regional council level, how they will advise decision makers, and most importantly how departmental work programs would plug in.[89] In the current draft this is set through five Recovery Environments: Built, Natural, Economic, Cultural, and Social. These Environments, broadly speaking, capture the structure of existing agencies and council functions, and would include sub groups as needed. For instance, the Built Environment includes many of the components of infrastructure and buildings.

In addition to the Environments, the draft strategy has four Recovery Support Services. These services include:

- Planning, Information Management, and Monitoring Innovation: Provides data collection, information management, recovery analysis and monitoring, and disaster specific planning support.
- Financing, Resource Allocation and Logistics: Promote access to necessary financial and other resources to execute recovery priorities and make the desired restorations, repairs, and improvements.
- Innovation and Risk Reduction: Maintaining focus on potential improvement, betterment, risk reduction, and capacity building is difficult during recovery.
- Communications and Community Engagement: Helps residents, practitioners, community leaders, government officials, and dedicated recovery personnel to

[89] Wellington Regional Emergency Management Office, *Draft Wellington Region Strategic Recovery Plan*.

> collectively understand, assess, and meet the needs of their respective communities, and to help organize and strengthen collective community assets, capacities, and interests.

Within the organization of the framework, the Support Services sit on top of the five Environments, as the Support Services are designed to provide functions that could be applied to event. This flexibility and scalability are a core element of the framework, and would seem to address one of the problems highlighted in the previous iterations of recovery planning- that of balancing pre-planning with uncertainty.

The basic structure and logic of the Environments and Support Services come from the structure used by the Canterbury Earthquake Recovery Authority (CERA) established as a long-term recovery organization in 2011 after the Canterbury earthquakes, with changes made by WREMO based on learnings from that event.[90] The function of CERA as an overarching organization with broad powers was legislated into in order to meet the extraordinary demands of earthquake recovery in Christchurch. However, most applications of recovery do not necessitate such sweeping changes to the structure of governance. Wellington's current framework aims to provide a scalable organizational structure that allows Councils to activate whichever portions of the framework are relevant. This structure goes right up to where a catastrophic event would require the formation of a long-term recovery organization (LTRO). At present, the draft framework identifies that more thinking and laying the groundwork for a Wellington-appropriate

[90] Wellington Regional Emergency Management Office, *Draft Wellington Region Strategic Recovery Plan.*; Interview subject 5, Interview by author.

LTRO needs to be done through workshops and research. While there is considerably more work to be done in this regard, the basic tenant of the scalable structure is to create clear pathways for governments and other agencies to partner throughout the recovery process- both in resilience-oriented pre event actions and in the constrained post event environment.

One significant tie in for progressing greater reflectiveness for Wellington through is in clarifying the processes for how the draft will be completed. It is clear that WREMO understands that there are more steps to complete, as the draft is separated into black and blue text, with black being basically complete, and blue intended to be worked through at the local level by Councils through a process of stakeholder workshops and steering groups. Although workshops are intended to be a major part of the process, the structure of them and specific outcomes is as of yet not indicated.

Another possibility has come in the form of an opportunity to test the draft framework in a live environment. On November 14th 2016, a major earthquake in Kaikoura and subsequent aftershocks caused significant damage to multiple areas of New Zealand, including the Wellington Central Business District (CBD). Damage to multiple buildings has required immediate deconstruction in order to prevent the risk of future failures, and the displaced tenants, mostly businesses, also require ongoing support and short term.[91] While the impacts are significant, they have also provided an opportunity to test some of the components of the draft framework, and generate possible pre-workshop changes to improve the usefulness of the framework. This could be valuable information, but it is unclear how it will be captured and

[91] Wellington Region Emergency Management Office, *Kaikoura Earthquake Situation Report 25.*

studied. There are two apparent risks in this. One, that the information which could help shape process is not captured or is poorly reported, thus negating the opportunity. The second is that the information captured is treated as an ideal model, when in reality it is reflective of a singular event. WREMO will have to establish a method of comparison for how to review the findings from this event.

Chapter 5- Discussion

In the following chapter, I discuss my findings from within Seattle and Wellington's respective recovery frameworks, organized around three central themes from my literature review. These themes are reflexivity and how human behavior interrelates, the connection between disaster resilience and disaster recovery planning, and mechanisms for implementing a community-centric model of recovery.

Reflexivity, cultural cognition, and disaster behavior

While recovery planning is indeed an opportunity promote reflectiveness and improve resilience, developing plans with a level of confidence in their implementability post-disaster is not a simple task. Recovery planning requires creating reasonable predictions of the potential impacts of hazards including magnitude and extent, but also the emergent behavior of a huge range of people in both the immediate days following a disaster and onward into months and years of recovery following.[92] Science lends some degree of surety on what might happen during disasters by investigating the physical dimensions of hazards and how infrastructure will react. For instance, the performances of certain building types can be modeled under given conditions of seismic stress, or the flood behavior of rivers can be modeled based on how much rainfall ends up in a particular basin. Historical observations of hazards illuminate a piece of the puzzle as well. Although imperfect, scientific and historical investigation increase how confident planners can be in their assumptions of how the physical world will behave. Of course, the physical

[92] American Planning Association, *Planning for Post-Disaster Recovery: Next Generation.*

environment is inhabited by a host of actors with a vast range of behavioral tendencies and ways of interpreting the world around them- we might just call them people though.

Pierre Bourdieu wrote that the pursuit of categorizing people as perfectly rational actors was foolhardy, but that it was equally foolhardy to think of people as merely bumbling or chaotic. To Bourdieu, the motivations and subsequent actions of people *do* follow a pathway more that fits according to their personal experience and beliefs, but any one person undoubtedly lacks the necessary information to be rational in the sense of acting according to a balanced internal algorithm. According to Bourdieu we are not rational, but we *are* reasonable.[93] We often do have reasons for our actions, and within what we know about a given problem we use what we have available at the time to solve it.

Bourdieu calls the summary profile of how a person may tend to react their 'habitus'. An individual's *habitus*- their sense of who they are and how they should tend act according to their internalized rule set- is a loosely defined way of estimating what that individual will do under any circumstance that they have encountered in the past, and a snapshot for how they have reacted to previous unprecedented situations.[94] Many people have a tendency to use the information available (right or wrong) and strategize accordingly. In so doing, habitus plays into strategic choice. "The lines of action suggested by habitus may very well be accompanied by a strategic calculation of costs and benefits, which tends to carry out at a conscious level the operations that habitus carries out in its own way."[95] At present, it is beyond the scope of the

[93] Bourdieu and Wacquant, *An invitation to reflexive sociology.*
[94] Ibid.
[95] Ibid.

social sciences to predict and forecast in the way that physical sciences are often able to. "That there is no one who has found such [methods] which could make the study of human activity predictive does not rule out the possibility that these elements might exist," but as thankfully recovery planning does not have to wait for such a system to eventuate.[96] Though behavior is difficult to profile and predict in a non-laboratory setting (and sometimes even *in* labs) planners don't need a complete catalog of each citizens' respective habitus to facilitate sound recovery planning.

Bourdieu also writes that "Times of crises, in which the routine adjustment of subjective and objective structures is brutally disrupted, constitute a class of circumstances when indeed "rational choice" may take over, at least among those agents who are in a position to be rational." This also relates to why Bourdieu describes habitus as "durable but not eternal."[97] Habitus is a way of summarizing the guiding force for an individual, but it is not hard-wired into the brain. External events shape our habitus even as our habitus shapes interactions with external events. To draw a loose analogy to high school physics, when two objects collide, they both exhibit a force on each other, but the more massive one moves furthest. The same could be said of habitus. Strong events leave their mark on most people, and tend to influence future actions. Just as a sense of trust and cooperation may lead to actions during a disaster, the experiences of the disaster itself, and the experience of those active in recovery, will likely reshape peoples' habitus.

---

[96] Flyvbjerg, *Making Social Science Matter*.
[97] Bourdieu and Wacquant, *An invitation to reflexive sociology.*

While disasters can inspire new paradigms and ultimately create opportunities for reinvention, previous relationships between (and within) communities and governments shape how the dynamics of a disaster unfold. Communities that have been promised solutions to problems, and haven't seen results, are less receptive to future efforts.[98] Many communities experience trauma in some form or another, whether its from chronic stressors of economic and social decay or from acute shocks such as earthquakes. Part of the challenge innate to this is that communities with chronic stressors often lack social cohesion and trust.[99] Without social cohesion and trust, traumatized communities are missing an important facet of social capital for responding and recovering.

From the broader perspective of human behavior during disasters, we see "overwhelming evidence that members of the public cope well before, during, and after disasters," and that "...behavioral patterns within populations under stress are pro-social, as indicated by increases in large-scale helping behavior and volunteerism."[100] This does not mean that there are no problems or that trauma is absent from the scene, but rather that- in the relative non-normal context of disasters- most people work to support each other and act with a high sense of altruism. Instances of anti-social behavior like looting and violence, despite their high visibility in media, are largely limited to areas which have daily experiences with the same behaviors.[101]

The takeaway is that cities could benefit greatly by acknowledging a high degree of community altruism, and incorporating this into the early phases of recovery actions when that feeling is

[98] Weinstein et al, *Trauma Informed Community Building.*
[99] Ibid.
[100] Tierney, "Disaster response: Research findings and their implications for resilience measures."
[101] Quarantelli, "Looting and antisocial behavior in disasters."

most prevalent. As they relate to the organization of recovery governance are that, cities could also promote a greater role for their communities in both actionable small-scale works, and second as advisors and decision makers in post-disaster plan implementation. Seattle and Wellington's respective successes in accomplishing this are discussed later in this chapter, but speaking generally, the benefit here is not just in the capacity of communities to act, but also in building stronger relationships and setting a history of partnership.

Balancing the use of technical methods with the ways people filter new experiences through a sense of self and the mechanisms of cultural cognition is a challenge. One framing of the problem from the perspective of social scientists is "…that social and political development based on instrumental rationality alone is not sustainable."[102]

Improving Concrete Process and Testing

Committing to community engagement, interdepartmental cooperation, and avoiding the zero-sum game thinking are laudable notions which both the Seattle and Wellington frameworks note as important.[103] In order to make good on these commitments, both cities must develop processes concrete enough that they can be trained to, but flexible enough to deal with emergent issues and opportunities. Doing so is an unenviably complex challenge, yet it must be undertaken with enough time to involve communities in developing and testing processes, and refining problems that arise.

---

[102] Flyvbjerg, *Making Social Science Matter*.
[103] City of Seattle Office of Emergency Management, *Draft Seattle Disaster Recovery Framework*; Wellington Regional Emergency Management Office, *Draft Wellington Region Strategic Recovery Plan*.

At present, the Seattle Disaster Recovery Framework and Wellington Strategic Recovery Framework indicate a reliance on post-disaster strategy informed by technical damage assessments and community engagement to determine more precisely the nature and range of needs for Seattle communities. Operationalizing the early phases of recovery makes sense, in that creating clearer channels through a pre-disaster framework for the work that will ultimately be done in a post-disaster actionable plan makes practicing and testing more feasible. Creating periodic opportunities for testing in a table-top environment, and occasional major functional exercises, means that people that are likely to be active in recovery have more opportunity to understand the hectic and time-compressed environment of recovery.

At present, neither Seattle nor Wellington have a robust system in place for testing recovery planning.[104] For the Wellington framework there is more work to come, including stakeholder workshops. Wellington Regional Emergency Management Office (the lead agency) is focusing on development rather than testing, though staff acknowledge the need for testing and have expressed keen interest in creating exercises and regular opportunities for testing.[105] The Seattle Disaster Recovery Framework has gone through a complete round of iteration and stakeholder participation, and as such has a more complete product with which to practice recovery, at least as a tabletop exercise. There are some elements of testing recovery which are easier than others-

[104] Interview subject 1, Interview by author;
Interview subject 2, Interview by author;
Interview subject 4, Interview by author;
Interview subject 5, Interview by author.
[105] Interview subject 4, Interview by author;
Interview subject 5, Interview by author;
Interview subject 6, Interview by author.

for instance Seattle City Light can practice specific actions, particularly in the earlier transition from response to early recovery where there are still actions that fall under the direct control of the organization such as restoration of power or meeting employee needs.[106] The less specific an organization defines its objectives and responsibilities, and the less they can rely on access to staff and other resources, the more complicated it becomes to practice recovery in a typical exercise environment.

Recovery practice through gaming

Rather than being able to test the ability of staff to follow prescript actions within the relatively direct objectives of the response phase, the chain of consequences branching from decisions made in recovery, and the wider number of players involved, exercising recovery frameworks could benefit from embracing a testing method that acknowledges a wide range of outcomes that achieve common core goals and visions. As such, a disaster recovery game structure that includes cooperative goals but wherein individual gains can be made could be an effective way forward.

Full scale simulation of the disaster environment is not practical as a means to test processes before disaster, however gaming on small scales may prove an effective way for groups to work through processes internally and to bridge community expectations on their role in recovery. In general, gaming encourages reflective behavior by pushing players to make decisions, and then having to react to consequences of those decisions. A good game structure also opens the door to

[106] Interview subject 2, Interview by author.

creative thinking by blending structure, goals, and insight into other roles and archetypes that a player wouldn't normally inhabit.[107]

Typically, games require players to balance use of resources, and in multiplayer games individuals may need to anticipate the resource requirements of other players as well. For Seattle, disaster recovery processes could be tested with internal gaming to help Recovery Support Function (RSF) co-chairs meet their RSF's needs while cooperating with the needs of other RSF's. The same principle is true for Wellington, though due to difference in organization structure, so too the game organization would change.

In addition to resource management, gaming also involves completing objectives. In my experience as a gamer, the best games in terms of fun, opportunities for emergent behavior among players, and overall replay value are ones that allow players to pursue a multitude of strategies to do complete core objectives. While the intent from game designers may be simply to provide a flexible experience with good potential for replay without repeating the same path to completion, flexibility in achieving objectives in recovery-oriented gaming would help challenge the players to recognize other pathways to achieve a desired outcome. If, for example, the desired outcome is immediate restoration of sanitary sewer facilities, a recovery game that encourages multiple pathways to complete objectives could allow players to spend more resources on paying for portable bathroom facilities instead of prioritizing more resources for rebuilding sewer lines as fast as possible.

[107] Hill, "Walk a Mile in Her Shoes."

While gaming can encourage reflective behavior from the perspective of an individual simulating how they might act in real life, gaming also allows roleplaying from diverse perspectives that a person cannot normally inhabit. Recovery gaming that encourages players to achieve diverse goals or work with unfamiliar resource constraints could be useful for communities with heterogeneous demographics, as a mechanism to understand the positions of neighbors and for recovery leaders to gain more reasonable expectations of the abilities and needs of other agencies and communities.[108] Gaming can be competitive but remain non-combative because it occurs in a simulated environment. Problems with proposed recovery processes, revealed through gaming or more standard exercises, give recovery planners time to reassess without having to first commit real resources. Games are also an opportunity to bring in perspectives representative of community interests, which may support a more balanced picture of how large urban systems with many real-life players would recover from catastrophic events.[109]

Finally, gaming can be a lot of fun! The main reason most people pick up a game is to have a good time. While the subject of disasters on some level means hardship and loss, an enjoyable co-op gaming session- even one about disaster recovery- should encourage positive association with problem solving amongst players. Good relationships built pre-disaster are vital to recovery.[110] The Seattle Disaster Recovery Framework indicates that CRTF co-chairs should meet often to share information and work through concerns.[111] The Wellington Strategic Disaster Plan also notes the critical importance of cooperation.[112] Opportunities to have a bit of fun may

[108] Hill, "Walk a Mile in Her Shoes."
[109] Cox Jr, "Community resilience and decision theory challenges for catastrophic events."
[110] Interview subject 4, Interview by author.
[111] City of Seattle Office of Emergency Management, *Draft Seattle Disaster Recovery Framework*.
[112] Wellington Regional Emergency Management Office, *Draft Wellington Region Strategic Recovery Plan*.

encourage participation and may positively impact group relationships that will ultimately be called into play post-disaster.

The Resilience-Recovery Connection

Current United States federal guidelines for recovery planning through the National Disaster Recovery Framework uplifts resilience as a key aspect. These guidelines are explicit in stating that communities can improve their resilience through the implementation of recovery plans, and that government agencies is most likely to be successful in this regard by taking sustained pre-disaster actions.[113] In New Zealand, updates to the National Strategy for Civil Defense and Emergency Management aimed at recovery and a national framework for resilience are under development, but at present Central Government guidelines for local recovery are not in place. In the United States, even though the National Disaster Recovery Framework is complete and published, the path to resilience is of course far from clear. In part this lack of clarity stems from the fact that there is no single definition of resilience. In fact, there are quite a few definitions. Many can be grouped into general themes such as engineered resilience, social resilience and ecological resilience, there are many variations and amalgamations of definitions. There are simply many ways to define resilience, but in terms of what seems to make it to the forefront of current practitioner frameworks for local government, resilience often includes quality of life provisions such as improving "…life safety, human health, and building and infrastructure integrity."[114] Still, this is broad and does not drill down towards how that might be achieved.

---

[113] FEMA, *National Disaster Recovery Framework.*
[114] King County, *Resilient King County.*

This broad set of academic definitions of resilience results in broad set of conceptualizations amongst anyone attempting to draw objectives and actions from those definitions. Resilience has thus become a 'boundary object', or in a more familiar parlance, a 'buzz word.' Boundary objects are defined enough to have a conceptual vector, but loose enough to collect a variety of related definitions or interpretations. The positive side of resilience as a boundary object is that people across multiple professional disciplines can come together with a general level of understanding and intent. The downside is that a lot can be lost in translation when it comes time to make decisions that require a singular definition.[115]

For starting conversations about resilience, exactness may not be particularly important, so long as people leave with an interest in continuing to explore the subject.[116] When it comes to shaping how and where a community rebuilds, the differences could be stark. Engineering perspectives on resilience emphasize making structural components more resistant to damage, such as building higher walls and stronger foundations so that the need to rebuild at all is less likely. Sociological perspectives might promote the ability to reorganize and recover quickly from disasters, instead of trying to build walls high enough to avoid floods in the first place. Some ecological definitions describe resilience as the likelihood of a change from one state to another entirely- such as forest transitioning to desert. The desert may actually be more resilient (i.e. stable) because it takes comparatively more energy invested in complexity to restore it to forest, just as it takes considerably more complex and directed energy for a city to be built than it does for fires to destroy them. That is the heart of why social perspectives of resilience are more

[115] Star and Griesemer, "Institutional ecology, 'translations' and boundary objects."
[116] Kahan et al, "Cultural cognition of scientific consensus."

useful for recovery planning: they acknowledge the importance of agency. If cities acknowledge agency and treat people as important actors in recovery rather than purely as beneficiaries, they can help to decentralize power and responsibility in functional ways. The process of supporting decentralization from a bureaucratic perspective is not without challenges, as more players at the table means more complicated discussions. One definition of resilience that pushes more towards social actors and community groups as a focus is "the ability of groups or communities to cope with external stresses and disturbances as a result of social, political, and environmental change."[117] However, this is still missing a piece of not just who, but what- a component of identity. Hence, a more operation definition of resilience is "the ability of the system to maintain its identity in the face of internal change and external shocks and disturbances"[118] By incorporating identity as the measure of success, cities and communities refine what they are working towards in resilience initiatives.

The Rockefeller 100 Resilient Cities Program

Wellington is in it's first year as one of the Rockefeller Foundation's 100 Resilient Cities. As part of this, Wellington has added pre-disaster recovery planning as a focus area, and will be including this focus into the development of the City's Resilience Strategy- essentially a business case for how and why to pursue resilience.[119] Choosing pre-disaster recovery planning as a focus area adds an important degree of political commitment to recovery planning as a whole, because the 100 Resilient Cities process is high-profile and has the official support of the Mayor and

[117] Adger, *Building resilience to promote sustainability.*
[118] Brand and Jax, "Focusing the meaning(s) of resilience."
[119] Wellington Regional Emergency Management Office, *Draft Wellington Region Strategic Recovery Plan*.

other decision makers within Wellington City Council, and neighboring Hutt City and Porirua City councils. Moreover, the process has an exploratory aspect to it that promotes inward investigation of what is in place already in terms of resilience actions and initiatives, and how those things might fit into the development of a broader resilience strategy that places priority on recovery planning.

As one of the 100 Resilient Cities, an explicit part of the process for developing a resilience strategy is to engage in reflective behavior at the scale of city government, and ideally to extend this to community members and experts in various fields such as infrastructure and social services. The government side, in Wellington's case, is unfolding through some unsurprising channels, in that the Wellington City is using in-house resources where existent to cover local knowledge to build out the 100 Resilient Cities tools and deliverables.[120] What makes the 100 Resilient Cities process possibly more useful is that reflectiveness is called out directly as one of seven core qualities of resilience, and is used in the assessment and framing of the development of Wellington's Resilience Strategy- one of the main outputs of the 100 Resilient Cities program.

The Resilience Strategy is meant to be aligned with recovery planning, and vice versa.[121] The methodology to support this alignment is not abundantly clear yet from the perspective of the Draft Wellington Strategic Recovery Framework, as it does not yet clearly link to the work programs supported by the resilience strategy.[122] However, from the current draft of the

[120] Interview subject 6, Interview by author.
[121] Interview subject 6, Interview by author.;
Interview subject 5, Interview by author.
[122] Wellington Regional Emergency Management Office, *Draft Wellington Region Strategic Recovery Plan*.

Resilience Strategy, recovery planning is a strong theme, and is highlighted as a specific project goal as a function of supporting good leadership and decision making.[123] As noted recovery is a theme throughout, but one of the specific project goals of the Resilience Plan highlights the need to "develop an earthquake recovery plan for Wellington that clearly describes expectations of various agencies and bodies."[124]

A potential strong benefit of the use of the Resilience Strategy is that if it continues to be accepted and supported by Wellington decision makers as it has initially,[125] then it may be used as a signal boost to the recovery planning process as it moves into a stakeholder workshop phase. This is important because quality workshop outcomes are dependent on quality participation and inputs from attendees. Support from decision makers may translate to support for department leaders to create space in schedules and prominence for staff to attend workshops.

Seattle is in an interesting position of having recently been named in the next round of 100 Resilient Cities.[126] Because Seattle has a more developed recovery framework which has been through a stakeholder workshop process, it may be of use in supporting the development of the City's Resilience Strategy. (As opposed to a somewhat concurrent development in Wellington.) Seattle has already identified catastrophic earthquake as a resilience challenge, citing "a model of a magnitude 6.7 earthquake estimated more than 1,600 fatalities and $33 billion in damages. Seattle has approximately 1,100 unreinforced masonry buildings which are the most likely to

[123] Wellington City Council, *Draft Wellington Resilience Strategy.*
[124] Ibid.
[125] Interview subject 6, Interview by author.
[126] City of Seattle, "Seattle selected to join 100 Resilient Cities network."

collapse in earthquakes."[127] The City also cites economic inequity as part of their resilience challenges, noting "an increase in inequality, including a lack of affordable housing and disproportionately poor health and educational outcomes for the city's neediest citizens."[128] With the Seattle framework already in place, the City could use these scope of the recovery plan to frame their resilience strategy, and create stronger partnerships in the cross-over space of resilience and pre-disaster recovery planning.

Implementing a Community-Centric Recovery Model

Successful recovery is not just about physical measures of how much housing or infrastructure has been restored, though these are integral. Recovery depends fundamentally on the sociological structures of communities such as the ability to connect and communicate with others.[129] Infrastructure serves a purpose, whether social, economic or cultural. How cities determine targets for recovering those supporting services could be looked at from many angles. In San Francisco, the SPUR framework sets a number of targets for recovery, including how much of a system needs be up and running within certain time horizons in order ensure a majority of citizens can stay or return quickly to their communities.[130]

Finding ways to safely allow people to remain in their communities, and in fact to encourage them to be an active participant in recovery, should be priorities early in recovery and sustained

[127] 100 Resilient Cities, "Seattle's Resilience Challenge."
[128] Ibid.
[129] American Planning Association, *Planning For Post-Disaster Recovery: Next Generation*.; Interview subject 6, Interview by author.
[130] SPUR, *Is San Francisco Safe to Stay?*

as long as is needed. How this can be accomplished is not clearly established in either Seattle or Wellington's frameworks,[131] though fair to say that figuring out how to do so is a common and enduring challenge in recovery.[132] While the strategy is not yet clear, at least some of the pieces that may contribute to success in giving community a bigger role in recovery are underway already, though not formally incorporated into recovery planning.

Institutional support for community recovery

Access to persistent, well-known places for community members to gather for information and resources is an important part of response and recovery. RSF 1 in the Seattle Disaster Recovery Framework meets this purpose head-on during disaster by standing up recovery centers as one-stop-shops for information and accessing resources.[133] In Wellington's framework, the Recovery Support System for Communication and Community Engagement is tasked with coordinating the same function of creating links between community and government.[134]

To date, successful examples of informal response efforts have mostly been spontaneously created following a disaster with little to no pre-planning, community-led, and not necessarily connected to government. Successful community-driven recovery efforts do have an important common element, that of social capital.[135] During disasters, at some point a person or group of people began organizing with the intent of connecting needs with available resources. Examples

---

[131] City of Seattle Office of Emergency Management, *Draft Seattle Disaster Recovery Framework.*; Wellington Regional Emergency Management Office, *Draft Wellington Region Strategic Recovery Plan*.
[132] American Planning Association, Planning For Post-Disaster Recovery: Next Generation.
[133] City of Seattle Office of Emergency Management, *Draft Seattle Disaster Recovery Framework*.
[134] Wellington Regional Emergency Management Office, *Draft Wellington Region Strategic Recovery Plan.*
[135] Aldrich, Interview by Dan Neely.

of communities that have been relatively successful in responding and recovering seem to exhibit a common theme of acting quickly in initial response, acting with trust, and staying well-connected and in contact even through evacuations or temporary relocations.[136] Like the habitus of any individual, predicting in any absolute measure how this behavior will manifest in groups is not possible, but city leaders can still take heed of these common traits and add a level of support by facilitating communities to build out where and how people might gather to solve problems in a disaster. Supporting the community-led response to disasters is exactly what both Seattle and Wellington have begun doing through promoting support systems such as Community Emergency Hubs.[137]

Despite Seattle and Wellington developing their programs independently, the conception of what a Community Emergency Hub is quite similar. Wellington Regional Emergency Management Office (WREMO) defines Community Emergency Hubs as:

> "…pre-identified places for the community to coordinate their efforts to help each other during and after a disaster. Community Emergency Hubs will be opened by people in their community, not official staff, when there is need for the community to help itself, such as when there has been widespread infrastructural damage, damage to buildings and roads, or communication networks are down for extended periods."[138]

Seattle Office of Emergency Management (SOEM) describes Community Emergency Hubs as:

---

[136] Ibid.
[137] Seattle Office of Emergency Management, "Community Emergency Hubs."; Wellington Regional Emergency Management Office, *Community Emergency Hub Guide*
[138] Wellington Region Emergency Management Office, "Community Emergency Hubs."

> "…places where people gather after a disaster to help each other. Hubs are established by community members and encompass geographic areas larger than just an immediate block or building. Hubs serve as a central gathering place among neighbors in multiple homes, apartments and condominiums, some who have organized using [Seattle Neighborhoods Actively Prepare.]"[139]

Both descriptions share the intent of acting as gathering points for information sharing and problem-solving, run entirely by community members rather than through a top-down command and control model found in emergency management at the government level.[140]

From a functional perspective, there are never enough professional responders or government officials to attend to everyone's needs in response or recovery. However, it is important to recognize that the ability to solve problems spontaneously and through both pre-existing and emergency networks already exists in many communities, and can solve problems effectively and preserve local autonomy in the process.[141]

Community Response Planning

WREMO's Community Response Plans are another program that could encourage reflectiveness in community members, and connect to a broader recovery strategy. WREMO's intent with Community Response Plans is to get community members actively involved in how they could

---

[139] Seattle Office of Emergency Management, "Community Emergency Hubs."
[140] Seattle Office of Emergency Management, "Community Emergency Hubs."; Wellington Regional Emergency Management Office, *Community Emergency Hub Guide.*
[141] Aldrich, Interview by Dan Neely.

response to disasters without waiting for official help from the government.[142] The question on WREMO's part is to then figure out how to channel the information communities can provide about sense of place, priority buildings and infrastructure, and important social/environmental functions into a pre-disaster recovery framework. This kind of ground-level intel on what communities value would help align recovery expectations of governments with those of people and potentially can facilitate a smoother recovery.[143]

Even with a good model for how to gather community information and connect the dots, another question arises- when do community engagement based methods integrate into the broader picture of activating a recovery framework? It is important to note that the Seattle Disaster Recovery Framework and the Wellington Region Strategic Recovery Plan do not necessarily jump to full activation as soon as an event happens. The SDRF clearly states that "ESF 14 will begin activating initial recovery functions such as debris clearance, damage/impact assessment, temporary space for displaced government/community functions, inspections for repairs, volunteer and donation management, and initiation of state/federal assistance programs."[144] Similarly, Wellington's plan indicates that short term priority actions bridging life safety and operational elements.[145] These are the appropriate functions for the high-priority operational elements which can be tackled in part through MOUs and pre-event planning. There is a point of opportunity for reflection relating to these snap decisions that happen right away, before the full recovery framework comes into play, and before early decisions determine long term outcomes.

---

[142] Wellington Region Emergency Management Office, "Community Response Plans."
[143] American Planning Association, *Planning For Post-Disaster Recovery: Next Generation.*
[144] City of Seattle Office of Emergency Management, *Draft Seattle Disaster Recovery Framework.*
[145] Wellington Regional Emergency Management Office, *Draft Wellington Region Strategic Recovery Plan*.

One earthquake example that comes to mind are buildings which are still standing but damaged to the point where they are a public safety hazard. In Christchurch during the 2011 earthquakes, one cathedral was severely damaged and rapidly demolished, and another has been sitting in a severe state of damage with a cordon surrounding it- for *five years.* The loss of the church, the one demolished outright, happened in an operational setting where inspectors and engineers made a decision which for all factors concerning safety and stability were probably quite correct. It is difficult to say to what degree people involved in making the decision to demolish the building incorporated an assessment of the cultural role that building had in supporting community identity, but clearly in the end the decision to demolish won out. The second building, the Christchurch Cathedral, is still standing but remains unrepaired and unused behind a long term cordon. It is an icon still standing, but one in such sorry state that it is hard to say whether it is a net positive that the building remains or a negative that it remained standing but obviously still not accessible.

The early phases of recovery will require decisions to be made with a level of information that is far less than ideal in order to preserve a hierarchy of safety over heritage. Though specific building types can be modeled as to how they will perform in earthquakes, it is not feasible to know *which particular* buildings will fail. Further, it is difficult to get a good idea of which buildings will have the highest positive impact on retaining cultural identity if they remain intact. As an example of the complication, consider a Christian church. For the sake of an example, we may presume that such a building is most important to those that attend services, and not to those of different denominations. However, if the loss of the church causes the church-going

community to lose social cohesion, what are the secondary effects? Are others who do not attend church affected if a large portion of a community ultimately moves away? As is the case in much of pre-disaster recovery planning, there is an opportunity to hedge bets by facilitating conversations with communities to get a better sense of what buildings and infrastructure underpins their identity, and to what degree those icons can be mitigated or rapidly reconstructed. In a best case scenario, these conversations can happen in a pre-disaster planning phase in order to get a baseline sense of what buildings and infrastructure are culturally significant or facilitate social interactions.

At present, the Community Response Plan process covers a wide geographic area, but it is difficult to say how representative the findings are. For example, in a planning area of approximately 3,000 people, if 20-30 people participate at planning meetings, it may not be a representative sample of majority values and interests of the community as a whole. Another challenge is that experiencing a disaster may alter opinions and priorities. It is plausible that some will wish to return to a life identical to pre-disaster conditions, while others might push for changes or recognize that pre-disaster conditions weren't all that ideal to begin with.

Even without addressing the difficulties in getting reliable, representative information from planning meetings, there is another possible benefit. As Community Response Plans are a recurring and direct opportunity for WREMO to facilitate conversations with communities, if they events are well-received and perceived to have value, WREMO would likely gain a positive reputation and credibility as a government entity. WREMO's Community Resilience Strategy directly notes the importance of fun in public engagement, however a positive experience and

increase in reputation could be achieved through a variety of means. The outcome of relationship-building and establishing credibility are no doubt helpful day to day, though those relationships take on a different importance in disaster recovery. Five years after the Canterbury earthquakes, the Canterbury Earthquake Recovery Authority (CERA) reported that one of the greatest challenges they faced was a lack of credibility and pre-existing positive relationships. CERA suffered both as an authoritative government entity that exercised the power to make decisions without comprehensive engagement and as a new entity seen only during a time of intense strife and change for people who had gone through the earthquakes.[146] City governments may mitigate the issue of credibility by engaging often and creating opportunities for positive interactions as described above. Further, with robust recovery frameworks, cities should aim to clarify their roles and responsibilities enough that they maintain an active public-facing role during recovery, even if a disaster is severe enough to warrant the creation of a broader recovery organization such as CERA.

Reflectiveness, ethics, and transformation through recovery

As simply as I can think to describe the concept, reflectiveness is all about using learning and knowledge to fuel positive and directed change. Taking the time to reflect and analyze pre-disaster is part of what urban planning is all about, but rarely do cities find themselves with the sheer scope of opportunity to change and transform that comes with the experience of a major disaster.

[146] Canterbury Earthquake Recovery Authority, *Understanding Social Recovery.*

Talking about recovery as 'building back better' following a disaster as a core value succinctly exemplifies this description of reflectiveness. The concept of bouncing forward into a better state than existed pre-disaster has advantages for positive reinvention of urban spaces that were problematic even before disaster, and avoiding rebuilding the social and infrastructural vulnerabilities that caused disaster in the first place. There is a dangerous possibility of over-riding community desires and needs. The Seattle Disaster Recovery Framework begins to bring this difficult facet of reinvention into the light by stating that "Significant reinventions that reshape Seattle should be vetted with affected community members, which will require time and sustained community engagement efforts."[147]

Wellington cites improvements as an important vision for recovery, including "sustainability, risk reduction, building back better, and other forms of community better, preservation, equity and prosperity."[148] Wellington also acknowledges the possibly of transformation through three different end-states for recovery: restored, renewed, and improved.[149]

- Restored, to stabilize or return to normal or a pre-disaster condition
- Renewed to replace or rebuild "like for like" but in a new condition, and
- Improved to capture innovations and betterment conditions such as "build back better," enhancement, adaptation and regeneration.

Wellington's framework states that "In some instances, the impacts of an emergency may not allow for a 'return to normal' and a new end-state will need to defined in conjunction with those

[147] City of Seattle Office of Emergency Management, *Draft Seattle Disaster Recovery Framework*.
[148] Wellington Region Emergency Management Office, *Draft Wellington Strategic Recovery Plan.*
[149] Ibid.

affected."[150] The implication is that in other instances, significant transformation is not an option. The reasons may be that in small scale recovery, it is simply easier to rebuild exactly what was lost. However, even in these instances there is always going to be some opportunity to improve. In one sense, rebuilding a 30-year-old home to the exact same floor plan is an improvement in that newer building materials and more efficient utilities could be installed. Perhaps for small scale recovery, that should be considered sufficient. However, if small scale recovery were the only anticipated need, it is unlikely that cities would ever need to develop robust recovery frameworks in the first place.

So why not always push for greater transformation and reinvention? For one, transformation requires more deliberation than recreating the status quo. As the Wellington framework notes, in recovery's time compressed environment "there is an inherent tension between the need for speed in recovery decision making and taking time to deliberate, analyze and plan as part of the decision making process."[151] Changing the use or form of an area can displace people directly through actions like changing land use to prevent people from living in a hazardous area, or indirectly through actions like heavily investing in redevelopment without provisions for affordability- and ultimately pricing people out.

Including the priorities of communities as a part of the recovery process will require concerted effort and sustained engagement. Expanding the number of people brought to the table no doubt

[150] Wellington Region Emergency Management Office, *Draft Wellington Strategic Recovery Plan.*
[151] Ibid.

increases the complexity of deliberation, but as one interview participant noted, it's the way that cities should proceed.

> "[In recovery,] it's many of us regardless of boundaries… it's not just my Council, we have to think wider. So I guess the other thing in the contemplating resilience and recovery, it's really important to consider that many of the functions of resilience and recovery are better delivered by organizations other than a [City government.] In fact I'd go so far as to say, that conceptually if we are going to empower our communities to act and do stuff, that's a far more powerful place to be than the agency itself or the higher authority."[152]

The Wellington framework corroborates the need of involving many agencies from another angle, that of the inflexibility of bureaucratic process. "Bureaucracies often do not adapt well to the time-compressed, recovery decision environment and so new governmental and non-governmental organisations, both formal and informal, emerge, particularly to fill the information gaps and provide more resources."[153] Recognizing this as a major problem, interviews do indicate that a measure of success in recovery planning is that stakeholders "are able to enter into a shared vision and framework around how they might partner together towards a shared vision for recovery, so we're not having to overly deliberate this on the day."[154] But the question still remains, how can cities accomplish this shared vision?

---

[152] Interview subject 6, Interview by author.
[153] Wellington Region Emergency Management Office, *Draft Wellington Strategic Recovery Plan.*
[154] Interview subject 5, Interview by author.

Getting past the preliminary recognition to increased capability will require institutional commitment on a broad scale, and ultimately committing budget lines to doing pre-disaster work. Major disasters can act as lightning rods for political and community energy. In New Zealand context, the Canterbury earthquakes of 2011 were a wake up call on a national scale, and a challenge to the nation to rapidly accelerate their conception of recovery planning. Some practitioners recognized that they "have always known even before Christchurch that [recovery] was the area we were weak."[155] Despite this recognition by some, actions to further a robust pre-disaster recovery framework did not begin until 2015 when work began on the current framework.

In Seattle's case, "The number of significant disasters worldwide provided a strong impetus to do recovery planning."[156] Even events as far away as the 2011 Tohoku, Japan and Canterbury, New Zealand earthquakes got the attention of local politicians- and ultimately encouraged budgeting for recovery planning.[157] Interviews with recovery plan stakeholders paint the picture that "the concept [of recovery] had been growing and evolving over the past 10 years", but it wasn't until there was a greater sense of urgency great enough to commit City staff time and funding for outside contractors to do the work.

Seattle and Wellington's experience of having had considerable prior thinking going on in the background and perhaps just among a small number of practitioners suggests that there may be a catalyst for recovery planning. The prior thinking and, at least in one case, a decade of reflection,

[155] Interview subject 6, Interview by author.
[156] Interview subject 1, Interview by author.
[157] Ibid.

primes governance to take action and direct resources when external events create enough political interest. Cities must react to disasters and make some efforts to recover, but without the evolution of thinking and pre-planning, cities must make decisions about recovery on the fly. It is fair to say that even with a significant amount of forethought into recovery planning, getting everything right in implementation is a mammoth challenge. In part this the nature of recovery. "Disaster recovery is full of uncertainty, intense time pressure, high takes and a lack of reliable information."[158] With much of the prior thinking and now more robust frameworks under development, both Seattle and Wellington are in a good position to move forward now to connecting vision to process through existing development plans. This could be progressed by connecting recovery with existing equity and quality of life goals of development/long-term planning, and through high profile initiatives like Seattle and Wellington's respective Resilience Strategies. Whichever process or strategy is ultimately used, success might be better achieved by adapting other definitions of resilience to explicitly focus on more inclusive process, and a push to not just maintain identity but to improve upon prior social failures.

[158] McNaughton et al, *Leading in Recovery.*

Chapter 6- Conclusions

Although recovery planning must tackle a wide range of complexities and a diverse range of people, the use of flexible, scalable frameworks are important for creating a good structure for governance and partnership among stakeholders. Furthermore, frameworks encourage reflectiveness provide a platform for exploration of a city's communities and systems, and may be an important bridge for supporting pre-disaster improvements to resilience. Both Seattle and Wellington have made clear moves towards such a model with their respective draft disaster recovery frameworks, though both cities should now work towards solidifying how these frameworks will be used through exercises and by seeking opportunities to strengthen partnerships that will be called upon in recovery.

Questions about recovery in general, and applications of reflectiveness specifically are wide ranging. To help focus the directive of my conclusions, I have separated tem into recommendations for practitioners, and questions for practitioners.

Recommendations for Practitioners

My conclusions drawn for practitioners assume that workable, deliverable solutions that can be fitted to programs and staffing are a priority. My conclusions for practitioners center on creating partnerships, involving members of the community, and testing recovery plans.

Be prepared to partner in recovery

Prior experience influences partnership, recovery leaders need to acknowledge this and work towards creating opportunities of positive experiences, both within organizations and looking outward to other agencies and community representatives. Individuals come with their own sense of self (Bourdieu's habitus) and their own filters for how they interact with new information. The greater the disparity between two given people's habitus, potentially the longer it takes to bridge any gaps in understanding. In the time-compressed environment of disaster recovery, players often don't have the luxury of prolonged engagement and deliberation. Building partnerships, and maintaining them long before recovery, reduces barriers to cooperation during recovery. Recovery practitioners such as urban planners and emergency managers should aim to drive relationship building and seek opportunities for positive reinforcement of the value of pre-disaster recovery planning.

For organizations that are likely to be involved in disaster recovery to be successful, building positive relationships with communities must start early and remain active indefinitely. 'Indefinitely' does not mean that planning needs to be at a constant high-intensity of engagement and effort, rather that community and government partnerships set- and meet- expectations on how often planning partners reconvene.

For recovery planning, practitioners should start by building relationships with community leaders, their counterparts in other levels of government, and representatives of business communities and cultural groups. Governmental and business institutions, community interests, access to public and private services, and the ability of people coming from different socio-

economic backgrounds to participate in decision making are all critical aspects of functional communities. Facilitating the active participation in decision making gives parties a role in recovery planning commensurate with their role in communities on a daily basis.[159] Creating good partnerships between stakeholders and organizations that may provide services is not always easy, particularly if there is a pre-existing lack of trust between community groups and academics or government officials working with them.[160] However, creating a positive history of partnership means that when a variety of actors enter the recovery scene, that past experience is likely to increase trust and the desire to work more cooperatively.[161]

As members of the Rockefeller 100 Resilient Cities program, both Seattle and Wellington should create linkages between their respective recovery frameworks and resilience strategies. Doing so builds relationships in the sometimes ill-defined space of just what 'resilience' means, and adds a somewhat more concrete framing of recovery planning. Including the ongoing development of pre-disaster recovery planning as a stated objective of the resilience strategy creates a touch-point for partnerships, among other direct benefits of establishing work programs with budgets.

Test recovery plans

"Before a disaster, if you have a good plan in place, that plan should be exercised regularly."[162] Recovery planning needs to be tested and improved ongoing, both through scenarios and

---

[159] Wellington Regional Emergency Management Office, *Draft Wellington Region Strategic Recovery Plan*.
[160] Weinstein et al, *Trauma Informed Community Building.*
[161] Aldrich, Interview by Dan Neely;
Tierney and Bruneau, "Conceptualizing and measuring resilience."
[162] Interview subject 4, Interview by author.

exercises before disaster and by incorporating post-disaster learnings. At present, neither Seattle or Wellington have described a process for how this might work, beyond the nominal recognition that it should happen. Opportunities for testing and improvement might include simulations through gaming, which may also increase partnership by providing a forum for the people that will be working through recovery frameworks in a real event to meet and work together in a low stress environment.

Create opportunities for the community to be involved

Creating active roles for community partnership pre-disaster may also provide vehicle for reflection, and generate useful outputs that can be used in business-as-usual planning. Community planning initiatives, as well as physical spaces like Community Emergency Hubs may create better expectations for community to participate in recovery, and in the future could be a linkage to city planning. Opportunities to encourage social capital and a greater sense of trust and reciprocity both in communities and as they relate to government agencies also tie back in support of partnership and setting positive experiences.

Questions for Researchers

Academic institutions can delve into the theoretical underpinnings of recovery, and take the time to research experiences of people and institutions who have gone through the process of recovering from disasters. Specific to connecting reflectiveness to recovery planning, there are multiple areas I see as topics that need greater focus from researchers.

Addressing social inequity

How can cities use pre-disaster recovery planning to address social inequity, both pre and post disaster? For those that are already marginalized and more socially and economically vulnerable to disaster, to what degree does learning about why those vulnerabilities exist create actionable routes to resolve them through day to day planning, and how does this differ from implementation in the post disaster context? Most cities struggle with concepts of inequality day to day. Existing recovery frameworks incorporate vision statements or post-recovery ideals of success, such as "Recovery minimizes the creation of winners and losers during the process. Every effort is made to restore all communities to pre-disaster condition."[163] One suggestion for researchers would be to continue looking for examples of more equitable recover processes from the real world, and dissect what actions helped city governments maintain a focus on equity throughout the arduous process of recovery.

Novel systems for supporting partnership

What novel methods might be used to support better partnership and understanding of recovery challenges? I suggested games as one such method, but creating a well-balanced and useful recovery game is a unique challenge in of itself. Creating and moderating a game could take up an entire work program, a luxury that most cities wouldn't have available. Instead, perhaps it is possible for researchers to create game archetypes that can be more easily tailored with local details and context. In this regard, perhaps using other Rockefeller resilience qualities could help to frame investigation. For instance, the Rockefeller resilience quality of Integration, which is

[163] King County, *Resilient King County.*

defined as processes that "bring together systems and institutions and can also catalyze additional benefits as resources are shared and actors are enabled to work together to achieve greater ends."[164] To me, that sounds a lot like the goal of a co-op board game.

Limitations

Given the breadth of recovery planning relative to the time and ability I could apply to this thesis, there were vastly more questions and possible methodologies than I could reasonably commit to. Because of this, I will focus my limitations on what I chose to do, rather than the innumerable possibilities for alternate methodologies.

Within the body of my research, there are two primary limitations. First, with any comparison there are issues of sample size. I have compared two cities, with two sets of frameworks each. Each set of frameworks is also in a way a continuum, a culmination of the work from a range of people and influences. In one sense, that is part of the study- I wanted to see how understanding of recovery changed, as evidenced by changes in iterations of recovery frameworks. This is part of showing reflectiveness as I have defined it in my thesis. However, to link back to Bourdieu, the range of habitus and nomos at play make elucidating *why* Seattle and Wellington have changed their conceptualizations of recovery an ongoing question. Interviews provided key context, but to my mind the responses raise many more questions than the six that each interviewee answered.

[164] Arup International Development, *City-Resilience Framework.*

Secondly, because of a lack of existing research on applying resilience frameworks such as the Rockefeller 100 Resilient Cities program to disaster recovery, I cannot externally validate the relative usefulness of the indicators I have chosen to explore reflectiveness. They make sense in reference to Rockefeller defines reflectiveness, however since they guided my exploration of the topic it is fair to ask how I might have calibrated them differently.

Closing thoughts

Disaster recovery is a field with vastly more questions than answers. Some of these questions don't have persistent answers in part because recovering from a disaster requires so many decisions to be made, and in each city there is bound to be many competing views on the correct choice for any given project or plan. That is part of why research in recovery is important because for all the strife of disasters, good planning and informed decision making opens the door to righting past mistakes. In a sense, recovery is a misnomer that ignores the inherent opportunities to not just bounce back from disaster, but bounce forward. Recovery can be an agent of transformation. If pursued with a strong commitment to ethics and community-led process, recovery can not only fix what was broken by a disaster, but potentially right the wrongs existing long before.

Exactly how to achieve such a goal is not perfectly clear, but creating a pre-disaster planning framework which supports reflectiveness may be an important mechanism. By willfully engaging in exploring the constrained and challenging context of recovery before disasters, cities and communities have an opportunity to think deeply about what they want and how they might achieve it.

Works Cited

100 Resilient Cities. “Seattle’s Resilience Challenge.” Accessed December 2, 2016. http://www.100resilientcities.org/cities/entry/seattles-resilience-challenge#/-_/

Abramson, David, Derrin Culp, Jonathan Sury, Laurie Johnson. *Planning for Long-Term Recovery Before Disaster Strikes: Case Studies of 4 US Cities.* National Center for Disaster Preparedness, 2011.

Adger, W. N. *Building resilience to promote sustainability: an agenda for coping with globalisation and promoting justice.* Bonn, 2003.

Aldrich, Daniel. Interview by Dan Neely. Personal interview. December 9, 2015.

American Planning Association. *Planning for Post-Disaster Recovery: Next Generation.* Chicago, 2014.

Arthur, Frank. “The feel for power games.” In *Real Social Science,* edited by Bent Flyvbjerg et al. Cambridge: Cambridge University Press, 2010.

Arup International Development. *City-Resilience Framework*. London, 2014.

Bourdieu, Pierre, and Loïc JD Wacquant. *An invitation to reflexive sociology*. Chicago: University of Chicago press, 1992.

Bourdieu, Pierre. *Pascalian meditations*. Palo Alto: Stanford University Press, 2000.

Brand, Fridolin Simon, and Kurt Jax. "Focusing the meaning (s) of resilience: resilience as a descriptive concept and a boundary object." *Ecology and society* 12, no. 1 (2007): 23.

Caetano, Anne. “Reflexivity and social change: A critical discussion of reflexive modernization and individualization theses.” *Portuguese Journal of Social Science*, volume 13 (2014): 93-109.

Canterbury Earthquake Recovery Authority. *Understanding Social Recovery*. Christchurch, 2016.

Chang, Stephanie E., Josh E. Taylor, Kenneth J. Elwood, Erica Seville, Dave Brunsdon, and Mikaël Gartner. "Urban Disaster Recovery in Christchurch: The Central Business District Cordon and Other Critical Decisions." *Earthquake Spectra* 30, no. 1 (2014): 513-32.

City of Seattle Office of Emergency Management. “Community Emergency Hubs.” Accessed December 1, 2016. https://www.seattle.gov/emergency-management/working-together/community-emergency-hubs.

City of Seattle Office of Emergency Management. *Comprehensive Emergency Management Plan.* Seattle, 2014.

City of Seattle Office of Emergency Management. *Comprehensive Emergency Management Plan Annex: ESF-14.* Seattle, 2014.

City of Seattle Office of Emergency Management Office. *Draft Seattle Disaster Recovery Framework.* Seattle, 2015.

City of Seattle Office of Emergency Management. *Seattle Hazard and Vulnerability Analysis*. Seattle, 2014.

City of Seattle. "Population and Demographics." Accessed June 5, 2016. http://www.seattle.gov/dPd/cityplanning/populationdemographics/aboutseattle/population/default.html.

City of Seattle. "Seattle selected to join 100 Resilient Cities Network." Accessed December 2, 2016. http://murray.seattle.gov/seattle-selected-to-join-100-resilient-cities-network/

City of Seattle. *Seattle 2035: Growth and Equity Analysis*. Seattle, 2016.

Comerio, Mary C. *Housing repair and reconstruction after Loma Prieta.* Berkeley, 1997.

Cox Jr, Louis Anthony Tony. "Community resilience and decision theory challenges for catastrophic events." *Risk analysis* 32, no. 11 (2012): 1919-1934.

FEMA. *National Disaster Recovery Framework.* Washington, D.C., 2011.

Flyvbjerg, Bent. "Phronetic planning research: Theoretical and methodological reflections." *Planning Theory & Practice* 5, no. 3 (2004): 283-306.

Flyvbjerg, Bent. "Values in social and political theory," in *Making social science matter: Why social inquiry fails and how it can succeed again*. Cambridge: Cambridge University Press, 2001.

Hill, Michelle. "Walk a Mile in Her Shoes: A guidebook for Implementing Role-Playing Simulation Games in the Planning Process." Masters thesis, University of Washington, 2014.

HistoryLink. "Seattle's Great Fire." Accessed July 2, 2016. http://www.historylink.org/index.cfm?DisplayPage=output.cfm&File_Id=715, 2015.

HistoryLink. "Earthquake registering 6.8 on Richter Scale jolts Seattle and Puget Sound on February 28, 2001." Accessed December 2, 2016. http://www.historylink.org/File/3039.

Holling, Crawford S. "Resilience and stability of ecological systems." *Annual review of ecology and systematics* (1973): 1-23.

ID New Zealand. “Wellington City population forecasts.” Accessed July 5, 2016. http://forecast.idnz.co.nz/wellington/home, 2016.

Interview subject 1. Interview by Sam Ripley. Personal interview. Seattle, United States. May 22, 2015.

Interview subject 2. Interview by Sam Ripley. Personal interview. Seattle, United States. June 16, 2015.

Interview subject 3. Interview by Sam Ripley. Personal interview. Seattle, United States. July 1, 2015.

Interview subject 4. Interview by Sam Ripley. Personal interview. Wellington, New Zealand. October 21, 2016.

Interview subject 5. Interview by Sam Ripley. Personal interview. Wellington, New Zealand. October 27, 2016.

Interview subject 6. Interview by Sam Ripley. Personal interview. Wellington, New Zealand. October 27, 2016.

Kahan, Dan M., Hank Jenkins-Smith, and Donald Braman. "Cultural cognition of scientific consensus." *Journal of Risk Research* 14, no. 2 (2011): 147-174.

King County Office of Emergency Management. *Resilient King County White Paper*. Renton, 2014.

Landman, Todd. “Phronesis and narrative analysis.” In *Real Social Science,* edited by Bent Flyvbjerg et al. Cambridge: Cambridge University Press, 2010.

McNaughton, Elizabeth, Jolie Wills, and David Lallemant. *Leading in Disaster Recovery: A companion through the chaos.* Wellington, New Zealand. 2015.

NZ History. “Massive earthquake hits Wellington.” Accessed December 15, 2016. https://nzhistory.govt.nz/massive-earthquake-hits-wellington

Olsen, Tricia D., Leigh A. Payne and Andrew G. Reiter. “Amnesty in the age of accountability.” In *Real Social Science,* edited by Bent Flyvbjerg et al. Cambridge: Cambridge University Press, 2010.

Quarantelli, Enrico Louis. *Looting and antisocial behavior in disasters.* Delaware, 1994.

Rabin, Matthew, and Joel L. Schrag. "First impressions matter: A model of confirmatory bias." *Quarterly journal of Economics* (1999): 37-82.

Sanford and Schram, “Phronetic social science: an idea whos time has come.” in *Real Social Science,* edited by Bent Flyvbjerg et al. Cambridge: Cambridge University Press, 2010.

SPUR. *Is San Francisco Safe to Stay?* San Francisco, 2012. http://www.spur.org/publications/article/2012-02-01/san-francisco-safe-enough-stay.

Star, S. L., and J. R. Griesemer. “Institutional ecology, ‘translations’ and boundary objects: amateurs and professionals in Berkeley’s museum of vertebrate zoology.” *Social Studies of Science* 19(3): 387-420.

Steinberg, Ted. *Acts of God: The unnatural history of natural disaster in America*. Oxford: Oxford University Press, 2006.

Tierney, Kathleen. "Resilience and the Neoliberal Project Discourses, Critiques, Practices—And Katrina." *American Behavioral Scientist* (2015).

Tierney, Kathleen, and Michel Bruneau. "Conceptualizing and measuring resilience: A key to disaster loss reduction." *TR news* 250 (2007).

Tierney, Kathleen. “Disaster response: Research findings and their implications for resilience measures.” *Vol. 6. CARRI Research Report*, 2009.

Walker, Brian, Crawford S. Holling, Stephen R. Carpenter, and Ann Kinzig. "Resilience, adaptability and transformability in social--ecological systems." *Ecology and society* 9, no. 2 (2004): 5.

Weinstein, Emily, Jessica Wolin, Sharon Rose. *Trauma Informed Community Building: A Model for Strengthening Community in Trauma Affected Neighborhoods*. San Francisco, 2014.

Wellington City Council. *Draft Wellington Resilience Strategy.* Wellington, 2016.

Wellington Lifelines Group. *Restoration Times Report*. Wellington, 2012.

Wellington Regional Emergency Management Office. *Community Emergency Hub Guide*. Wellington, 2016.

Wellington Region Emergency Management Office. *Community Resilience Strategy.* Wellington, 2012.

Wellington Region Emergency Management Office. “Community Response Plans.” Accessed December 2, 2016. http://www.getprepared.org.nz/communityresponseplans, 2016.

Wellington Region Emergency Management Office. *Draft Wellington Region Strategic Recovery Plan.* Wellignton, 2016.

Wellington Region Emergency Management Office. *Kaikoura Earthquake Situation Report 25*. Wellington, 2016.

Wellington Region Emergency Management Office. *Wellington Region Civil Defence Emergency Management Group Plan 2013 – 2018.* Wellington, 2013.

World Bank. *City Strength: Can Tho.* Washington, D.C., 2014.

Zimper, Alexander, and Alexander Ludwig. "On attitude polarization under Bayesian learning with non-additive beliefs." *Journal of risk and uncertainty* 39, no. 2 (2009): 181-212.