A Political Ecology of Design:
Contested Visions of Urban Climate Change Adaptation

by

Kian Goh

Bachelor of Arts, Mathematics, College of Wooster (1996)
Master of Architecture, Yale University (1999)

Submitted to the Department of Urban Studies and Planning
in partial fulfillment of the requirements for the degree of

Doctor of Philosophy in Urban and Environmental Planning

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

September 2015

© 2015 Kian Goh. All rights reserved.

The author hereby grants to MIT the permission to reproduce and to distribute publicly
paper and electronic copies of the thesis document in whole or in part in any medium now
known or hereafter created.

Signature redacted
Signature of Author

Department of Urban Studies and Planning
August 31, 2015

Signature redacted
Certified by

Signature redacted
Lawrence J. Vale
Ford Professor of Urban Design and Planning
Thesis Supervisor

Signature redacted
Accepted by

Signature redacted
Lawrence J. Vale
Chair, PhD Program in Urban Studies and Planning
DISCLAIMER NOTICE

Due to the condition of the original material, there are unavoidable flaws in this reproduction. We have made every effort possible to provide you with the best copy available.

Thank you.

Some pages in the original document contain text that runs off the edge of the page.

pages 44, 252, 255
A Political Ecology of Design: Contested Visions of Urban Climate Change Adaptation
by
Kian Goh

Submitted to the Department of Urban Studies and Planning on August 31, 2015 in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Urban and Environmental Planning

ABSTRACT

From the eastern seaboard of the United States to coastal cities in Southeast Asia, severe weather events and long-term climate impacts challenge how we live and work. As the debates over cities, planning, and climate change intensify, governments are proposing increasingly ambitious plans to respond to climate impacts. These involve extensive reconfigurations of built and “natural” environments, and massive economic resources. They promise “ecological security” and the perpetuation of capitalist growth. Yet they often involve intractable social questions, including decisions about how and what to protect on sites that are home to already marginalized urban residents.

Scholarship on urban adaptation planning has tended to reinforce divisions between social and spatial, drawing a line between designed and engineered solutions and sociopolitical measures. It often assumes urban politics to be contained and cohesive. And it has relied on static conceptualizations of the city as a bounded territory, neglecting interconnections across networks and broader processes of globalization, urbanization, and geopolitics.

This dissertation, on the urban spatial politics of climate change adaptation, is posed as a conceptual and methodological counterpoint to the dominant discourse. Exploring what I call a political ecology of design, I investigate sites and strategies in three cities, New York, Jakarta, and Rotterdam. Looking, on one level, at city and national initiatives, including Rebuild By Design in New York, the “Great Garuda” sea wall plan in Jakarta, and Rotterdam Climate Proof, my dissertation also searches out alternate narratives, the “counterplans” – including community resiliency in Brooklyn and Manhattan, and grassroots design activism in the informal “kampungs” of Jakarta – and new global/urban networks – the multiscalar, multilevel connections through which urban concepts travel, transform, and embed. I focus on the contested visions, the interrelationships of local and global, and the role of design in urban adaptation. I ask, in the face of climate change and uneven social and spatial urban development, how are contesting visions of the future produced and how do they attain power?

I ground my research in theories of sociospatial power relationships – the social production of space (Lefebvre 1991), urbanization and uneven development (Harvey 1985; Smith 1984), spatial justice (Soja 2010), and the geographies of policy mobility (Peck 2011; Roy and Ong)
I also look to theories of the interrelationships between social, ecological, and technological processes in and through cities (Bulkeley et al. 2011; Hodson and Marvin 2010).

I develop a method of urban relational analysis to study disparate yet highly interconnected sites. On one level, this is a mixed methods study of multiple design strategies across different cities, combining semi-structured interviews with field and participant observation, and spatial and visual methods. On another, I build on frameworks for a more reflexive approach to case selection and analysis (Burawoy 2003; McMichael 2000) and a relational reading of sites – each understood through the others (Amin 2004; Massey 2011; Roy 2009). In Ananya Roy’s words, “to view all cities from this particular place on the map.”

I find that, 1) in this new landscape of climate policy mobilities, urban adaptation projects, globally constituted, are reformatted by and to local urban sociospatial systems, 2) climate change motivates relationships, but plan objectives often transcend climate-specific goals, and 3) the production of alternative visions – “counterplans” – opens terrains of contestation, enabling modes of organizing and resistance to hegemonic systems. These findings emphasize the agency of marginalized urban communities, the sociopolitical role of design, and the embeddedness of climate change responses within multiple scales and levels of global urban development. They imply that planners committed to just socio-environmental outcomes engage across the range of urban scales and networks, and learn from critical social and political imaginaries and practices. I end with speculations on an insurgent, networked, urban ecological design practice.

Committee:
Lawrence J. Vale, MIT DUSP (Chair)
Gabriella Carolini, MIT DUSP
Neil Brenner, Harvard GSD
ACKNOWLEDGEMENTS

This dissertation simply would not have materialized if not for the stellar guidance of my committee members Lawrence J. Vale, Gabriella Carolini, and Neil Brenner. Beyond actively informing the progress of this research, they were continually excited about its prospects, and held firm to the notion that it should be done, and that I should be the one to do it. Gabriella inspired in me a real appreciation for scholarship. She demonstrated, through her advising and her own research, the value of careful, probing analysis especially when conducting interdisciplinary research. Neil opened my mind the first time I saw him speak, and continues to do so at an alarming rate. But besides that, I thank him for his ease and trust, unparalleled combination of intellectual acuity and generosity, and comradeship. I am especially grateful to Larry, my committee chair. He has been so committed, with such openness to ideas and experiences, including allowing me to lead him and his sons along slippery riverbanks and hair-raising traffic medians in Jakarta. I very much appreciate Larry's ability to see across points of view, to search out and make sense of the connections, and to pinpoint the interesting stories.

And there’s more, beyond simply the obviously excellent idea of asking each of them to be a part of my committee. I wonder how many PhD graduates can say that one of the more pleasurable aspects of their dissertation was the chance to bring their committee together so that they could be a part of such sterling discussion? That was what this was like.

My very deep thanks to Dian Tri Irawaty and Marco Kusumawijaya at Rujak Center for Urban Studies in Jakarta, Jill Eisenhard at the Red Hook Initiative in Brooklyn, New York, and Damaris Reyes at Good Old Lower East Side in Lower Manhattan. This dissertation owes its heart to you.

And to Barry Beagen, Ivana Lee, Ariel Sheppard, John Taylor, Etienne Turpin, Farid Rakun, Yantri Dewi, and Abdoumaliq Simone, who opened my eyes to Jakarta.

I will be forever grateful for the friendship and the deep intellectual camaraderie of each and every one of my friends and colleagues at MIT, especially Lily Pollans, Eric Chu, Linda Shi, Alpen Sheth, Alexis Schulman, Lyndsey Rolheiser, Lili Knorr, Zachary Lamb, and Hannah Teicher, who each offered invaluable feedback on this research. It constantly amazes me to see just how smartness and kindness can coexist.

And how, really, does one make it through the last year or two of something like this? My love and cheers to the dear friends who lent timely support in so many ways this last year, especially Eugenie Huang, Jen Higgins, Jacqueline Woo, Susanna Bohme, Juno Parrenas, Noah Tamarkin, An Xiao, Marc Sharifi, Jen Cox, Siobhan Burke, Irene Tung, Maya Funaro, Amanda Katz, John Bruce, and Dennis Lim.

And Tamiko Beyer. Life is messy.
My heartfelt thanks to mentors and colleagues Louise Harpman, David Turnbull, Annette Fierro, Brian McGrath, Peggy Deamer, and Matthew Robb.

And to my activist family in New York, including the folks at Audre Lorde Project, FIERCE!, and Sylvia Rivera Law Project. Your passion and dedication set the bar.

Cheers to my compatriots in the Resilient Cities Housing Initiative at MIT, and to my comrades in the Urban Theory Lab at Harvard GSD – homes away from home.

I am privileged to spend these years in the Department of Urban Studies and Planning at MIT. It has been a wonderful academic home. My thanks to all those here who have advised, inspired, and otherwise played a role in making this happen, in particular Eran Ben-Joseph, Phil Thompson, Balakrishnan Rajagopal, Bish Sanyal, Anne Spirn, Lawrence Susskind, Brent Ryan, Amy Glasmeier, Alan Berger, Xav Briggs, Tunney Lee, Phil Clay, Miho Mazereeuw, Jim Wescoat, Dayna Cunningham, Miloon Kothari, Diane Davis, and Annette Kim. And, in remembrance of JoAnn Carmin and Judy Layzer, who each pushed methodically, productively, against my sometimes less exacting nature, and made me a better researcher and a better writer. I would have liked to learn more from you. I am grateful too for the tireless efforts of Sandy Wellford, Ezra Glenn, Sandra Elliott, Karen Yegian, Janine Marchese, Duncan Kincaid, Patricia Foley, Jordan Pettis, Prudence Robinson, Bettina Urcuioli, Kirsten Greco, and Ellen Rushman.

Enthusiastic thanks to Winy Maas, who doesn’t fit into the other paragraphs, but who has inspired me in thinking the urban for a long time now.

The research in this dissertation was partly funded by the Center for International Studies, the Aga Khan Program for Islamic Architecture, the William Emerson Travel Fund, and the Harold Horowitz Research Fund, all at MIT, and by the American Institute for Indonesia Studies, and the US-Indonesia Society. Thank you immensely. I also want to thank the Harvard Program on the Study of Capitalism, the MIT Program on Environmental Governance and Sustainability, and the Lloyd and Nadine Rodwin Fellowship at MIT, all of which helped fund research projects that contributed to the intellectual foundations of this study.

I am grateful for the support of the Point Foundation throughout my doctorate.

Finally, to my parents, without whom all of this would simply not be, and my brothers.

This dissertation is for the youth of Red Hook, and the kids in the kampungs of Bukit Duri, Kampung Pulo, and Muara Baru.
# TABLE OF CONTENTS

List of Figures ................................................................................................................. 11  
List of Tables ................................................................................................................. 15  
List of Appendices ...................................................................................................... 16  

## 1 INTRODUCTION  *Contested Visions of Space and Environment* .................................. 17

Global context, problem framing, sites and strategies, discussion of methods, dissertation structure, preview of findings and implications

- Research Question ........................................................................................................ 18  
- Climate Change Challenges .......................................................................................... 19  
- Sites and Strategies ..................................................................................................... 21  
  - *New York* ........................................................................................................... 22  
  - *Jakarta* ................................................................................................................ 26  
  - *Rotterdam* ........................................................................................................... 29  
  - *Dutch Historical Threads* .................................................................................... 32  
- Plans, Counterplans, Global Networks ........................................................................ 33  
  - *Nature of Contestation* ....................................................................................... 36  
  - *Global / Urban Networks* .................................................................................... 37  
  - *Sociopolitics of Design* ....................................................................................... 37  
- Site Selection .............................................................................................................. 38  
- Methods ...................................................................................................................... 41  
- Dissertation Structure and Themes ............................................................................ 43  
- Findings and Contributions ......................................................................................... 45  
  - *Theoretical Contribution* .................................................................................... 48  
  - *Methodological Contribution* ............................................................................... 49  

## 2 THEORY  *Climate Changes Planning?* ....................................................................... 52

How do new constraints challenge and guide planning, in the context of climate change and global urbanization?

- Climate Change and Global Urbanization .................................................................... 52  
- Environment and Development .................................................................................. 53  
- Adaptation and Resilience ......................................................................................... 55  
- Social and Spatial ....................................................................................................... 59  
- Analytical Frames ....................................................................................................... 63  
  - *Production of Space* ......................................................................................... 63  
  - *Urban Political Ecology* ..................................................................................... 66
<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conceptual Mobilities</td>
<td>66</td>
</tr>
<tr>
<td>Theoretical Synthesis</td>
<td>67</td>
</tr>
<tr>
<td><strong>3 NATURE OF CONTESTATION</strong> Environment and Uneven Development</td>
<td>69</td>
</tr>
<tr>
<td>Interrelationships between environmental initiatives and uneven urban development, focusing on the nature and production of social and spatial contestation in cities</td>
<td></td>
</tr>
<tr>
<td>Urbanization, Nature, and Uneven Development</td>
<td>70</td>
</tr>
<tr>
<td>Nature and Capital</td>
<td>71</td>
</tr>
<tr>
<td>Urban Sustainability</td>
<td>73</td>
</tr>
<tr>
<td>Climate Change and Urban Ecologies</td>
<td>74</td>
</tr>
<tr>
<td>Analytical Framework</td>
<td>76</td>
</tr>
<tr>
<td>New York</td>
<td>77</td>
</tr>
<tr>
<td>Superstorm Sandy</td>
<td>82</td>
</tr>
<tr>
<td>Red Hook</td>
<td>86</td>
</tr>
<tr>
<td>Lower East Side</td>
<td>94</td>
</tr>
<tr>
<td>Rebuild By Design</td>
<td>99</td>
</tr>
<tr>
<td>Jakarta</td>
<td>104</td>
</tr>
<tr>
<td>Marginalization and Resistance: Kampungs</td>
<td>109</td>
</tr>
<tr>
<td>Kampung Activism: UPC and Ciliwung Merdeka</td>
<td>115</td>
</tr>
<tr>
<td>2007 Flood to the Great Garuda</td>
<td>121</td>
</tr>
<tr>
<td>Analysis</td>
<td>129</td>
</tr>
<tr>
<td>Marginalization and Resilience</td>
<td>132</td>
</tr>
<tr>
<td>Local Knowledge</td>
<td>134</td>
</tr>
<tr>
<td>Coalition Building</td>
<td>134</td>
</tr>
<tr>
<td><strong>4 GLOBAL / URBAN NETWORKS</strong> New Spaces of Flows?</td>
<td>137</td>
</tr>
<tr>
<td>How are large-scale adaptation plans conceptualized? Who’s behind them, and who stands to benefit?</td>
<td></td>
</tr>
<tr>
<td>Leaning From... Policy Mobilities</td>
<td>141</td>
</tr>
<tr>
<td>Policy Mobilities</td>
<td>142</td>
</tr>
<tr>
<td>“Worlding”</td>
<td>143</td>
</tr>
<tr>
<td>Transnational Climate Governance</td>
<td>144</td>
</tr>
<tr>
<td>Analytical Framework</td>
<td>145</td>
</tr>
<tr>
<td>Dutch Water Shifts</td>
<td>146</td>
</tr>
<tr>
<td>Rotterdam</td>
<td>154</td>
</tr>
<tr>
<td>Rotterdam Climate Proof</td>
<td>156</td>
</tr>
<tr>
<td>Timeline of Relevant Events in Rotterdam</td>
<td>162</td>
</tr>
<tr>
<td>Connecting City to Globe</td>
<td>163</td>
</tr>
<tr>
<td>Connecting Delta Cities</td>
<td>163</td>
</tr>
</tbody>
</table>
5 SOCIOPOLITICS OF ADAPTATION DESIGN  Plans and Counterplans ...... 184

Why do these projects take the forms that they do?

Questioning (Urban) Design ............................................................... 184
  City of Modernist Design / the Functional City ...................................... 185
  City of Social Complexity .................................................................... 187
  City of Urban Nature ........................................................................ 190
Design and Climate Change ............................................................... 192
Analytical Framework: Analyzing and Explaining Design .................... 198
Jakarta ........................................................................................................ 199
  "Great Garuda" ..................................................................................... 199
  Kampung Design Activism ................................................................. 206
New York ................................................................................................... 216
  Rebuild By Design .............................................................................. 216
  Winning Teams ................................................................................... 217
  Process and Participation .................................................................. 225
Analysis ................................................................................................... 230
  Jakarta .................................................................................................... 230
  New York ............................................................................................... 231
  An Alternative? Red Hook Initiative.................................................. 232

6 A POLITICAL ECOLOGY OF DESIGN  Syntheses and Conclusion ............ 237

An Initial Synthesis ................................................................................ 239
  Nature of Contestation ....................................................................... 240
  Global / Urban Networks ..................................................................... 242
  Sociopolitics of Adaptation Design .................................................. 244
  Theoretical Reflection ......................................................................... 246
A Political Ecology of Design ............................................................... 247
  Contestation and "Counternetworks" .................................................. 247
  Counterplans ....................................................................................... 249
On Adaptation: A Sociospatial Typology ............................................. 252
On Resilience .......................................................................................... 256
On Method: Network Formation and Reflexive Sites .......................... 259
Counter Arguments and Limitations ............................................. 262
*Case Selection and Method* ..................................................... 262
*Research Worldview* ............................................................... 263
Speculations on Insurgent Urban Landscapes ......................... 264
Towards a Theory of Urban Climate Change Adaptation Design .... 268

Appendix 1: List of Interviews Conducted .................................. 272
Appendix 2: List of Planning and Design Documents Analyzed .... 275
Appendix 3: Sample Interview Instrument .................................. 279

References Cited ......................................................................... 280
LIST OF FIGURES

Figure 1.1   Sites – New York, Jakarta, Rotterdam
Figure 1.2   Lower Manhattan in darkness, New York magazine's “The City and the Storm” issue, November 12, 2012
Figure 1.3   Rebuild By Design research phase sites
Figure 1.4   Red Hook, Brooklyn, during Superstorm Sandy
Figure 1.5   Ciliwung River at Kampung Pulo, Central Jakarta
Figure 1.6   Rendering of Jakarta NCICD “Great Garuda” masterplan
Figure 1.7   Watersquare Benthemplein, Rotterdam, June 2014
Figure 1.8   Deltas in Times of Climate Change II conference, Rotterdam, Sept. 2014
Figure 1.9a  Sites, strategies, and networks – urban regions and primary state/city-led or supported plans
Figure 1.9b  Sites, strategies, and networks – interconnections among primary actors
Figure 1.9c  Sites, strategies, and networks – alternative visions / “counterplans”
Figure 1.10  Diagram of dissertation structure
Figure 1.11  Waduk Pluit, North Jakarta, July 2013
Figure 2.1a  Adaptation strategies at various scales
Figure 2.1b  Combination of adaptation strategies
Figure 3.1   New York City and metropolitan region
Figure 3.2   Hudson River Park and Richard Meier-designed towers
Figure 3.3   Flooding during Sandy at 14th Street in Manhattan
Figure 3.4   Houses leveled by fire in the aftermath of Sandy, Breezy Point, Queens
Figure 3.5   Top 1% income share in New York City and New York State
Figure 3.6   Map of Red Hook, Brooklyn and Lower East Side, Manhattan, including Superstorm Sandy surge impact, and location of RHI and GOLES
Figure 3.7  Temporary boilers at the Red Hook Houses, Red Hook, Brooklyn, in May 2014
Figure 3.8  Red Hook Initiative, the Sunday after the storm, November 4, 2012
Figure 3.9  RHI Digital Steward Katherine Ortiz inspects networking equipment
Figure 3.10  Volunteers for Chinatown / Lower East Side community organization CAAAV distributes supplies
Figure 3.11  Cell phones charging outside GOLES’ Lower East Side office
Figure 3.12  Damaris Reyes presents at Rebuild By Design public meeting in the Lower East Side, New York
Figure 3.13  Rebuild By Design finalist teams and sites
Figure 3.14  Jakarta DKI and metropolitan region
Figure 3.15  Urban growth in Jakarta, 1976, 1989, 2004
Figure 3.16  Looking south from Medan Merdeka, July 2013
Figure 3.17  Ruins in Kota, January 2013
Figure 3.18  Kampung Bukit Duri, Jakarta, July 2013
Figure 3.19  Kampung Pulo during flood, Jakarta, July 2013
Figure 3.20  On the edge of Waduk Pluit, July 2013
Figure 3.21  “Taman Jokowi,” July 2014
Figure 3.22  Organizers from UPC and Muara Baru residents, July 2013
Figure 3.23  Map of kampungs in relation to Jakarta landmarks, and the proposed NCICD Giant Sea Wall masterplan
Figure 3.24  Ciliwung Merdeka with researchers and Bukit Duri residents, July 2013
Figure 3.25a, b  Ciliwung River at Jatinegara, Central Jakarta, 24-hour difference during a minor flood on July 22, 2013
Figure 3.26  Jakarta Coastal Defense Strategy (JCDS) diagram
Figure 3.27  National Capital Integrated Coastal Development (NCICD) / “Giant Sea Wall” plan
Figure 3.28 Photograph of Ciliwung River at the 6th International Architecture Biennale Rotterdam, June 2014

Figure 4.1 Shaun Donovan, HUD Secretary, and Melanie Schultz, Netherlands Minister of Infrastructure and the Environment, sign the MOU between the US and the Netherlands

Figure 4.2 Dutch Minister Melanie Schultz and Djoko Kirmanto, Indonesian Minister of Public Works, at the announcement of the NCICD plan

Figure 4.3 A delegation from Indonesia travels to New York and New Orleans in September 2014 to learn about adaptation projects

Figure 4.4 Map of Dutch Delta Works

Figure 4.5 Maeslant storm surge barrier, Nieuwe Waterweg, Rotterdam, Sept. 2014

Figure 4.6 Room for the River at Nijmegen

Figure 4.7 Museumpark garage, Rotterdam, June 2014

Figure 4.8 Rendering of Museumpark garage stormwater storage concept

Figure 4.9 Rotterdam city and metropolitan region

Figure 4.10 Floating pavilion, Rijnhaven, Rotterdam, June 2014

Figure 4.11 Map of cities in Connecting Delta Cities network

Figure 4.12 At the Deltas in Times of Climate Change conference, Victor Coenen (Witteveen+Bos), Robert Purba (Coordinating Ministry for Economic Affairs, Indonesia), Ad Sannen (Royal Haskoning), and Sutanto Soehodho (Deputy Governor, Jakarta DKI) discuss the NCICD masterplan, Rotterdam, September 2014

Figure 4.13 “Great Garuda” sketch hangs in the NCICD planning office, in the Indonesian Ministry of Public Works building, July 2014

Figure 4.14 Rebuild By Design presentation boards exhibited at the 6th International Architecture Biennale Rotterdam, titled “Urban By Nature,” June 2014

Figure 4.15a “Static” diagram of national and subnational relationships

Figure 4.15b Relational diagram of global-urban networks

Figure 5.1 Rendering of Jakarta NCICD / “Giant Sea Wall” masterplan

Figure 5.2 “Great Garuda” sketch
Figure 5.3  NCICD masterplan showing retention ponds (directly below the “wings”) and water management systems

Figure 5.4  Houses in Muara Baru, on the edge of Waduk Pluit, July 2014

Figure 5.5  Bukit Duri houses perched at the edge of the Ciliwung River, July 2014

Figure 5.6  UPC’s participatory design concept for a new kampung typology at Muara Baru, exhibited at the Jakarta Vertical Kampung exhibition at the Dutch Embassy in Jakarta, July 2013

Figure 5.7  Ciliwung Merdeka’s design for a “humanitarian vertical kampung,” exhibited at the Jakarta Vertical Kampung exhibition at the Dutch Embassy in Jakarta, July 2013

Figure 5.8  Detail of Ciliwung Merdeka’s “humanitarian vertical kampung”

Figure 5.9  Architect Yuli Kusworo of Arkom leads design session with Muara Baru kampung residents, July 2013

Figure 5.10  Stren Kali upgrading project in progress in Surabaya, July 2014

Figure 5.11  Rendering of “The Big U” at the south tip of Manhattan by BIG team

Figure 5.12  Aerial rendering of “Living with the Bay” proposal by the Interboro team

Figure 5.13  Concept drawing of “New Meadowlands” proposal by MIT CAU + ZUS + URBANISTEN team

Figure 5.14  Rendering of “Resist, Delay, Store, Discharge” plan for Hoboken

Figure 5.15  Aerial rendering of “Hunts Point Lifelines,” South Bronx, proposal by PennDesign/OLIN team

Figure 5.16  Rendering of “Living Breakwaters” proposal by SCAPE team

Figure 5.17  Red Hook Initiative, March 2010

Figure 5.18  Red Hook Initiative during Sandy recovery

Figure 6.1  Henk Ovink explains what we all think of Sandy at Deltas in Times of Climate Change II conference, Rotterdam, September 2014

Figure 6.2  A social-spatial typology of coastal urban adaptation strategies

Figure 6.3a  “Standard” conceptual diagram of urban/landscape design

Figure 6.3b  Extended conceptual diagram of urban/landscape design, connected to local social relationships and global networks
### LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 2.1</td>
<td>Lefebvre’s conceptual triad in <em>The Production of Space</em></td>
</tr>
<tr>
<td>Table 4.1</td>
<td>Table of Actors in Rebuild By Design and Jakarta NCICD Masterplan</td>
</tr>
<tr>
<td>Table 6.1</td>
<td>Theory, findings, and implications</td>
</tr>
<tr>
<td>Table 6.2</td>
<td>Synthesis of plans, counterplans, and connections</td>
</tr>
</tbody>
</table>
LIST OF APPENDICES

Appendix 1  List of Interviews Conducted by Author
Appendix 2  List of Planning and Design Documents Analyzed
Appendix 3  Sample Interview Instrument
1 INTRODUCTION

Contested Visions of Space and Environment

From the eastern seaboard of the United States to coastal cities in Southeast Asia, severe weather events and long-term climate impacts challenge how we live and work. As the debates over cities, planning, and climate change intensify, governments are proposing ambitious plans to respond to climate impacts. These involve extensive reconfigurations of built and "natural" environments, and massive economic resources. They promise "ecological security," that is, safety from climate impacts, and the perpetuation of capitalist growth. Yet they often involve intractable social questions, including decisions about how, who, and what to protect on sites that are home to already marginalized urban residents.

Scholarship on urban adaptation planning has not yet taken adequate account of the disparate contexts in which these new adaptation projects are taking place. It has tended to reinforce divisions between social and spatial, drawing a line between designed and engineered solutions, and sociopolitical measures centered on governance challenges and on-the-ground community responses. It has also assumed urban politics to be contained and cohesive, with large-set city surveys missing the real life politics on the ground, and in-depth case studies underplaying broader links and processes. And it has relied on static conceptualizations of the city as a bounded territory, neglecting interconnections across regional and global networks and associated processes of urbanization.

My dissertation is posed as a counterpoint to these dominant discussions. I explore what I call a political ecology of design – the urban spatial politics of climate change adaptation. I
investigate sites and strategies in three cities, New York, Jakarta, and Rotterdam. Looking, on
one level, at city and national initiatives, including Rebuild By Design in New York, the Giant
Sea Wall masterplan in Jakarta, and Rotterdam Climate Proof, my study also searches out
alternate narratives – the “counterplans,” including community resiliency in New York, and
grassroots design activism in the informal “kampungs” of Jakarta – and new global/urban
networks – the multiscalar, multilevel connections through which urban concepts travel,
transform, and embed.

Research Question
In the face of climate change and uneven social and spatial urban development, how are
contesting visions of the future produced and how do they attain power?

In order to address the main question, which deals in an interrelated manner with politics,
environment, space, and design practice, I probe a set of topics that can be more directly
disentangled and analyzed: the dynamics of contestation, the making of the visions themselves,
and the ways in which these visions are legitimized. First, I explore the making of social and
spatial marginalization, particularly in the context of climate change and the environmental
initiatives produced in response. Second, I look at the new global landscape of design and policy-
making, particularly the interconnectedness of local and global relationships. And third, I look at
the role of design in the making of contesting visions.
Climate Change Challenges

The impacts of climate change – including storm surges, sea level rise and coastal flooding, heatwaves, and drought – present a number of key risks to urban centers. These include: health impacts and disrupted livelihoods in low-lying coastal zones due to storm surges, coastal flooding, and sea level rise; the breakdown of infrastructure networks and critical services due to extreme weather events; mortality and morbidity during periods of extreme heat, particularly for vulnerable urban populations; and food insecurity linked to warming, drought, flooding, and precipitation variability and extremes, particularly for poorer populations (IPCC 2013).

Climate change poses particular challenges for urban planning and design. It relies on systems of knowledge that are scientific, and often constituted at a global scale. In Sheila Jasanoff's words, “Climate change... tends to separate the epistemic from the normative, divorcing is from ought... it detaches global fact from local value” (2010, 236). It takes place on spatial and temporal scales that are far beyond the traditional scope of planning and design. For historian Dipesh Chakrabarty, climate change forces us to reconsider the concept of history. “The geologic now of the Anthropocene has become entangled with the now of human history” (2009, 212). And, it necessarily dwells in uncertainty, where decisions with long-term consequences have to be made on the basis of incomplete information,¹ present day expenses necessary to forestall the probability of future threats. In effect, climate change denies planning practice its traditional, core modes and methods.

¹ See, for example, the European Climate Adaptation Platform: [Necessary for] “decisions with potentially long term consequences on the basis of incomplete knowledge and uncertain information” (Climate-ADAPT n.d.).
These challenges have motivated what I consider to be central issues in responding to climate change. First, these are global-scale problems, with local impact, involving a complex array of entities and interconnections. Nation states take part in international, multilateral climate negotiations like the UN Framework Convention on Climate Change (UNFCCC), receiving input from a global scientific body, the Intergovernmental Panel on Climate Change (IPCC). At the same time, local governments (mostly municipal, some regional entities) learn, share, and influence through city-to-city networks such as C40 Cities, ICLEI Local Governments for Sustainability, and the Rockefeller Foundation’s 100 Resilient Cities, all interrelated in a complex and shifting system of “multilevel governance” (Bulkeley and Betsill 2005, 2013). In addition, governmental agencies such the US Agency for International Development (USAID), nongovernmental groups including philanthropic organizations such as the Rockefeller Foundation, lending institutions like the World Bank, and environmental advocacy groups all play their roles at each of these scales and levels. What are the effective and appropriate scales of policy and action?

Second, we also see what might be called the “metropolitanization” of climate change (Hodson and Marvin 2010), where cities, as such, are viewed as a large part of the problem and a necessary part of the solution (Reid and Satterthwaite 2007; C. Rosenzweig et al. 2010). This assertion is usually couched within the oft-stated statistics that 50% of the world’s population now lives in cities, responsible for 70% of emissions, etc. City managers and urban researchers rush to find ways to “climate proof” (Knowledge for Climate 2012) or “future proof” cities (Godfrey and Savage 2012).

Third, initiatives in economic development and environment, classically at odds, are increasingly intertwined. The stated embrace of environmental issues by institutions such as the
World Bank (2012), concerned about the impact of climate change on economic development, is paralleled by an increase in the marketization of environmental initiatives, what critics call the "neoliberalization of nature" (Castree 2008a, 2008b; Heynen and Robbins 2005). We now routinely hear terms like "urban vulnerability" employed in discussions of economic competitiveness (Hodson and Marvin 2010).

My research is on the intersection of these debates.

Sites & Strategies

Figure 1.1. Sites – New York, Jakarta, Rotterdam. By author using NASA base image
New York

On October 29, 2012, Superstorm Sandy hit the New York City region. 53 people died, with early forecasts of $18 billion in economic loses. But beyond the sheer death toll and financial loses, the impact on the Sandy-affected region was a watershed moment. Coming one year on the heels of Hurricane Irene, Sandy cemented in municipal and popular imagination the vulnerability of the metropolitan region. Images of a darkened lower Manhattan (taken by architectural photographer Iwan Baan on the cover of New York magazine in a story as mythic as the image – see Figure 1.2), rows of houses destroyed by fire in the Rockaways, cars floating in underground parking lots turned into pools, devastation rarely seen in Bloomberg-era New York, tuned public attention to the issue, and as well galvanized city leaders, urban designers, and climate scientists who were already increasingly aware of the situation.

In fact, New York City had already formed a Climate Change Adaptation Task Force in 2008, part of PlaNYC, the city’s sustainability plan (NYC 2007; NPCC 2010). In 2010, two years before Sandy, the Museum of Modern Art hosted the high profile Rising Currents exhibition, showcasing architectural and urban design strategies for the New York harbor area, in response to sea level rise. Post-Sandy, this institutional and cultural foundation was further reinforced with the formation of President Obama’s Hurricane Sandy Rebuilding Task Force, led by the US Department of Housing and Urban Development (HUD), and New York State Governor Andrew Cuomo’s NYS 2100 Commission (see HSRTF 2013, and NYS 2100 Commission 2013). Beyond the institutional context, these efforts brought specific highly influential individuals such as HUD Secretary Shaun Donovan and Rockefeller Foundation


\[3\] http://www.moma.org/explore/inside_out/category/rising-currents
President Judith Rodin to aligned objectives in the Sandy affected region.

Figure 1.2. Lower Manhattan in darkness, *New York* magazine’s “The City and the Storm” issue, November 12, 2012.

This confluence of factors focused climate change-focused design in New York in a distinct and innovative way. In June 2013, the Hurricane Sandy Rebuilding Task Force launched Rebuild By Design, a design competition that commanded federal and local political attention, and included Dutch spatial planning leadership, New York-based climate expertise, and high profile philanthropic attention. Competition organizers, tasked with finding “innovative,

4 http://www.rebuildbydesign.org/
implementable proposals that promote resilience in the Sandy-affected region" (Rebuild By Design 2013) selected ten multidisciplinary, designer-led teams to conduct research and produce proposals, working with localities in New York, New Jersey, and Connecticut (Figure 1.3). Six winning teams and projects were announced in June 2014, just one year later, with $930 million in federal rebuilding funds allocated through Community Development Block Grants - Disaster Recovery (CDBG-DR) grants.

Figure 1.3. Rebuild By Design research phase sites. Source: Rebuild By Design

At the same time, Sandy exposed the unevenness of vulnerability in the urban region, what researchers have called a “tale of two Sandys” (Superstorm Research Lab 2013). Systemic
inequities related to poverty, joblessness, and access to housing and services in the city were accentuated in the aftermath of the storm. But the immediate post-Sandy period also illustrated the ways in which community social relationships might be linked to broader environmental resilience. In places like Red Hook, Brooklyn (Figure 1.4), and the Lower East Side, Manhattan – both coastal and low-lying, with substantial populations of low-income residents in public housing – community organizations such as the Red Hook Initiative and Good Old Lower East Side played key roles, and indeed often led the way, in post-storm recovery efforts. These organizations’ work stressed the importance of long-term community building, as well as the potential of coordinated social media and community-based technology initiatives. These ground-up initiatives – alternative ways of thinking – run in parallel to the large-scale plans, and are alternately ignored, paid lip service, sometimes suitably engaged by them.

Figure 1.4. Red Hook, Brooklyn, during Superstorm Sandy. Photo by Jade Doskow via New York Observer / GalleristNY
Jakarta

Jakarta, the capital city of Indonesia, is particularly susceptible to floods, with severe inundations in 1996, 2002, and 2007. In January 2013, massive floods again hit the city, claiming at least 30 lives and displacing tens of thousands. The floods, caused by heavy rains but exacerbated by a breached flood canal, captivated a global audience as prominent landmarks such as the Bunderan HI (Hotel Indonesia roundabout) were subsumed under water. The events again called attention to the predicament of the city, considered one of the most vulnerable to climate change, and for which the history of frequent and severe floods is predicted to worsen to catastrophic conditions in the coming decades.

The floods highlighted the city’s failing infrastructure, and the plight of residents, particularly those living in the informal kampung settlements along the city’s thirteen rivers. Jakarta’s predicament, epitomized by the notorious Ciliwung River (Figure 1.5), became a cause célèbre of sorts, and precipitated a surge of action. City governor Joko Widodo, newly elected, popular and populist, promised change, and enlisted the help of the South Korean government and engineering conglomerates to envision the future of the Ciliwung. Ongoing river dredging and “normalization” projects by the World Bank and Japanese technical cooperation agency JICA took on renewed urgency. Beyond the infrastructural works, the problem commanded broader attention from international experts. Scientists from the Singapore-ETH Center sent drones down the river to capture point cloud data for three-dimensional hydrological models. World-renowned architects joined efforts to design ambitious “vertical kampungs.”
But the most eye-opening response appeared more than a year later, in April 2014. On a visit to Jakarta, Melanie Schultz, the Netherlands minister for infrastructure and the environment, announced the draft masterplan for a massive new sea wall project, developed by Dutch consulting firms. Officially named the National Capital Integrated Coastal Development (NCICD) masterplan, it is colloquially known as the Giant Sea Wall. From the air it resembles the Great Garuda, the mythical bird that is Indonesia’s national symbol (Figure 1.6). It is itself a new city for 1.5 million people built on landfill right in the Jakarta Bay. In addition to addressing flooding, the plan promises to ease congestion, function as a fresh water reservoir, and provide a new central business district.

Figure 1.5. Ciliwung River at Kampung Pulo, Central Jakarta. Photograph by author
On the ground, far from the meeting rooms in which teams of international consultants – engineers, designers, economic planners, politicians, trade specialists – met with city and national leaders, kampung activists were fighting to keep their homes. The dredging and normalization projects entail the eviction of poor urban residents from settlements along coastlines and river edges, throwing thousands into an uncertain near future. In some of the threatened kampung areas, some of the urban poor, led by community advocacy organizations such as Ciliwung Merdeka and the Urban Poor Consortium (UPC), have resisted, organizing and proposing “counterplans” to business-as-usual relocation efforts. These kampung design activism efforts are locally specific, but they are indicative of a broader program of grassroots social and spatial movements in the region.
Rotterdam

In September 2014, the second “Deltas in Times of Climate Change” conference was held in Rotterdam, the Netherlands. It was jointly organized and hosted by the Netherlands government, the Dutch Knowledge for Climate research program, the Rotterdam climate program, and C40 Cities. In one room, Henk Ovink, principal of Rebuild By Design, and previously director of spatial planning and water affairs in the Netherlands Ministry of Infrastructure and Environment, moderated a panel on cross-sector collaborations with panelists from the New York-based Municipal Arts Society, the US Department of Housing and Urban Development, New Orleans-based Waggonner and Ball Architects, and the Netherlands Ministry of Infrastructure and the Environment. In another room, Paul van Koppen of the Netherlands Water Partnership chaired a series of presentations by senior Indonesian government officials and the Dutch project leaders of the Jakarta NCICD masterplan. In booths in the main gathering area, Dutch environmental agencies showcased their pedigree of delta and water management in the country, and Netherlands-based private infrastructure, engineering, and project management firms touted their work in far-flung reaches of the globe. Outside the conference halls, Dutch officials led tours of projects around the city including large-scale infrastructure like the Maeslant storm surge barrier and small-scale urban interventions like “water squares” (Figure 1.7).
Even a cursory study reveals the deep engagement of the Netherlands with climate change-oriented initiatives in New York, Jakarta, and beyond. In New York, in addition to Ovink's position on the leadership team of Rebuild By Design, six out of the ten finalist teams participating in the competition include Dutch design and engineering expertise. In Jakarta, the NCICD masterplan is being conducted with Netherlands government funding, and authored by Dutch infrastructure and engineering firms, urban designers and landscape architects, and economic development specialists. On one level this is not so surprising. The Netherlands has long been held as a beacon for spatial planning and water management – epitomized by large-scale national projects such as the Delta Works – and has a history of global, international engagements that span trade relationships to colonialism.
However, in recent decades, two factors—economic restructuring and climate change—have been changing the Dutch sociospatial and policy landscape. Economic liberalization has led to initiatives to decentralize decision-making and embrace more market-driven approaches to spatial planning and development. In 2008, the effects of the global financial crisis reached the Netherlands, the impacts of which are very much still being felt throughout the country today. Also in 2008, a new Delta Commission was charged with long-term safety against climate change. In addition to proposing to increase flood protections of diked areas, the commission recommended more flexible responses, including “Room for the River,” a program to allow occasional localized river flooding. This new approach to “building with nature” is at once technocratic and ecological, a self-described “paradigm shift” in Dutch environmental planning.

So, on one level, many environmental projects are now being conceived on a city, or local, scale. Rotterdam has developed an ambitious climate adaptation program, and promotes itself as a model. City officials tout pilot projects, including car garages with stormwater storage, floating districts, and “water squares” – recreational spaces that also protect against flooding from cloudbursts. On another level, there is an outward shift, a focus on international relationships. Connecting Delta Cities, a program initiated and coordinated by the Rotterdam Climate Initiative within the C40 network, promotes cooperation and knowledge sharing among ten coastal cities. The Rotterdam program helps organize conferences, such as the one in September 2014, at which Dutch climate and water agencies and major engineering and infrastructure firms are able to meet with delegations from other countries (Figure 1.8).
Of course, the Dutch connection in both New York City and Jakarta long predate contemporary efforts at water planning and management. Both cities served formative periods as Dutch colonial settlements – New York as Nieuw-Amsterdam in 1624 (Blom 2010), Jakarta as Batavia in 1619 (Grijns and Nas 2000). Jakarta, like its colonial city peers, continues to bear the physical, social, and institutional marks of colonization. It is not an accident that in the so-called Dutch “Golden Age” of the 17th Century – an era of accelerated urbanization and reclamation in the low-countries – coincided with the rise of Dutch colonialism worldwide. My study is concerned not so much with the historical stories or artifacts, but the ways in which present-day relationships in each of these places are related to a broader and longer trajectory of Dutch
landscape order and pragmatism and outward-looking internationalism,\textsuperscript{5} born of collective threat and trust in the state.

**Plans, Counterplans, Global Networks**

The environmental initiatives just outlined represent differing, often contesting, visions in response to social and environmental challenges, often with oppositional priorities, methods, and objectives. They bring to light institutional power relationships, international relations, histories and geographies of marginalization, systemic oppressions of class and/or race, and the political economy of place – urban spatial politics, in a new context of global environmental change. They also indicate a new type of global interconnectedness in policy and design responses to climate change, in which networks of urban, national, and transnational entities work at multiple scales and levels to produce visions of urban futures. In the sense that these visions of the future are often contested, and represent alternatives in relation to local and global power structures, they might be seen as well as acts of domination or consolidation, and resistance – plans and counterplans in the context of climate change. How do planners make sense of these contradictions in urban responses to climate change?

\textsuperscript{5} Pragmatism evident, for example, in this statement by the Delta Works Online foundation, “Understandably, a number of nature reserves were irreparably damaged, but as compensation, new nature reserves have emerged at different sites” (2014).
Figure 1.9a. Sites, strategies, and networks – urban regions and primary state/city-led or supported plans. Diagram by author

Figure 1.9b. Sites, strategies, and networks – interconnections among primary plan actors
On the surface New York, Jakarta, and Rotterdam seem like disparate sites—confronting sometimes similar risks, but with radically different sociopolitical, economic, and spatial contexts. Yet, they are interconnected in more ways than one would necessarily expect (Figures 1.9a, b, and c). It’s a bit of a trope in urban planning to claim that one’s object of analysis is complex—everything is complex. But in this case, the way we research and practice—our disciplines, fields, and inherited methods—might actually be impeding our possibility to really understand what is going on. Cities like New York, not necessarily lacking in financial or governance capacity, or those like Jakarta, frequently cited as lacking effective governance, but with avenues for intense growth and private investment, present new and fast-moving scenarios for this scholarship. The role of countries like the Netherlands, present across this interrelated set of stories, and of new
global institutions and networks, in the making of adaptation plans in various locales around the world, also demand attention.

The complexities of the strategies and sites, local and global conditions, the interconnections and place-based contestation, all bring up a set of intertwined problems: the need to analyze power relationships locally and regionally, and globally, across national boundaries; the mechanisms and processes of urban planning and design, and those of concept mobilities, the way ideas move and transform; and the ways in which the production of images gives legitimacy and power. To do this, I conduct an analysis based on three broad, crosscutting topics that span the sites and strategies. In accordance with the framing of the problem, each topic is multi-sited, multiscalar, and multilevel. They are: the nature of contestation in the context of urban climate change adaptation; the global and urban networks through which ideas, influence, and capital flow and projects coalesce; and the sociopolitics of designing for climate change adaptation.

*Nature of Contestation*

Urban centers have always been sites of contestation, in which unequal power relationships and systemic oppressions play out spatially, and over time. A key mode of this contestation is socio-environmental. Environmental initiatives in cities have often been presented in an uneasy, and contradictory, relationship with urban development – witness, for example, zoning codes for light and air, urban growth boundaries, and preservation areas. These days, the challenges and opportunities from climate change-related environmental threats to cities have unearthed new terrains of contestation. In this dissertation, I explore the ways in which the specific histories of recent economic, political, and environmental processes and events have affected social and
spatial stratification and marginalization. To what extent are these more recent events, in the context of climate change and late 20th Century / early 21st Century urbanization and globalization, different from the historical processes of such urban centers in the past?

**Global / Urban Networks**

Research on planning and policymaking has often been delimited by specific territorial scales and entities – the country, city, region... Indeed, urban-focused social science research and comparative urban studies often demand such constraints. With accelerated globalization and what is often asserted as the diminished importance of national borders, and the rise of institutional, global networks of cities (C40 Cities, for example), questions arise about the relationship between national policy and urban development, as well as the mobility of planning ideas across transnational and city-to-city networks. This study focuses on the new global geographies of climate change planning, in particular the global-urban networks that enable interrelationships across scales and levels. In particular, I look at the increasing role of Dutch government agencies, nongovernmental entities, and private firms in the making of urban adaptation plans around the world.

**Sociopolitics of Design**

The issue of design in climate change adaptation research has been neglected. But design – urban, landscape, architectural, and infrastructural – can often be the platform through which contesting spatial agendas are visualized and prioritized. This is crucial given the difficult choices that initiatives to adapt necessarily bring up. Design offers visions of alternate futures, and can play a key role in the making and disseminating of adaptation planning. Not only showing the
desired physical outcomes, the marshaling of design as well exposes the sociopolitical motivations and fault lines behind power relationships in cities. This research looks into the sociopolitical dimension of design in the production and legitimization of adaptation plans. I explore the actors and institutions, concepts and ideas, and motivations across the sites and strategies. I focus, in particular, on the ways in which design is itself a mode of contestation.

**Site Selection**

Each of these sites might present itself as a critical case.

In New York City, Rebuild By Design represents a major milestone. It is high profile – disasters in New York, rightly or wrongly, take up an outsize share of the global imagination. Its initial phases are funded and backed by the Rockefeller Foundation, a powerful global nonprofit setting the agenda for urban resilience around the world. In the US context, it is notable as an environmental initiative using public, federal funds for climate change projects. It is also innovative in its use of the competition format. This format is now being used in, or has inspired, a number of significant initiatives (all of which involve the Rockefeller Foundation):

- The Changing Course competition in New Orleans.

- The National Disaster Resilience Competition, announced by President Barack Obama in June 2014, inviting localities that have been impacted by disasters to compete for almost $1 billion in federal CDBG-DR funds, “building on the successful model set forth by HUD’s Rebuild by Design competition” (White House 2014).
The Global Resilience Partnership, launched in September 2014 by the Rockefeller Foundation, joined by the US Agency for International Development (USAID) and the Swedish International Development Cooperation Agency (Sida), inviting teams to propose resiliency projects in the Sahel, Horn of Africa, South Asia, and Southeast Asia (Rockefeller Foundation 2014b).

In Jakarta, the NCICD Giant Sea Wall masterplan is likely one of the largest municipally and nationally-approved and supported urban adaptation projects. It is one in which the symbolic nature of the project rivals its infrastructural ambitions. It is also critical in that Jakarta poses possibly one of the worst-case scenarios for the confluence of rapid urbanization, environmental degradation, and urban inequality – making it, unglamorously, a testing site for an urban future that confronts many cities around the world. The organizational and financing structure of the NCICD masterplan, while not unique, is notable when seen in conjunction with the ambition of the project. The masterplanning is being funded the Dutch government, produced by Dutch private firms and research institutions, while the implementation will rely on very large private real estate investments. This case provides a prime example of how more cities confronting climate risks will likely choose to proceed, in a global context in which the disparate power of colonial and postcolonial relationships still matter, and privatized urban development is often seen as the preferred and sometimes only means to get things done.

Rotterdam, certainly, is different. New York City and Jakarta, on the face of it quite dissimilar, are both large, dense, socially and economically diverse urban agglomerations. They are both cities within significant urban regions, with associated administrative and environmental incongruities – city(ies) and watershed(s) unaligned. Both are undertaking significant adaptation
plans in response to a set of recent disasters. Rotterdam is the key city in the key country when it comes to models for urban, spatial planning in response to environmental change. Its role in convening international forums like Connecting Delta Cities, and its centrality as a place in which, 1) design concepts for adaptation are implemented, and through which, 2) the actors involved in such implementation bring such concepts to other sites like New York and Jakarta, make Rotterdam a critical site.

There is, as well, the more general issue of specific, and heightened, risks to large coastal cities (Aerts et al. 2012; Hallegate et al. 2013; McGranahan, Balk, and Anderson 2007).

While each of these sites and sets of strategies is noteworthy as a case in and of itself, the interrelationships between them are critical to understanding what’s going on. It is clichéd to say we live in an increasingly global and interconnected world. But it is imperative to state that none of these adaptation initiatives happen in a vacuum, in bounded time and space. The initiatives in New York, Jakarta, and Rotterdam form particularly critical network relationships, in part because of each site’s prominence, but also because of the nature of the network itself. New York and Jakarta are commonly referred to in a set of very large urban regions, although in different ways. New York is often seen as a “command-and-control’ global city (along with London and Tokyo), and Jakarta as a quintessential megacity (along with so many others, including Mexico City, Lagos, Bangkok, Dhaka, Mumbai…). Rotterdam is an emerging example of a “modeling,” outward-oriented city (accompanied on this stage by Singapore, perhaps as well by Curitiba in Brazil). This is one particular set of sites and strategies, but it represents a network formation

---

6 Saskia Sassen’s (1991) classic triplet.
7 In the development studies formulation – not just about scale, but based on certain often alarmist assumptions about population growth, informality, and deficiencies in governance (see, for example, Fuchs et al 1994).
that, in my view, will increasingly be the kind we see in global and urban initiatives in response to various manners of environmental threats, including climate change.

Methods

I investigate sites and strategies in three cities. The unit of analysis is the design strategy – within and beyond the city. New York and Jakarta are the primary sites, in which I focus on contested visions, the plans and counterplans. Rotterdam functions as a reflexive site – the site itself, and the relationship between this site and the other two sites, illuminating and sharpening the analysis of strategies in each of the three sites, and the comprehension of the whole.

In essence a mixed methods, multiple case study, I combine semi-structured interviews with field and participant observation, document analysis, and spatial and visual methods. I conducted field visits between January 2013 and May 2015, with primary field visits to Indonesia in Summer 2013 and Summer 2014, to the Netherlands in Summer and Fall 2014, and numerous shorter field visits to New York City and Washington DC between Summer 2014 and Spring 2015. I conducted approximately forty-five in-depth semi-structured interviews across the sites (Appendix 1), and numerous informal interviews, including with residents of informal settlements in Jakarta, public housing residents in New York, participants in and around Rebuild By Design, and designers and water management officials in the Netherlands. I reviewed approximately thirty-five planning and design documents for strategies across the three sites (Appendix 2).

In terms of a multi-site, multi-strategy study, I build on frameworks for a more reflexive approach to case selection and analysis (Burawoy 1998, 2003; McMichael 2000) and a relational
reading of sites – each understood through the others (Amin 2004; Massey 2011; Roy 2009). In Ananya Roy’s words, “to view all cities from this particular place on the map” (2009, 822, italics in the original). This involves, in essence, 1) sites and strategies observed and analyzed in relation to – and not in comparison with – each other; 2) “cases,” as such, considered not as place-bound entities but as a set of sites, documents, actors, and actions that span space and time; and 3) variables explored not as static units, but in terms of how they might be affected by actors and processes in other sites. I also look to methods that relate biophysical materiality and environmental processes with social processes, including Anne Rademacher’s work on the ethnographies of waterscapes and cultural change, in pursuing an understanding of what she has termed the “social ideas and practices of urban ecology” (2011, 15).

At its core, my approach is an analysis of power – extending from Marx’s method of political economy, and perhaps more concretely operationalized by proponents of radical planning, most of which build on John Friedmann’s (1987) “transformative theory” (Beard 2003; Friedmann 1993; Miraftab 2009; Sandercock 2004, 2006; Yiftachel, 2006), and urban political ecology (Gandy 2002; Heynen, Kaika, and Swyngedouw 2006; Kaika 2005; Keil 2003). In terms of what is being measured and observed: the dependent variable is the extent to which design strategies gain power – both plans and counterplans – relative to their position to societal power structures. The independent variables are the modes and methods of contestation and organizing that enable strategies to gain power.
Dissertation Structure and Themes

Chapter 1, this chapter, introduces the context, problem, and the sites and strategies. It summarizes the primary topics, sites and strategies investigated, methods, and contributions.

Chapter 2 details the contexts and theoretical foundations of the issues and topics addressed, including climate change and global urbanization, environment and development, adaptation and resilience, and the social and spatial aspects of urban adaptation. It also reviews the analytical frames through which I investigate the question at hand, including the production of space, urban political ecology, and concept mobilities. The next three chapters look at, in sequence, the three broad topics of the dissertation. Chapter 3 explores the nature of contestation in New York and Jakarta. Chapter 4 concerns the new global geographies of climate change planning, in particular new global-urban networks and the role of Dutch government agencies, nongovernmental entities, and private firms. Chapter 5 looks into the issue of design in the production and legitimization of adaptation plans. Chapter 6 offers a synthesis and conclusion. I reconsider the interrelationships between both the strategies and sites and bring the three broad topics back together in order to answer the question about contested visions and urban futures. I discuss the issue of resilience, and elaborate on the methodological and theoretical ramifications of looking relationally at the sites and strategies. And I propose a sociospatial typology of adaptation, and speculate on a practice of “insurgent urban landscapes.”
Figure 1.10. Diagram of dissertation structure
Findings and Contributions

At base, the intellectual core of this dissertation is centered on a framework of the social production of space (Lefebvre 1991) tuned towards environmental design, policy, and planning in the context of global urbanization and climate change. Lefebvre’s concepts enable us to explore the making of plans in spaces that are simultaneously “real” (physical), political (of contestation and power), and imagined (envisioned, projective).¹

In my analysis of the three crosscutting topics – the nature of contestation in cities, the global and urban networks; and the sociopolitics of design for urban adaptation – I make the following findings.

First, urban-natural environments have long been sites of contestation, with urban social and ecological change co-determined and produced. In this context, I find that the dominant, state-led and supported, “top-down” environmental plans, even though often planned within national and municipal agencies/institutions and partnerships that are globally-linked and oriented, tend to be reformatted by and to the sociospatial and economic systems in which they are embedded. In other words, “global” values and objectives (if there are such things at all) recursively transform as they embed in “local” places. For the counterplans, a number of key factors appear in common across the sites, including the link between the condition of marginalization and social and environmental resilience, the criticality of local knowledge, and the potential of broad-based coalitions.

¹ See Chapter 2 for more elaboration on this.
Second, in exploring the new geographies of concept\(^2\) mobilities, I find that global, national, and urban scales are increasingly intertwined, with new institutions and frameworks of connectivity – at various scales – creating links between policies, practices, and interventions through the range of urban and global scales. These interconnections form multiscalar, multilevel networks through which ideas, influence, and capital flow. These networks are empowered – conferred further reach and influence – by colonial and postcolonial histories, the inherited conventions of global development, and, now, the imperatives of climate change.

Third, in exploring further how these plans and counterplans are produced, and examining the ways through which certain ideas and visions gain legitimacy and power, I find that design assumes multivalency, able to take on a variety of guises. Design is simultaneously process, practice, and outcome. In this way, design is able to connect the pragmatic and emotional, bridge social and spatial, and to take on that space of contestation. Design is political, a means of establishing hegemony, and a means of resistance. The builders of statehood and empire, of course, have long known this (see Vale 1992). But the inchoate inverse, so to speak – design as a mode and process of resistance – deserves further accentuation.

From these findings, I draw a broad synthesis of three primary points. First, in this new landscape of climate policy mobilities, urban adaptation projects, globally constituted, are embedded within, reflect, and are reformatted by existing urban sociospatial systems. In each of the sites, the dominant, state-led (or state-supported), “top-down” plans generally conform to modes of urban development, constitution of market forces, levels of governance, cohesion of climate policies, and patterns of institutionalized community participation. Second, climate change motivates relationships and plans, but plan objectives often transcend climate-specific

\(^2\) A better word, in this situation, than the oft-used “policy.”
goals. Climate, in fact, exposes and enhances motivations and contradictions in existing global relationships. It also facilitates new avenues for capital exchange and accumulation. And, third, the production of alternative visions of the future – the “counterplans” – opens terrains of contestation, enabling modes of organizing and resistance to hegemonic systems.

In each of the sites, the dominant climate plans are formed differently to account for structures of governance and modes of development. The counterplans too take different forms. In New York, the imaginaries and practices of community organizations offer localized, community-specific approaches to social and environmental resilience – not so much a direct substitute to the “big plan,” but ways of conceiving resilience that emphasize the agency and voice of their constituents. In Jakarta, confronting myriad direct and diffuse threats, kampung activists developed innovative coalitions and tools to produce social and spatial form alternatives to “business as usual” in an entrenched top-down system, to forge new platforms for organizing and negotiation.

In each of the sites, the counterplans envision transformative social and spatial change as part of environmental resilience.

These findings emphasize the agency of marginalized urban communities, the sociopolitical role of design, and the embeddedness of climate change responses within multiple scales and levels of global urban development. They imply that planners committed to just socio-environmental outcomes engage across the range of urban scales and networks, and learn from critical social and political imaginaries and practices.
Theoretical Contribution

In terms of the fields of planning and design, this research engages environmental planning, urban design, landscape architecture, international development, and planning theory more broadly. More specifically, the research makes the following theoretical interventions:

1. *Bringing an urban theory framework to understanding urban landscapes.* So far, there has been a lack of relationship between what is essentially a way of understanding and a way of doing. The urban political ecology literature, which does take seriously urban theory, offers us critical understanding of society and nature, and urban socio-ecological change. But it generally does not account for the specific modes and methods of making urban landscapes, something of keen importance to urban planning and design. Conversely, ecological urbanism and landscape architecture, driven by design theories and methods and concepts in practice, are often not sufficiently connected to the critical lineage of urban theory. Establishing this relationship not only brings an urban historical and political knowledge to the making of urban landscapes, it also enables more effective and meaningful connections to broader fields of relevant theory, for example, to sociology, anthropology, political science, and development studies.

2. *Linking local resistance and global relationships.* There has been a massive amount of studies of globalization, from the most critical approaches to those that tend to the apolitical. There has been similarly extensive attention to the issue of local resistance and contestation. This research is deliberately situated at the intersection, a much less trodden space. Part of this research contributes to the growing importance of relational urban analysis, paying attention not only to the movement and the stasis, but also to the interpenetrations and transformations of both. Concretely, this is tuned to the ways in
which global multiscalar, multilevel networks inform and transform these so-called “local” movements of resistance. Although scholars like Ananya Roy have extensively explored these ideas, there is still much room for empirical research that lays claim to and exposes these links. This research is particularly important to a critical assessment of two fields of practice in planning: (globalized) urban development and international development.

How do we maintain useful distinctions, for example, between Global South and North, or studies of south-south relationships, while acknowledging that, increasingly, nothing much happens strictly outside of the global-local interpenetrations that this research illuminates?

**Methodological Contribution**

Methodologically, this research fleshes out and elaborates on a process of relational analysis for multiscalar, multilevel sites and projects, in particular a network formation of disparate yet highly interconnected sites. It makes the argument for “seeing” a set of sites and strategies together, not as points of data or comparison, but as a set of distinct and specific interrelationships between each of the sites and strategies. In this particular network formation, New York and Jakarta are primary sites, Rotterdam a reflexive site, itself and its relationships with the other sites illuminating the whole. I outline a process for conducting this research that includes, in sequence: framing, or a snapshot, of the network; defining the strategies, actors, institutions, and relationships; conducting an overview analysis, a mapping of power relationships and expectations; disentangling the key topics of analysis; and synthesizing the findings.

In addition to contributing a process of relational urban analysis, this research lends empirical weight to the many evocations of relational geographies and policy mobilities. This
method not only reveals and clarifies the interrelationships between cities, it sheds new light on the terrain of contestation within cities.

In the concluding chapter, I offer two broad conceptual takeaways: 1) a sociospatial typology of urban adaptation, categorized in terms of organization and form, and 2) speculations on an insurgent, networked, urban ecological design practice. From this, I argue that, in order to “scale up,” as it were, alternative social and spatial practices – the counterplans – urban researchers and planners need to look not at the strategy itself, but at the specific urban processes that these strategies constitute. If exploring design as a terrain of contestation reveals underlying power relationships and fault lines, then the marshaling of an explicitly insurgent, critical urban ecological design possible disrupts such systems.

More generally, this dissertation opens productive pathways towards a critical theory of urban climate change adaptation, centered on the production of alternative visions. Such a theory is beyond the scope of this research, for now. But, in my view, it is an imperative. We know that the future will be urbanized, and that the urbanized future will be defined by climate. The field of urban adaptation has so far resulted in bundles of strategies and frameworks best suited for specific circumstances – rich and poor, north and south, infrastructure and governance, physical and sociopolitical, designed and whatever might be termed “non-designed.” However, new approaches to urban adaptation are taking shape that are not easily grasped in terms of such dichotomies. And our concepts of resilience, adaptation, and design remain chaotic, variable, and ill-formed.
A critical theory of urban adaptation would critically engage the spectrum of approaches, and the social, spatial, and historical interrelationships under which they are proposed.

Figure 1.11. Waduk Pluit, North Jakarta, July 2013. Photograph by author
2 THEORY

*Climate Changes Planning?*

How do new constraints challenge and guide planning, in the context of climate change and global urbanization? This chapter explores the context of climate change and global urbanization, and lays out the theoretical frameworks around climate change planning, urban adaptation, environment and development, urban marginalization, and the possible role of design. It focuses on the question of how climate changes planning, and potential theoretical frameworks with which to approach this problem.

This chapter is meant as a theoretical overview – providing context and framing for the study. The following chapters elaborate in detail on the theoretical frameworks guiding the topical investigations.

**Climate Change and Global Urbanization**

Two interrelated conditions situate this research on a global scale. First, the planet is undergoing unprecedented environmental destruction, including reduced biodiversity and resource depletion, ecosystem degradation, and, perhaps most critically, climate change (IPCC 2013; Speth 2008; World Bank 2012). The extent of this human-induced transformation has prompted scientists to propose, at least informally, a new geologic epoch, the *Anthropocene* (Crutzen 2006; Crutzen and Stoermer 2000). Second, processes of urbanization are accelerating in both scale and scope. While rapid urbanization is often seen as a problem of the megacities of the Global South (see,
for example, M. Davis 2006), the intertwined relationship between processes of urbanization and global environmental impact turns this into a planetary-scale problem. Increasingly potent urban processes are radically transforming not just the urban agglomerations, but the so-called hinterlands as well – agricultural regions and zones of extreme climates and ecosystems (Brenner 2013a, 2013b; Brenner and Schmid 2011; E.C. Ellis et al. 2010; Sayre 2010; Soja & Kanai 2007).

This planetary urbanization as such suggests that there are direct relationships between processes of urbanization that are concentrated in and on the agglomerations. Not simply the transformation of far-off places and processes, this affects the future of the planet itself. Within this global “urban fabric” (Lefebvre 1970), “cities” do exhibit specific vulnerabilities as centers of population density and political and economic activity (Birkmann et al. 2010; Huq et al. 2007; Satterthwaite 2007), and as centers of concentrated mass and form of the material and structure of the built environment (Nordenson, Seavitt, and Yarinsky 2009).

Environment and Development

Initiatives in economic development and environment, classically at odds, are increasingly intertwined. The World Bank, in 2012, published “Turn Down the Heat,” a report that links climate change to potentially severe effects on economic development (World Bank 2012). The stated embrace of environmental issues by global investment and development agencies is paralleled by a corresponding increase in the forms of marketization of environmental initiatives, what critics call the “neoliberalization of nature” (Castree 2008a, 2008b; Heynen and Robbins 2005). Strategies of urban growth and governance now increasingly mediate ecological pressures,
and tropes of "urban vulnerability" are routinely employed in discourses of economic competitiveness (Hodson and Marvin 2009, 2010).

This link between continued economic vitality and environmental advocacy has significant implications for planning. Where once inner city neighborhoods in the US were cleared for urban redevelopment, now in cities like Jakarta informal housing for the urban poor is razed for recreational parks, and urban riverbank sites are cleared of "slums" for flood mitigation while unchecked urban development adds to ground impermeability and runoff, causing more floods (see Chapter 3). At the other end of the urban continuum, entire self-described "eco" cities are built in "greenfields" and deserts.¹ The increasing acknowledgement of environmental urgency is welcome and necessary. At the same time, it is becoming evident that the new large-scale urban plan is now the environmental plan, the Big Green Plan. The problem is that it is not always as clear whether these plans will, or are even meant to, fulfill their social and environmental promises. Or, particularly in the cases of displacement, whether they are subsumed into new (environmental) modes of "accumulation by dispossession" (Harvey 2003).

It is in this context that "cities," as such, have taken on particular prominence in environmental struggles: as centers of critical financial transactions and political power, so-called beacons of culture, or concentrations of the most vulnerable people, confronting the tangible impacts of climate change – rising seas, stronger storms, fluctuating, extreme, and unpredictable temperatures. What can and should be done to protect these centers of population, culture, and transaction?

¹ For example, Masdar in Abu Dhabi, Tianjin Eco-City in China, and Songdo, near Seoul, Korea.
Adaptation and Resilience

The marked shift in attention from mitigating environmentally harmful practices like the production of greenhouse gas emissions to adapting to the effects of climate change signals the acknowledgement of the severity of the situation. Recent studies project that even if we stopped rising greenhouse gas emissions now, the planet will continue to grow warmer. Adaptation, previously seen as an “overlooked agenda” and “dirty word,” has been brought into focus by three factors, the increase of climate-related disasters, inadequate global action on mitigation, and the inclusion of “loss and damage agenda” in multilateral negotiations and courts (Khan and Roberts 2013). On another level, this shift also moves the prevailing discussion from what is essentially a shared notion of risk and action (since mitigation only works if more and more countries/cities take similar measures), to individual responsibility (on the scale of the country or the city, where much adaptation strategizing has taken place).

The urban adaptation field, emerging and rapidly growing, has coalesced around empirical studies of city vulnerabilities and policy responses, usually in the Global South (see, for example, Alam and Rabbani 2007; Awuor, Orindi, and Adwera 2008; Dodman, Mitlin, and Co 2010; Moser et al. 2010; Porio 2011), large-set surveys of cities (Carmin, Nadkarni, and Rhie 2012; Castán Broto and Bulkeley 2013), policy strategies and motivations (Carmin, Anguelovski and Roberts 2012), capacities of governance (Birkmann et al. 2010), policy guidelines and assessments (ACCCRN 2013; C. Rosenzweig et al. 2011b), and efforts to conceptualize and create frameworks for adaptation (Da Silva, Kernaghan, and Luque 2012; Tyler and Moench 2012).  

---

2 For example, Frölicher, Winton, and Sarmiento (2014) and Ramanathan and Feng (2008).
2012). There is a firm understanding of the disparate vulnerabilities faced by poor urban residents, particularly in cities in the Global South (Dodman and Satterthwaite 2008; Huq et al. 2007; Satterthwaite et al. 2007), a general agreement of the role of cities as both a large part of the problem, and necessary part of the solution (Reid and Satterthwaite 2007; C. Rosenzweig et al. 2010), and as well assertions of the sociopolitical nature and transformative potential of adaptation (Pelling 2011).

Concepts of “sustainability” and “sustainable development” have been institutionalized in global development and design realms since the Brundtland Report in 1987. The idea of “resilience,” however, has more recently permeated scholarly and policy consciousness. From its beginnings as concepts in psychology and in ecology in the 1970s, a broader understanding of resilience coalesced as a conceptual converse to vulnerability in climate change adaptation (Adger, Arnell, and Tompkins 2005; Adger 2006; Pelling 2011; Tompkins and Adger 2004), and in inquiries on the relationship between social and environmental capacities against such vulnerabilities (Adger 2000). The concept has also been applied as urban resilience – the characteristic of resilience in cities, including the ability to recover from shocks and disasters (Vale and Campanella 2005); the sociopolitical processes and spatialities associated with the characteristics of urban resilience (Vale 2014); urban security in a new age of counter terrorism (Coaffee, Murakami Wood, and Rogers 2010); the capacity to withstand urban violence (D. Davis 2012); and as a concept in urban ecological design (Pickett, Cadenasso, and McGrath 2015).

3 Known as the Brundtland Report after chair Gro Brundtland, the World Commission on Environment and Development’s (WCED) 1987 report, “Our Common Future” defined sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

4 See a discussion of resilience and its conceptualization in ecological science in Wu and Wu (2013), who build on work by ecologist C.S. Holling. See Werner and Brendtro (2012) for an interview with Emmy Werner, an early researcher of childhood psychological resilience.
2013).

In the last five years, particularly through the support and advocacy of the Rockefeller Foundation, “resilience” has emerged as a key framework through which global discussions on urban climate change policy, preparedness, and planning occur. Invocations of “resilience,” in tune with the Rockefeller Foundation’s (2009, 2013) formulation of the concept, appear across a multitude of forums and documents sponsored or authored by global and national agencies such as ICLEI, DFID, FEMA, and USAID. The foundation’s 100 Resilient Cities initiative is in partnership with the Clinton Global Initiative, Swiss Re, the World Bank, the American Institute of Architects, Architecture for Humanity, and Palantir (a “big data” technology company partly funded by the CIA). Urban resilience, here, brings together aspects of development, the built environment, and various manners of security.

The concept of resilience – from its initial psychological and ecological inceptions – aligns well with the idea of adaptation. Often they are used interchangeably. Indeed, it seems desirable for cities – people, institutions, systems – to “survive, adapt, and grow” and to “bounce back,” as stated in Rockefeller Foundation’s publications (2013, 2014a). But, bounce back to what? The means and modes of urban development that got us into this quandary in the first place?

“Stop calling me resilient,” states a sign stapled to a post in New Orleans, “Because every time you say, ‘Oh, they’re resilient,’ that means you can do something else to me.”5 “Resilience” begs to be clarified, made accountable. In 2013, the term was literally declared a buzzword by Time magazine (Walsh 2013). That same year, the American Institute of Architects chimed in, 

---

5 Words by Tracie L. Washington, Louisiana Justice Institute, from artist and activist Candy Chang’s blog, http://candychang.com/resilient/
"Resiliency is the new green," the irony of not having really dealt with the "old" green lost somewhere (AIA 2013). Concepts around environmental challenges and what to do about it are often vague, easily co-opted and manipulated. The use of "sustainable design" and "sustainability," for example, has been criticized for lacking specificity, frequently invoked as "greenwash." A parallel skepticism is beginning to appear around "resilience," inquiring whether the sole action of resiliency, or bouncing back, is necessarily positive or progressive (Fainstein 2015; Leichenko 2011; Pelling 2011; Pike, Dawley, and Tomaney 2010).

Environmentalism has always been political, contests over space, over human/nonhuman relationships, over ideas of society. Still, there is something specific about climate change, especially now as we confront crises that are existential in scale. Dipesh Chakrabarty, for example, argues that climate change necessarily changes our reading of human history (2009), and because of it we are faced with profound question of being actors in both human and nonhuman time scales (2014). Sheila Jasanoff (2010) stresses that the invisibility of climate change, made visible and gaining legitimacy mainly through scientific knowledge, displaces society from more traditional forms of knowing. Bruno Latour (2003, 227), tongue somewhat in check, lamented that efforts to deconstruct scientific knowledge (of which he is a notable part) might actually backfire in regards to climate change: "Why does it burn my tongue to say that global warming is a fact whether you like it or not?"

But now, as the tangible effects of climate change appear in cities – our most tangible centers of society – how might that further destabilize our perception of ourselves in the very long term, or, alternately, reconnect us with a very real sense of self-preservation?
Social and Spatial

The “classic” climate change adaptation literature – generally developed in the social sciences and policy research and practice – tends not to focus on the spatial and physical aspects of urban adaptation. This is even as much of the research acknowledges that spatial, physical vulnerabilities and protections are important aspects of adaptation implementation. Some of the research responds explicitly to a stated overemphasis on physical, engineered, infrastructural solutions (e.g., in Birkmann et al. 2010, and Garschagen and Kraas 2011). Generally, there is a line drawn between hard, engineered infrastructure, and measures that are more social and political in focus, as well as speculations on more flexible strategies, including “ecosystem-based measures” (for example, in Carmin, Dodman, and Chu 2013). Frameworks that attempt to distil a systemic understanding of urban adaptation tend to classify spatial/nonspatial, physical/nonphysical categories of analysis and action (for example, in Tyler and Moench 2012), with repercussions not only in concept but also in practice.

What that leaves is both a perception of – and often a reality of – a divide between those who work in space and those who don’t. This divide, in the literature and in practice, is problematic. Arguably, urban adaptation is challenging because it is sociospatial in nature.

Tyler and Moench’s (2012) and Arup’s (2014) work in this regard is notable, in that they explicitly attempt to develop a systematic and comprehensive framework for urban resilience. (They are mutually reinforcing as well, both either arising from or partly based on the Asian Cities Climate Change Resilience Network (ACCCRN), launched and supported by the Rockefeller Foundation.) Tyler and Moench, observing the “integration of social agents and institutions along with biophysical elements...” in resilient systems (2012, 313), propose a
framework that categorizes and links these elements. It includes three generalizable components: 

*systems* (e.g., flexible, diverse, and redundant physical infrastructure and natural systems), *agents* (e.g., responsive, resourceful, and learning organizations or individuals), and *institutions* (e.g., laws, governance mechanisms, and social rules supporting information flows and inclusive rights and decision making). While the authors stress linkages between elements, elaboration on this is somewhat lacking. Links between social agents and systems, for example, is depicted as a unidirectional flow from former to latter (2012, 319).

In such research, the agents and institutions responsible for designing and implementing much of the systems at play seem to be ignored altogether (unless imply subsumed under a very general term of “planning”). But initiatives to *design* urban adaptation present opportunities to form integral connections between social and spatial. Design, whether viewed as a process, a practice, or an outcome, presumably involves the capacity to bridge these competing claims. But while designers – urban, environmental, architectural – are certainly practicing in these spaces, in places like New York and Jakarta, the design fields have not yet stepped up to reflect on this work, and to situate it within other relevant fields and practices.

Design for adaptation is still under-theorized. Proponents of landscape urbanism – concerned with integrating natural and engineered infrastructural systems – are seemingly suited to address climate change adaptation (see Bélanger 2009; Mostafavi 2010; Waldheim 2006). But while ostensibly concerned with environmental crises and global social challenges, they have, to date, not engaged seriously with climate change scenarios, especially in consideration with the levers of policy change, social change, or urban governance. The literature in ecological and sustainable urbanism has extensively probed the intersection of building with nature (see Spirn 2012), but similarly has only infrequently engaged the complexities of climate change science and
policy. Other theories of ecological urban design that do directly respond to climate change, on the other hand, have tended to neglect sustained engagement with social and political issues (see, for example, McGregor, Roberts, and Cousins 2013, and Newman, Beatley, and Boyer 2009).

Studies that bridge climate science and design have produced helpful contributions. Nordenson, Seavitt, and Yarinsky (2010), based in engineering and landscape architecture, conducted a study of New Jersey-New York Bay two years before Hurricane Sandy, illustrating methods of spatial research and design speculations on the role of soft, hybrid infrastructure in coastal protection. Others include Hill (2009, 2012) – geologist turned landscape architect, whose work combines descriptive assessments of design, climate change, and social justice with design proposals for ecological adaptation strategies – and an edited volume by Pickett, Cadenasso, and McGrath (2013) that connects concepts in ecology and urban design through “resilience.”

Quite separate from the realm of theory, the role of design in adaptation has emerged in certain municipal adaptation plans. New York City’s waterfront program, for example, catalogues a series of physical adaptation measures. There are measures for a variety of scale, from the “site” (meaning building site) to the “reach” (potentially regional), but the treatment of scale is rather static, and even the larger scale measures are depicted as isolated moments (Figures 2.1a and 2.1b). Less attention is paid, for example to the potential social and spatial outcomes of a range of adaptation strategies. One might ask, what is a typology of adaptation design?
There are many potential adaptive strategies at various scales.

Figure 2.1a. Adaptation strategies at various scales. Source: NYC DCP (2012, 29)

These strategies can be combined at various scales.

1. Take protective measures beyond the scale of the neighborhood
   - Includes these options: Breakwater, Seawall, Bulkhead, Levee/Dike, Surf Barrier, Wetland restoration

2. Prevent flooding of neighborhood through protective shoreline measures.
   - Includes these options: Wetland restoration, Surf Barrier, Breakwater, Seawall, Elevate Land

3. Protect individual structures and assets through site-specific measures.
   - Includes these options: Elevate land, Elevate on fill, Elevate on piles, Elevate on fill, Elevate on piles, Elevate on fill, Wetland restoration

4. Reduce impact of flooding through wave attenuation and protect structures through site-specific measures.
   - Includes these options: Wetland restoration, Surf Barrier, Breakwater, Seawall, Elevate Land, Elevate on fill, Elevate on piles, Elevate on fill, Elevate on piles, Elevate on fill, Wetland restoration

5. Strategically retreat from at risk areas.
   - Includes these options: Relocate, Wetland restoration

Figure 2.1b. Combination of adaptation strategies. Source: NYC DCP (2012, 33)
The concept of “resilience,” as previously discussed, is rather fluid, and requires interrogation. Still, it is potentially helpful in that it cuts across infrastructure, governance, and design fields, with loosely similar meanings (see, for example, in Arup 2014; Leischenko 2011; Pickett, Cadenasso, and McGrath 2013; Pike, Dawley, and Tomaney 2010; Vale 2014). What is needed is a more theoretically rigorous yet conceptually broad analysis of this term, situated within and across the places in which competing claims and contested visions of urban adaptation reside. I will return to these prompts about resilience and adaptation in the concluding chapter.

Analytical Frames: Urban Adaptation as a Social-Technological-Ecological-Spatial Problem

The previous sections have illustrated the theoretical contexts, and the problem at hand. Further theoretical lenses frame my research in terms of nature, technology, society, and space.

The Production of Space

For my investigations into the key spatial, designed, and constructed environments (both “built” and natural), I look to, on one level, my experience in practice and in teaching architecture and design. I also look to the various literatures that probe the intersection of space, politics, and the urban – including the “production of space” (Lefebvre 1991), the politics of urban design (Vale 1992), processes of urbanization and uneven development (Harvey 1985, 2008; Smith 1984) and the sociopolitical formation of urban spaces (Logan and Molotch 1987; Soja 2000, 2010).
(Social) space is a (social) product.

- Henri Lefebvre, *The Production of Space* (1991, 26)

In *The Production of Space*, Henri Lefebvre attempts to develop a theory of space. In it he takes aim at both an absolute, rational space, as well as an epistemological “mental space” — limitless appeals to “the space of this and/or the space of that…” (1991, 3). In a work that has influenced a number of theories and lineages of thought critical to the present study, including the “production of nature” (Smith 1984) and “spatial justice” (Soja 2010), Lefebvre proposes the concept of the “social production of space,” that space, contrary to much assumption, cannot be understood as a neutral plane or container. One way to say this would be that space is socially constructed. But that would be a somewhat simplistic take on it. Lefebvre raises a number of implications from his proposition, that physical, natural space is disappearing; that every society — every mode of production — produces its own space; and that knowledge of space reproduces and explains the process of production.

Lefebvre offers three concepts of space — spatial practice, representations of space, and representational space, in other words, perceived space, conceived space, and lived space. To clarify:
Table 2.1. Lefebvre’s conceptual triad in *The Production of Space* (1991, 33-40)

<table>
<thead>
<tr>
<th>Spatial practice</th>
<th>perceived space</th>
<th>Production and reproduction; the relationship between specific actions and physical spaces in societies</th>
<th>physical*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Representations of space</td>
<td>conceived space</td>
<td>Relations of production – knowledge, order, codes of space – the conceptualized space of scientists, planners, technocrats</td>
<td>mental*</td>
</tr>
<tr>
<td>Representational space</td>
<td>lived space</td>
<td>Symbolisms, imagery, space of art, an “overlay” on physical space</td>
<td>social*</td>
</tr>
</tbody>
</table>

* This column from Elden (2007). I would substitute “intellectual” for “mental,” although that is not quite it either.

The debates on Lefebvre’s contributions – the relationship and discord between space and time, geography and history, etc. – are quite substantial. It is not the point of this study to seriously unpack or substantively critique these specific debates. More helpfully, Lefebvre’s ideas present an approach to tackling problems in urban research that revolve around multilevel questions about space, and, in this case, have been overly defined by disciplinary emphases, inherited methods, and enforced categories.

To take some concrete examples – say, a kampung riverbank in Jakarta, or the landscape around a public housing project in New York City – Lefebvre’s concepts offer us an understanding of how space is simultaneously “real” (in the sense that we might visit and “see” a place), political (subject to contestation based on competing knowledge, expertise, rules and regulations), and imagined (re-envisioned in relation to physical space and fairly long-term projected physical and environmental changes). They enable us to weave our way between the “real,” the social relationships locally and globally, and the ideas, symbols, and images that are
invoked and mobilized.

**Urban Political Ecology**

Theories of urban political ecology attempt to explain the interplay of sociopolitical and biophysical, in particular the ways that both social and ecological processes flow within and through the urban (Gandy 2002; Heynen, Kaika, and Swyngedouw 2006; Kaika 2005; Keil 2003). Such theories provide a view and understand of the multiscalar, multilayered aspects of these contested sites, including, for example, the literal flows of water, the physical infrastructures of pipes, dikes, or constructed wetlands, and the sociopolitical processes, the power struggles between various actors. Theories of urban sociotechnical systems, relatedly, look at the way that city systems – that is, urban infrastructural and technological systems, both physical and virtual – are coproduced, and coevolve, with society (Bulkeley et al. 2011; Graham and Marvin 2001).

**Conceptual Mobilities**

This unsatisfactorily titled set of literature encapsulates a wide swath of disciplines, fields, and levels of theory. At base, I mean the range of concepts and tools to understand interpenetrations of actors, ideas, and institutions across space and time.

This has likely long been the general condition, but in a time of globalization and technological permeation, it is particularly limiting to consider cities in isolation, as municipal entities to be bracketed and studied. Scholars have called for relational geographies, cities seen as dynamic “spatial formations,” understood in relation to each other (Amin 2004; Massey 2011, Roy 2001). More concretely, they’ve looked at changes in the ways in which policies, urban and
otherwise, move and transform across space (Cochrane and K. Ward 2012; J.M. Jacobs 2012; McCann and Ward 2012; Peck 2011; Peck and Theodore 2010). And the have examined the structures and frameworks that have enabled new modes of transnational state and non-state governance to emerge, particularly in the face of environmental challenges (Bulkeley 2010; Bulkeley and Newell 2010; Bulkeley et al. 2014; Hodson and Marvin 2010).

Theoretical Synthesis

This theoretical overview presents the context and the problem, outlines the potential approaches to understanding and responding to the context and problem, as well as the gaps and shortcomings in these approaches. It then lays out a set of analytical frames to critically engage the problem—one that exists at the intersection of social, technological, ecological, and spatial spheres.

On a global scale, interrelated conditions of climate change and global urbanization pose certain risks to the planet more broadly, and to cities, more specifically. Within this context, initiatives in environment and development—often seen in opposition to each other—are increasingly intertwined. In cities and urban regions across the globe, environmental plans are being proposed that envision and promise the security of physical spaces and economic systems. Indeed, these plans often promote urban development in the form of marketization of environmental initiatives. Thus, seen in a different light, the global conditions of climate change and urbanization are more than interrelated, they are mutually reinforcing.

The proposed measures are promoted under the rubric of adaptation, or, increasingly, of resilience. Through the support and advocacy of governments at all scales, nongovernmental
entities, and global institutions, models and frameworks for resiliency are now rapidly produced, invoked, transformed, and contested. To the extent that the environmental has always been political, climate change shifts new political contests to the foreground, now existential in nature, at a time of some urgency.

Finally, urban climate change adaptation presents distinct challenges to planning. It is sociospatial in nature, and as well involves issues that are at once ecological and technological. Here, I've proposed a set of theories to better frame these challenges. They are, 1) the social production of space, 2) the interrelationships between the social and ecological, and 3) the mobility of concepts.
3 NATURE OF CONTESTATION

Environment and Uneven Development

In New York, Jakarta, and Rotterdam, the challenges and the opportunities arising from climate change impacts and the imperative to respond have unearthed terrains of contestation. In New York, a high-profile disaster and a high-profile response have ignited imaginations. At the same time, uncertainty and unevenness of implementation, amid increasing attention to rising inequality, cloud the outlook for the immediate future. In Jakarta, an ambitious megaproject is proposed to solve a multitude of longtime urban problems and new environmental challenges. And yet, it seems to start by dodging the key problems, while leaving the existing city behind. In Rotterdam, city leaders maintain the profile of a well-run, well-designed, modern city, a model for spatial planning and urban hydrological design. Pulling aside the well-ordered physical surface reveals further motivations, in large part centered on global and local economic challenges. In each of the sites, the imperatives of climate change expose fault lines, and accentuate fissures, in the social, spatial, and environmental operations of these urban centers.

But to what extent are these contestations different from that found in the history of cities to date? This chapter explores the interrelationships between environmental initiatives in the context of climate change and uneven urban development. It focuses on the impacts of and responses to climate change, and on the interrelated nature and production of social and spatial contestation in cities. There are two ways to look at this chapter. The first is that it relates contemporary forces of marginalization – in the context of environmental change – with the sociospatial history of uneven urban development. The second is that it brings an urban theory
framework to an analysis of urban environmental politics. I review, to begin, the theoretical foundations of urbanization, nature, and uneven development. I then develop with more detail the context of sociospatial marginalization and environmental initiatives in New York and Jakarta, two cities at opposing ends of the spectrum, as far as large urban centers go, but both facing rising social stratification, environmental threats, and the pressures and opportunities of global capitalism. (In the following chapter, I look specifically at Rotterdam, the Dutch city that is in many ways quite distinct from both the large metropolises here, but, as we will see, has come play a key role in their environmental narratives.)

**Urbanization, Nature, and Uneven Development**

How do we conceptualize social and spatial marginalization in cities? This is inextricably linked to a broader question: How do we conceptualize cities? Neo-Marxian geographers such as David Harvey (1985, 2008) and Neil Smith (1984) have long asserted that processes of urbanization, driven by cycles of capital accumulation, proceed on the basis of uneven development – the creation and sustaining of urban social and spatial inequalities. The “city,” as such, is not a neutral container in which inequality somehow happens. The urban processes that make up the city itself – its social relations – produce inequality and spatial difference. On a different level, historian Sam Bass Warner (1972) reminds us that, in the American context, cities have always been centers of conflict and oppression, in which class, race, and gender discrimination lie at the heart of urban disparities and problems. The city is not, by nature, just. I will return to this point shortly.
At the same time, other scholars have asserted that the urban remains a terrain of contestation in which the potential for social change persists. Iris Marion Young (1990, 238) envisions a "normative ideal of city life," in which social experiences in the city form the basis for an embrace of difference and diversity. Lefebvre himself (1996, 158), in coining the "right to the city," envisioned a "transformed and renewed right to urban life." Manuel Castells (2012), decades after ruing the dominating effects of the "space of flows," determines that social movements in the network age – while both globally and virtually constituted – touch down and claim space in the urban. And Neil Brenner (2000) asserts that the urban itself is an unstable reference point, an "interface" through which struggles between sociopolitical actions and global capitalism are fought. Fully aware of the power differentials always present in the urban, they still find that it is in the place of the city, or in the urban process, that social change might be wrought.

*Nature and Capital*

Nature is generally seen as precisely that which cannot be produced; it is the antithesis of human productive activity. ...The natural landscape presents itself to us as the material substratum of daily life... But with the progress of capital accumulation and the expansion of economic development, this material substratum is more and more the product of social production... The development of the material landscape presents itself as a process of the production of nature. The differentiated results of this production of nature are the material symptoms of uneven development.

In “The Production of Nature,” Smith (1984) explicitly makes the connection between nature and capital. Developing an analysis of nature under the changing social relationships wrought by capitalism, Smith argues that the mode of production for exchange and the associated division of labor result in a change in the relationship between humans and nature. Where once nature was in unity with human actions, capitalism transforms natural material into commodities, imbued with an exchange value component, dissociating it from its original unity. Nature is transformed into a “second nature,” the appropriation of which is increasingly regulated by social institutions. With the rise of capitalism, this appropriation is extended to a global scale. “Capitalism stalks the earth in search of material resources; nature becomes a universal means of production…” ([1984] 2008, 71, italics in the original).

Building off of Smith’s concepts of the production of nature and Harvey’s (1985) notion of urbanization as the spatial manifestation of capitalism, we begin to discern the relationship among processes of urbanization, nature, and society. Scholars of urban political ecology further elaborate on this relationship. In pursuit of a framework that theorizes “uneven urban socio-ecological change, related explicitly to the inherent spatial patterns the distribution of environmental amenities take under urban capitalism” (Heynen, Kaika, and Swyngedouw 2006, 8), these scholars assert that the social and ecological are wrought together, co-determined, as part of processes of urbanization. Not simply refuting the distinction made between society and nature, they focus on the interrelationships that produce the city itself as a hybrid space between, and involving, society and nature, a “cyborg city” (Gandy 2002; Swyngedouw 2006). Urban
ecologies are formed through a dialectical relationship between social and ecological change (Gandy 2002; Heynen, Kaika, and Swyngedouw 2006; Kaika 2005; Keil 2003).

In taking an explicitly justice-oriented position, they tease out the power relationships behind social and ecological change in cities, "...to disentangle the interwoven knots of social process, material metabolism, and spatial form" (Heynen, Kaika, and Swyngedouw 2006, 8, italics in the original). These scholars offer an ecological analysis of the neo-Marxian theoretical framework that links the production of the urban with capitalist accumulation. Alongside, with the focus on urban processes, urban political ecology brings theoretical frameworks centered on urbanization to lineages of scholarship on environment and politics, including environmental justice and green grabbing.

Urban Sustainability

There are two issues not so apparent in the urban political ecology literature. The first is a more well-formed and critical idea of the state. The state does not play a significant role in urban political ecology scholarship. Urban nature is seen as a process in capitalist accumulation – in which cities are considered “caught up” (Kaika 2005, 22; cf. Heynen, Kaika, and Swyngedouw 2006). Smith himself refers to a “capitalist state” ([1984] 2008, 71), but one whose function, like “all previous states,” is largely in service of the ruling class – the capitalists – suppressing the working class and maintaining the conditions necessary for capital accumulation. It is an expediting and arbitrating role. And yet, as we can see in the sites previously described (and to be elaborated on further), states appear to play rather different roles in relation to each other, to sub-national governance entities, and to private interests. The second issue is related: since the environment in cities – both “built” and “natural” – are intertwined and considered part of
broader processes, there is a lack of qualitative assessment of environmental outcomes in urban political ecology scholarship. According to Heynen, Kaika, and Swyngedouw (2006, 10), “…There is no such thing as an unsustainable city in general.” Urban ecologies constitute a terrain of struggle, over which various social groups are in contestation. The thrust of this research, therefore, is on “who gains and who pays,” and much less on outcomes for the environment per se, or any “assumed qualities” of nature. This point of view is certainly in tension with mainstream environmental scholarship that stresses concepts such as “ecological footprint” and “carrying capacity” (Rees and Wackernagel 1996).

But what happens if what’s at stake is existential on a global scale, as is largely agreed upon with the threats of climate change, yet still disparate in terms of its localized impacts and costs? To the extent that the scientific basis for understanding climate change and global environmental management is contested, and not simply by those who might be considered climate change deniers (see Chapter 2), this is not a straightforward question.

Climate Change and Urban Ecologies

Climate change reveals new sites and issues at the intersection of urban processes, environment, and capitalism. On the one hand, there is an increasing focus on large, dense, urban agglomerations as the sites of climate change discourse. Not only are such urban centers considered a large part of the problem and necessary part of the solution (Reid and Satterthwaite 2007; C. Rosenzweig et al. 2010), their involvement in climate change plans is increasingly seen as strategic. For Hodson and Marvin (2009, 2010), cities pursue “urban ecological security” in order to “secure their ecological and material reproduction” (2009, 194). Extending from the
concept of “splintering urbanism” (Graham and Marvin, 2001) – i.e., the bundling of infrastructure in order to selectively service, protect, and exclude parts and populations of cities – the authors contend that economically-privileged “world cities” undertake decisions and plans not towards any collective benefit or safety from climate impacts, but to protect their centers of economic activity through climate transitions. This includes both physically and institutionally securing the centers of trade and control, and as well the circuits and networks of financial transactions and ecological resources flows. The results of this strategic, selective protection are the creation of “ecological enclaves”1 (sometimes to the increased harm of adjacent areas) and reinforcement of existing social and spatial divides in cities.

In addition, Hodson and Marvin (2010) illustrate the emergence of global coalitions of cities and nongovernmental groups (for example, C40 Cities and the Clinton Climate Initiative) collaborating to develop security strategies and new global markets. These transnational networks (cf. Bulkeley 2010; Bulkeley et al. 2014) constitute an “emerging form of self-reliant urbanism,” with the support of environmental, corporate, and political interests alike, in the context in which ecological and economic threats have helped the “naturalization” of these selective responses as inevitable (Hodson and Marvin 2010, 116). This intertwining of cities and nature, threat and profit resonates with the “contradictory mix of opportunity and apocalypse” that Neil Smith points out ([1984] 2008, 86).

On the other hand, scholars are as well probing the peripheral boundaries of this relationship between climate change and urbanization. They are researching the ways in which the mutually reinforcing twin engines of environmental change and urbanization, both increasingly global, are unveiling new spaces of capital accumulation and territorial contestation

---

1 See, for example, the Eko-Atlantic development in Lagos, Nigeria (Lukacs 2014).
(Brenner 2013b). For example, Leigh Johnson has shown how the dwindling sea ice in the
Arctic, driven by climate change-induced global warming, reinforces the scalar incongruities of
climate change – local action to global impact, and the faster rate of warming at the poles – and
at the same time opens new potential for fossil fuel extraction and global shipping. She notes,
"the original externalities of greenhouse gas emissions themselves literally do \textit{physical work}"
(2010, 834, italics in original) in a process she calls "accumulation by degradation" – an
environmentalized "accumulation by dispossession" (Harvey 2003).²

\textbf{Analytical Framework}

In developing the analysis of each site and strategy, I begin with the urban regional context,
including the geography, population, environment, distinctive aspects of political and governance
spheres, and urban spatial form. I then focus on the substantive historical factors behind spatial
and environmental development and differentiation. I discuss the current state of environmental
threats, both climate and non-climate-related. And I trace the challenges faced by specific
localities and communities, and the primary government/municipal initiatives in response to
these threats, based on document and interview data. I then develop a more generalized view of
the nature of contestation in each site, illustrating modes of conflict, marginalization, activism,
and alternative points of view or approaches.

² See as well Brenner (2013b), Sevilla-Buitrago (2015), and the ongoing work of the Urban
Theory Lab at Harvard GSD (http://www.urbantheorylab.net/) on the extreme territories of
urbanization.
New York

New York City seems to bear the weight of its urban history quite literally – particularly in the ever-densifying buildings simultaneously defining and leaving behind Manhattan’s 204-year-old street grid. With 8.4 million people in the city proper, and 20.1 million in the larger metropolitan region,³ it is the archetypal metropolis, the preeminent – if not original – Global City. It is also the place where, right now, the aging model of the metropolis of the 20th Century confronts the questions of what it is that makes the new city of the 21st.

Many New York urban histories have rightly focused on its remarkable extents of building and people, diversity of social and cultural practices, its concentration of urban life. These histories are iconic: urban form and zoning regulation made imageable in Hugh Ferriss’ charcoal ziggurat drawings (Ferriss 1929); urban megaprojects and community resistance of the 1960s epitomized by Jane Jacobs battling Robert Moses (Caro 1975; Flint 2009); culture, modernity, and urban citizenship showcased in the two World’s Fairs of 1939 and 1964 (Tirella 2013; Zim, Lerner, and Rolfes 1988); disaster and security intertwined, and buildings as icons and targets, in the days, weeks, and years after 9-11 (Graham 2008; Iovine 2011; Marcuse 2006). New York has also been the archetype for a number of key urban concepts that highlight the sociospatial factors of urban inequality. These include foundational concepts of gentrification including the “rent gap” (Smith 1979) and the “revanchist city” (Smith 1996), the marketization of urban lifestyles in “loft living” (Zukin 1982), and the multiple narratives of urban contestation (Abu-Lughod 1994).

³ Municipal population from NYC Department of City Planning (2015), metropolitan region population from US Census Metropolitan Statistical Area 2014 projections (n.d.).
But many others have noted too the city's environmental connections, its surprising naturalness. Art and environmental historian Jean Gardner notes that New York City's native natural environment - in its bays, bluffs, beaches, marshes, meadows, and forests - is the most varied of any American city (1999, 102). This is clearly a more literal assessment of urban nature. Other scholars have stressed, as well, that even in the extreme built up environments of cities like New York, the transformations over time are socioecological - societal and natural change are
wrought together. How could one forget the potent mixing of parochial moralizing, public health advocacy, environmental planning, and landscape architecture in the original New York “green grab” of Central Park? Matthew Gandy (2002), in probing the production of urban nature in New York, details specifically the institutional power grabs and battles over race and class that underlie the making of municipal water networks and green space. He makes the point that ecology in the city cannot be understood without its interactions with politics and capital. As David Harvey proclaims, “It is in practice, hard to see where ‘society’ begins and ‘nature’ ends… there is in the final analysis nothing unnatural about New York City” (1993, 28, italics in the original).

New York has as well witnessed a kind of urban-nature renaissance in the last two decades that strongly link the workings of capital, urbanization, and environmental transformation. Beginning with, arguably, the initial wave of privatized, nonprofit takeover of prime city parks by organizations such as the Central Park Conservancy in 1980 and the Bryant Park Corporation in 1988, this elaborate symbiosis of urban nature and real estate economics has been accentuated in the last decade and a half. The Hudson River Park, on the west side of Manhattan, precipitated a building boom along West Street, epitomized by the three Richard Meier-designed residential condominium towers looming over the Christopher Street Piers (Figure 3.2). A state-owned park, it is operated by the private Hudson River Park Trust, formed in 1999. Recent efforts at development in the park have attempted to revise longstanding zoning

---

4 R. Rosenzweig and Blackmar (1992) and Wall, Rothschild, and Copeland (2008) provide accounts of the use of eminent domain to evict and demolish existing settlements in the current Central Park area, including Seneca Village, the first African American land-owning settlement in New York City, that existed from 1825 to 1857, when it was cleared.
rules by proposing that air rights be transferrable to another block, across a street.\(^5\) Two other high-profile, “elite parks” (Zukin 2010), the High Line and Brooklyn Bridge Park, involve new private funding models that, ultimately, offer high-profile and high-cost (and yet, “free” to the city) urban nature in return for the acceleration of property values for privatized, high-end residential condominium development. And in Greenpoint and Williamsburg, Brooklyn, where the city has undertaken a large-scale rezoning of the waterfront area from industrial to residential, the legislative mechanism is different, but the results similar.

\(^5\) See Foderaro (2013) and NYS Legislature (2013) for more context around the Hudson River Park air rights legislation efforts, and Goh (2015) for elaboration on the sociopolitical contestation around the park and adjacent West Village, long a site for queer struggles and activism in the city.
These environmental initiatives are all framed and promoted as part of a larger goal of urban sustainability – to bring nature to people, and to reclaim the edges from highways and industry. But they are all unquestionably tied to dramatic real estate transformation, often by design. And they often test the boundaries of what constitutes “public.” These developments are all widely seen as part of a longer-term citywide recovery from the dire 1970s, during which New York teetered on the edge of bankruptcy, the economic recession of the early 1980s, and the 1987 stock market crash.

In this light, climate change planning can be seen in the context of a broader focus on environmental and sustainability initiatives in the city. New York’s climate change planning was not particularly early, but was well underway in the first decade of the new millennium. Mayor Michael Bloomberg released the city’s sustainability plan PlaNYC in 2007 (NYC 2007). PlaNYC was a comprehensive sustainability plan, with emphases on housing and infrastructure to cope with projected population growth, attention to providing green space and protecting and improving waterways, and increasing energy efficiency – with a nod to climate change mitigation and adaptation.⁶ As part of PlaNYC, Mayor Bloomberg convened the New York City Climate Change Adaptation Task Force in August 2008. To support the Task Force, the Mayor’s Office, in partnership with the Rockefeller Foundation, established the New York City Panel on Climate Change (NPCC), a group of climate scientists and legal, insurance, and risk management experts, also in August 2008. The charge of the NPCC was to provide the city’s adaptation planning with “sound science and a thorough understanding of climate change” (NPCC 2010, 22), particularly for the context of the New York metropolitan region, its “infrastructure shed” (C. Rosenzweig et al. 2011a). The panel released its first report, “Climate

⁶ The 2011 update to PlaNYC (NYC 2011) substantially increases the focus on climate change.
Change Adaptation in New York City: Building a Risk Management Response," in 2010 (NPCC 2010). The city codified the NPCC in August 2012 as Local Law 42, establishing the panel as an ongoing body, to meet at least twice a year to review scientific data on climate change (NYC, 2012; see also Adams-Schoen, 2014). Alongside, the city’s waterfront revitalization program, “Vision 2020,” released in 2011 (NYC DCP 2011), called further attention to climate change, and in program updates included explicit stipulations that climate change projections be incorporated into project proposals seeking discretionary actions or waterfront planning review.7

The NPCC released its second report in 2015 (NPCC 2015). Of course, in the intervening years, everything had changed in New York.

Superstorm Sandy

So when Superstorm Sandy hit the New York area on October 29, 2012, it was not necessarily in the context that disaster could happen, but that disaster would happen. Hurricane Irene had hit the Northeast a year earlier, in August 2011 (by that time downgraded to a tropical storm). It reaffirmed the fact that tropical cyclones could take a tremendous toll this far up the eastern seaboard. New York City, which had taken the unprecedented step of ordering mandatory evacuations of coastal areas, and shutting down the subway system, was largely spared. But Sandy, one year later, demonstrated just how vulnerable the metropolitan region was.

Sandy hit New York City as a Category 2 storm, and was the worst “natural” disaster in the city’s history. Forty-three New Yorkers died, with another ten casualties in the rest of New York State, 34 in New Jersey, and four in Connecticut. The storm caused about $19 billion in

7 Michael Marrella (Director of Waterfront and Open Space Planning, New York City Department of City Planning), interview by the author, New York, NY, May 11, 2015.
losses for New York City alone. The storm damaged more than 100,000 homes, and left 10,000 people looking for shelter. Subway tunnels and stations were flooded, taking days for service to be partially restored. Coastal areas such as Red Hook in Brooklyn, and the Lower East Side in Manhattan were flooded (Figure 3.3 and 3.6). The most striking visible damage, alongside the darkened Manhattan skyline, floating cars in underground garages, was the stretch of leveled houses in Breezy Point, Queens (Figure 3.4). In late-2012, New York State Governor Andrew Cuomo asked the federal government for $42 billion for Sandy recovery (Sledge 2012).

Figure 3.3. Flooding during Sandy at 14th Street in Manhattan, October 29, 2012. Photo by AP / John Minchillo

---

9 See FEMA (2015).
Sandy not only revealed the weaknesses in the city’s infrastructure, institutions, and buildings. It exposed and accentuated its underlying inequality. In what researchers have called a “Tale of Two Sandys” (Superstorm Research Lab 2013, 2; see also Cohen and Liboiron 2014; Jaffe 2013; Jaleel 2013), the storm “exacerbated crises which existed before the storm and continued afterwards in heightened form,” including longstanding problems such as poverty, lack of access to affordable housing, and lack of employment. On the ground, this meant that, in the outer-lying neighborhoods pummeled by Sandy, the city’s Build It Back\textsuperscript{10} program, already slow and spotty,\textsuperscript{11} might simply end up reconstructing existing spatial inequities. In addition, maintenance at the New York City Housing Authority (NYCHA) public housing projects impacted by the storm has been delayed. Boilers, other mechanical equipment, and lobbies have

\textsuperscript{11} See Durkin (2014) and L. Robbins (2014) for accounts of the Build It Back implementation.
remained unfixed since the storm. It was only in the spring of 2015, two and a half years after Sandy, that Mayor Bill de Blasio announced that the Federal Emergency Management Agency (FEMA) would give $3 billion to NYCHA to repair and protect 33 public housing developments (see Durkin 2015; NYC 2015a).

These shortcomings in recovery and rebuilding have taken place in the context of some of the most dramatic urban development transformations in recent New York City history. As Sam Bass Warner asserted, cities have always been centers of oppression and inequality. That has arguably been the case in New York from the start. Yet, new modes and extents of social, economic, and spatial disparity have emerged in the post-near-bankruptcy era, as the city transitioned from a center of industry to one of finance (Sassen 1991), and the continued repercussions of urban economic restructuring result in consolidating a “dual city,” a “capital of capital” (Mollenkopf and Castells 1991, 1). Besides the aforementioned park-side and waterfront developments, the explosion of very tall residential skyscrapers dramatically shows this accelerated disparity. More than 80 stories, with $100 million full-floor penthouse apartments, their fantastic heights – enabled through the accumulation of air rights – as much as anything represent the pure extrusion of capital. The rise of these “supertalls,”¹² a hyper-consolidation of wealth and rights, is an apt metaphor for the rise of income inequality in the city (Figure 3.5).¹³

---

¹² See Goldberger (2014) and Sorkin (2015) for commentary on the “supertalls.”
¹³ See NYC Comptroller’s Office (2012), Bergad (2014), McGurran (2014), and Roberts (2014) for recent statistics and accounts of rising inequality in New York City.
Figure 3.5. Top 1% income share in New York City and New York State relative to the United States. Source: Fiscal Policy Institute (2013, 4)

Red Hook

Red Hook, Brooklyn, spans waterfront port infrastructure along the New York - New Jersey Bay on the southwest and west, to the elevated Brooklyn-Queens Expressway and Gowanus Canal on the northeast and east. Along this short span, it traverses what might seem like alternate worlds: new art galleries, wine stores, and cafes along Van Brunt Street; the expanse of the Red Hook Houses, the largest New York City Housing Authority (NYCHA) public housing project in Brooklyn, completed in 1939, including 30 buildings and covering 39 acres; the Red Hook Ball Fields, famous for its Latin American food trucks; and the Gowanus Canal, declared a federal Superfund site in 2010. Historically an industrial, port neighborhood, home to immigrant communities and dockworkers, the neighborhood underwent severe decline in the 1970s and 80s. In 1988, LIFE magazine named Red Hook the “Crack Capital of America.” For some time
dodging the most acute effects of gentrification because of its relative physical isolation and lack of subway access, Red Hook now confronts clear change. The stores along Van Brunt Street, the spine of gentrification in the neighborhood, and Ikea, which opened in 2008 and paid for a waterfront park, were harbingers of things to come. A controversial for-profit private school and new townhouses are under construction, and larger, more ambitious development plans have been proposed for the waterfront.\textsuperscript{14}

Red Hook, coastal and low-lying,\textsuperscript{15} was one of the worst hit neighborhoods in the city during Superstorm Sandy (Figure 3.6). Residents in the Red Hook Houses lost power and heat for weeks. (Temporary boilers were still present two years later. See Figure 3.7.) But in the days following the storm, Red Hook also emerged as a hub of grassroots recovery efforts. Staff from the Red Hook Initiative (RHI),\textsuperscript{16} a local community organization, Occupy Sandy and other local volunteers, and workers from city agencies worked together to organize recovery efforts. RHI's space survived the storm unscathed and took on a central role, serving as command center and soup kitchen for post-disaster recovery.\textsuperscript{17} Social media sites lit up as volunteer coordination and fundraising efforts were developed around the Red Hook efforts (Figure 3.8) (Red Hook Initiative 2013; Schmeltz et al. 2013).

\textsuperscript{14} See Hughes (2015), Nalley (2015), and Souccar (2014).
\textsuperscript{15} Almost the entirety of Red Hook lies within the Category 1 storm-surge zone (http://maps.nyc.gov/hurricane/).
\textsuperscript{16} I was the architect responsible for designing RHI's current space in Red Hook. See Goh (2013b) for my letter to the editor about spaces of resilience in the New York Times.
\textsuperscript{17} See the end of Chapter 5 for a full discussion of this.
Figure 3.6. Map of Red Hook, Brooklyn and Lower East Side, Manhattan, including Superstorm Sandy surge impact, and location of Red Hook Initiative and Good Old Lower East Side. By author based on NASA aerial photo and Sandy surge mapping project by WNYC.
The Red Hook Initiative works primarily with youth who live in public housing, targeting the intergenerational poverty that plagues the neighborhood. RHI provides health and education workshops as well as job training. Jill Eisenhard, founder and executive director of RHI, explains why the organization’s staff members, many of whom are hired from within the public housing community, were so ready to take their place in recovery efforts:

Many of the people who were there had worked for RHI for five, eight, ten years. Our whole model is around being able to identify community need, and respond to it. Sure, it’s different from a young person who’s suddenly homeless. But knowing who your neighbors are, knowing how to assess a situation, knowing how to develop an action plan, an agenda… that isn’t any different from what they are doing everyday, it’s just a different kind of situation… I think it’s building on the social capital that’s there in the neighborhood.  

In the days immediately following the storm, there were lots of observations and complaints among news media, volunteers, and sympathetic New Yorkers that government agencies were not present on the ground. Eisenhard sets the record straight, noting that elected officials may not have been there on Day One, but were there within a few days. NYCHA employees were on the scene, but did not communicate this fact well. At the same time, Eisenhard stresses the issues that plagued municipal and federal recovery crews, particularly confusion stemming from a lack of local knowledge. “FEMA asked us a lot of things… one of our board members got into a truck with [a FEMA official], because he didn’t know where to go,” she says. “At the end of the day, you’re always going to ask someone local.”

---

18 Interview by the author, Brooklyn, NY, September 13, 2014.
19 Ibid.
Figure 3.7. Temporary boilers at the Red Hook Houses, Red Hook, Brooklyn, in May 2014. Photograph by author

Figure 3.8. Red Hook Initiative, the Sunday after the storm, November 4, 2012. Photo by Red Hook Initiative
Post-Sandy, there have been a number of recovery and resiliency initiatives in Red Hook. It was selected to be part of New York State's New York Rising Community Reconstruction program (NYRCR), tasked with facilitating community redevelopment planning in disaster-affected areas statewide. The neighborhood was also part of early Rebuild By Design research and design studies, although these efforts did not make it to the final round of proposals.

Local community leaders express ambivalence about these initiatives. Gita Nandan, architect and resident of Red Hook, and co-chair of the Red Hook NY Rising planning committee, stresses the positive aspects of that community planning effort, including the varied and numerous educational training sessions that illustrated the key issues, problems, potential solutions and synergies. She notes that many of the community stakeholders in Red Hook took the initiative to educate themselves about the issues. At the same time, Nandan points out the problems brought up by the disparate stakes of community members:

The critical factor, I think, is that [NYCHA residents] have no ownership over there. They have very little empowerment over their environment, and so when you’re asking community leaders to put together the plan, it’s very hard for residents who have never had any actionable influence to think that, whatever, they’re going to sit for eight months at a table and actually make an impact.\(^{20}\)

Eisenhard of RHI is more direct about the shortcomings in NY Rising’s planning process:

I don’t think they did a very good job of engaging public housing residents. You start getting into discussions like, Should there be a sea wall? Or should there be floodgates? These big infrastructure questions. And public housing residents are sitting there, and they’re, like, my building is still connected to a temporary boiler, and they bring gas in

\(^{20}\) Interview by the author, Brooklyn, NY, August 22, 2014.
every day to fill it. And the diesel fumes are coming in my window. And you’re talking about a sea wall? This meeting is not for me.\(^{21}\)

Red Hook continues to be a focus of attention by the media, researchers, and government officials. However, while there has been efforts at community resiliency planning in the neighborhood, these processes do not appear to engage fully across the diversity of stakeholders, in particular not finding ways to effectively include NYCHA residents, approximately 50% of the residents in Red Hook,\(^{22}\) with less material stakes. While the critical work of community organizations in the relief efforts immediately after the storm is well recognized (see Red Hook-NYRCR 2014), and efforts to reach out to marginalized residents clear, there has been little sustained attempt in the city and state planning processes to understand and build on these grassroots social support infrastructures. The relative lack of accounting for social resiliency or the agency of those who have been otherwise disempowered, and the systemic and structural barriers that define the risks faced by, and expectations of change of, disparate social groups characterize the post-disaster planning efforts in the neighborhood.

This lack of agency manifests itself in other ways. Eisenhard has previously shared with me her concerns about “storm fatigue” on the part of Red Hook Houses residents, who have been asked numerous times since the storm to take part in focus groups. She reiterates her concerns, and points out the flip side of this kind of disassociation from the system, stating,

You talk about resilience… I think for people in public housing, by December [2012], they’re, like, My lights are on, everything is fine, why are people still talking about this?

\(^{21}\) Interview by the author, Brooklyn, NY, September 13, 2014.

\(^{22}\) 6,500 residents live in the Red Hook Houses, out of the total 12,400 residents of Red Hook – cited in Red Hook-NYRCR (2014), based on data from 2010 US Census and NYCHA.
Because when you're a low income New Yorker and you've been marginalized, stuff like this happens all the time. It's not always on the national news.23

There is one aspect to this story, in particular, that ties together the community social relationships, post-disaster response, and broader possibilities of planning for future resiliency. RHI started the Red Hook Initiative WiFi project in collaboration with the Open Technology Institute (OTI) in late-2011 as a community-led project to bring free broadband connectivity to the neighborhood. RHI and OTI first placed antennas on the roof of the RHI building, and then extended the range with additional antennas on another nearby building. The network offers access to the Internet, as well as local network applications such as real-time bus tracking and NYPD relations surveys, developed in partnership with RHI participants (RHI 2012; OTI 2013).

Superstorm Sandy left much of Red Hook without electricity and communications, but the RHI building, and RHI WiFi, stayed up. In the days that followed, it functioned as a critical communications hub for area residents. Less than two weeks after Sandy hit, FEMA officials and volunteers set up additional routers to extend the network to further support recovery efforts. Since the storm, the network has been further expanded, and RHI and OTI now also train neighborhood youth to install and manage networking equipment in a program called "RHI Digital Stewards" (OTI 2013, 10). The RHI WiFi project connects and weaves community, technology, coalition, and resilience from the ground up.

---

23 Interview by the author, Brooklyn, NY, September 13, 2014.
The Lower East Side in Manhattan is home to some of the most illustrious and iconic narratives of New York City urban lore. The area bearing this name originally spanned 14th Street in the north to Canal Street in the south, before the area above Houston Street was re-coined the East Village in the 1960s, a particularly successful campaign of cultural and real estate marketing revisionism. Historically a center of commerce and a working class area absorbing waves of immigrants from the mid-1800s on, it has more recently been characterized by struggles over real estate development, confronting waves of gentrification from the 1970s through the 1990s and beyond (Mele 2000; Smith and DeFilippis 1999; Two Bridges Neighborhood Council 2011). The neighborhood has also witnessed movements of radical politics and avant-garde art. The pressures of gentrification notwithstanding, the Lower East Side is still home to many lower income residents. It contains a significant concentration of NYCHA public housing projects lining the elevated FDR Drive along the East River. These include the Smith, Rutgers, La
Guardia, and Vladeck Houses south of Houston Street, and the Baruch, Wald, and Riis developments north of Houston, in the East Village.

The Lower East Side did not suffer the same extent of storm surge and flooding as Red Hook in the direct aftermath of Sandy (Figure 3.6). However, the impacts were often invisible—in flooded basements and disrupted infrastructure stemming from a massive transformer explosion at the Con Edison power plant on 14th Street, a few blocks north on the east side of Manhattan. These impacts were particularly serious for low-income residents living in NYCHA projects, who lived without electricity and working elevators for weeks after the storm (LES Ready 2014).

Figure 3.10. Volunteers for Chinatown / Lower East Side community organization CAAAV distribute supplies. Source: photo by Ken Chen via opencitymag.com (pictured in LES Ready 2014)
Damaris Reyes is a longtime community organizer and Executive Director of Good Old Lower East Side (GOLES), a housing and tenants rights advocacy group. In the days following Sandy, Reyes found herself in a context of frenetic activity and confusion. Staff members, volunteers, and members of other community organizations were attempting to help people who were stuck in their apartments. But there was little ability to coordinate these efforts, since there was no response plan in place, and communications networks were unreliable. She recounts the realization that the volunteer activities were not organized, with disparate attention to different places, and not enough knowledge of who was doing what. “I think that was a moment where I
said, this is going to happen again and it would serve us right to figure out how to use our
collaborative and organized and coordinated way."\textsuperscript{24}

Reyes talks about the process of forming LES Ready, the Lower East Side Long Term
Recovery Group, a coalition of community groups and institutions coordinating response and
preparedness planning and training for future disasters in the aftermath of Sandy: “With Sandy
and disaster preparedness, we now have 36 members in the network and it’s growing. We have
resident associations, block associations, we have clergy, we have medical providers, that is not a
coalition that you could just build around anything.” She credits her longtime experience as a
resident and organizer in the Lower East Side for her ability to bring people together. “So, I
knew who to call,” she says, talking about her previous work on coalition building on housing
and rezoning campaigns. Reyes explains some of the challenges and opportunities in building
coalitions in a context where some community-based organizations are large and relatively well
funded (for example, the settlement houses, which have been in operation since the late 1800s),
in contrast to her own organization, GOLES, with its reputation as “rabble rousers” and “trouble
makers.” In her view, despite – and because – of this reputation, Reyes was elected as the chair of
LES Ready.

The Lower East Side, like Red Hook in Brooklyn, was selected as one of the localities for
the NY Rising Community Reconstruction program. In addition, the neighborhood is the site of
perhaps the most high profile projects of the Rebuild By Design initiative, the “BIG U” project
by the BIG team, designed to protect Manhattan from midtown down to the southern tip.\textsuperscript{25}
Images and descriptions of the “BIG U” has dominated news accounts of Rebuild By Design. Its

\textsuperscript{24} Interview by the author, New York, NY, December 18, 2014.
\textsuperscript{25} This project will be discussed in more detail in Chapter 5.
clear counterpoint to the post-Sandy photos of Lower Manhattan in darkness provokes a visceral response. The LES Ready coalition served as a key community constituent for this project. Says Reyes, "I wanted to make sure that our community was not forgotten, especially because on the surface we looked like we recovered and bounced back right away." 26

Reyes discusses the relationship between the design team members and her constituents. Echoing Eisenhard in Red Hook in terms of community expectations, she recalls previous planning efforts in the neighborhood that had not amounted to discernible results:

You know, this is not new anymore, the planning workshops... People have a little bit of planning fatigue, but more than that, you have all these kind of processes that happen and they don't always result in anything concrete, so we were, like, why do you want my opinion? For what?! 27

Through the course of the community meetings, she was gradually convinced that they were being heard. She says, "When they showed us the final stuff when they came back the second time, I could tell by their responses. The people felt like their ideas were being incorporated." 28

Because of the high-profile exposure associated with the project, LES Ready, and in particular GOLES and Reyes, have attained high levels of visibility in resilience design and adaptation circles. Rebuild by Design principal Henk Ovink often mentions Reyes by name, and she has participated on international panels on resiliency.

26 Interview by the author, New York, NY, December 18, 2014.
27 Ibid.
28 Ibid.
Figure 3.12. Damaris Reyes presents at a Rebuild By Design public meeting in the Lower East Side, New York, NY. Source: video still from “Rebuilders: GOLES” by Rebuild By Design

Rebuild By Design

President Barack Obama signed an executive order on December 12, 2012, six weeks after Sandy, establishing the Hurricane Sandy Rebuilding Task Force. The Task Force’s primary responsibility was to coordinate rebuilding efforts, strengthen the economy, understand weather-related vulnerabilities and future risks, and determine a strategy for rebuilding (White House 2012). The president appointed US Department of Housing and Urban Development (HUD) Secretary Shaun Donovan as chair of the task force. In June 2013, the Hurricane Sandy Rebuilding Task Force launched Rebuild By Design, a design competition to spur “innovative, implementable proposals that promote resilience in the Sandy-affected region.” The objectives, as stated in the brief, include better understanding of the region’s vulnerabilities and...
interdependencies; generating regionally-applicable design proposals to promote resilience; building local community and government agency capacity; strengthening collaboration within government and between government, business, academic, and nonprofit groups; spurring innovation and “outside-the-box perspectives;” and executing “world-class projects with regional impact” (Rebuild By Design 2013, 1).

Rebuild By Design announced ten finalist teams in November 2013, with design proposals for sites in localities in New York, New Jersey, and Connecticut (Figure 3.13). In June 2014, it announced the six winning teams.

Rebuild By Design represented a new framework, both in organization and funding. Launched by the Hurricane Sandy Rebuilding Task Force, the management and coordination would be transferred to HUD. The Task Force and HUD’s work was supported a number of organizations, including the Institute for Public Knowledge at New York University, the Municipal Art Society, the Regional Plan Association and the Van Alen Institute. The Rockefeller Foundation, a private philanthropic organization, provided a large part of the funding for the initial competition stage. Importantly, the implementation of the design proposals would be funded by $930 million in federal Community Development Block Grants targeted towards disaster recovery (CDBG-DR), allocated to HUD under the Disaster Relief Appropriations Act of 2013 (US HUD 2014). According to Scott Davis, Senior Advisor in the Office of the Secretary at HUD, the appropriation language from the US Congress authorizing the HUD Secretary to allocate the CDBG funds at his or her discretion was crucial for this step of the process, enabling, for the first time, the use of a competition to determine the allocation.29

29 Interview by the author, Washington DC, October 31, 2014.
Nancy Kete, Managing Director of the Rockefeller Foundation, describes the context in which the philanthropic organization decided to become involved. She cites a number of parallel factors, including ongoing Dutch economic and diplomatic missions, and the initiatives at the White House Office of Science and Technology Policy to invest in innovation and spur competitiveness. 30 “We saw an enormous opportunity with Rebuild by Design to spur something

30 The American COMPETES Act, reauthorized by Congress in 2010.
big and to help government innovate,"\textsuperscript{31} she says. The foundation’s involvement was important for two primary reasons – funding and management. While the federal CDBG funds were allocated for implementation, there were no federal funds for the competition itself. The Rockefeller Foundation was the primary funder for the competition, as well as for hiring Rebuild By Design staff members. Says Kete, “HUD wasn’t able to use federal or public money for anything up until the grant stage… Our support made it possible to use an entirely new approach for post-disaster spends. We added a little bit of structure and back-end organization to make sure that this would work, because it needed strong project management.”\textsuperscript{32}

Beyond the organizational innovation, there were the challenges of motivation – why take on the risk? – and the speed at which it had to happen. Kete stresses the extraordinary circumstances:

It all happened amazingly fast, in part because Dr. Rodin – the Rockefeller Foundation’s president – had the authority to make a commitment, and also because we knew Secretary Donovan from his previous appointment here in New York City government. It wasn’t clear at the beginning exactly where all this was going to go, everything was moving at a pace I’d not seen before. Everyone felt a sense of urgency, and we knew we were writing a new script as we went along.\textsuperscript{33}

Marion McFadden, Deputy Assistant Secretary for Grant Programs at HUD, echoes Kete’s assessment of the context of Rebuild By Design. She states, “It took an extraordinary amount of work and trust, but… it was only possible after a disaster because of the kind of

\textsuperscript{31} Interview by the author, New York, NY, June 16, 2014.
\textsuperscript{32} Ibid.
\textsuperscript{33} Ibid.
compassion and goodwill you get after a disaster is unparalleled anywhere else.” However, McFadden as well brings up a critical point about funding, also unique to the moment: “I will say from the federal perspective, on the record, that the states and the local government – at least through my lens – were driven by the fact that there was the potential for big CDBG dollars on the back side.”

The specific use of the $930 million in CDBG-DR funds has substantially informed the objectives and outlook of the Rebuild By Design competition. While allowing a broad range of recovery activities, these funds are primarily targeted for low-income residents and urgent community development needs (US HUD 2015). The funds would be allocated to the local municipality after the competition phase. This reinforces the necessity for community engagement, and attention to the worst impacted localities with the least capacity to respond. At the same time, it puts the responsibility to implement these designs squarely in the court of the individual localities after the CDBG funds are allocated, with their varying rules and regulations for doing this. There is no specific mechanism directly linking the competition proposals with the eventual outcomes.

One of the defining characteristics of the Rebuild By Design process is the relationship between the global – the ten selected finalist teams involved design and engineering firms from around the world (although primarily from the US and Netherlands) – and the very local – the localities and municipalities that would be competing to receive the block grants. Amy Chester, Manager of Rebuild By Design, recounts the challenges of making sure teams understood that they had to win local government support, in order to have implementable projects, and as well

34 Interview with the author, Washington DC, October 31, 2014.
the pressure from funders to ensure community involvement, all in a relatively open competition structure:

So how do we take incredibly smart people that are coming from around the world and teach them about our region? ...How do we prove to them that they need to forget everything they know? And relearn everything.\(^{35}\)

Rebuild By Design, by many counts, represents an innovative new model for organization and funding. What it leaves as open questions, unaccounted for, include the effectiveness of the proposals themselves – will they work? – and the on-the-ground urban politics. Because of the implementation funding structure, the initiative is positioned well to address inequities in the disaster-affected region. However, it remains unclear whether the level of engagement expressed by design teams and the competition management results in qualitative change in the way post-disaster recovery is conducted. I will explore these possibilities further in Chapter 5.

Chester expresses optimism about the community engagement process (in line with Reyes' assessment) noting,

Every one of them... we told them at the end at their jury presentation you can bring whoever you want, bring your coalition. And they all brought the local mayors and stakeholders and advocates to the jury presentation – as one team.\(^{36}\)

\(^{35}\) Interview by the author, New York, NY, June 19, 2014.

\(^{36}\) Ibid.
Jakarta

A sprawling megalopolis on the island of Java, Indonesia, situated between the Jakarta Bay on the north, and volcanic mountains to the south, Jakarta exemplifies the critical problems of rapid urbanization, burgeoning inequality, and threats from climate change. 9.5 million people live within the Jakarta DKI (Special Capital Region), 27.9 million in the larger metropolitan region. Jakarta, along with nearby Southeast Asian cities Manila, Yangon, and Bangkok, is considered among the top five cities in the world most vulnerable to climate change, trailing only Dhaka (Maplecroft 2013).

Jakarta has historically dealt with flooding problems. Forty percent of the city lies below sea level. Thirteen rivers thread through it. Climate change, compounded by rapid urbanization, has exacerbated this. Sea levels in Jakarta Bay are rising at 5.7mm per year (Hadi et al. 2005). Land subsidence, attributed to unregulated groundwater extraction and increased impermeability due to rampant urban growth, has resulted in upwards of 0.25 meters per year of sinking in parts of the city (Abidin et al. 2011) – much faster than sea level rise, a point I will return to later in this chapter. The sinking land, rising seas, failing infrastructure, and clogged rivers have resulted in increasingly frequent and harmful floods – a severe one roughly every five years, serious ones occurring sometimes several times a week during the wet season. Massive inundations occurred in 1996, 2002, 2007, and 2013.

Jakarta is also the capital city in a country that is a political and ecological hybrid. Indonesia is particularly susceptible to tsunamis, earthquakes, and rising seas. At the same time it is often targeted by environmental activists because of extensive logging and forest burning. It is the most populous Muslim-majority nation, with relatively stable religious and racial diversity,
and it was also witness to Suharto’s dictatorship lasting half its post-independence period, including, in that time, a brutal invasion and occupation of East Timor.

Figure 3.14. Jakarta DKI and metropolitan region. By author based on Google Earth basemap

On the ground, the city exhibits an accelerated patchwork urbanism, what geographer T.G. McGee (1991) called desakota – hybrid regions merging aspects of city and country. Extensive urban development envelops less developed areas, producing the distinct landscape of “villages in the city.” The extreme spatial differentiation – islands of glassy towers nudging
against the variegated fabric of the kampungs, all encircled by choked highways and polluted rivers – is echoed in its stark socioeconomic inequality (cf. Kusno, Miller, and Turpin 2013; Padawangi 2012; Pratiwo and Nas 2005).

The history of Jakarta postcolonial development has been to turn away – from the coast, from the water, and from the colonial city. Waves of development pushed the center of the city further south (cf. Silver 2008) (see Figure 3.15). This history can be seen moving north from the new gleaming skyscrapers in Kebayoran Baru (initially planned in the late-colonial years as a new satellite city), through the weighty administrative buildings and nationalist monuments in Medan Merdeka, and finally to Kota, the Dutch colonial city, now in picturesque ruins (Figures 3.16 and 3.17). Since 1995, there have been sustained efforts, including presidential decrees, to refocus development towards the north, and to develop a waterfront befitting a megacity with Global City aspirations (Kusno 2013).

Figure 3.16. Looking south from Medan Merdeka, July 2013. Photograph by author

Figure 3.17. Ruins in Kota, January 2013. Photograph by author
Urban development in Jakarta has proceeded largely unchecked. It exemplifies “governance failure” in just and balanced infrastructure provisions, particularly in the highly uneven water and sanitation sector (Bakker et al. 2008). One encounters an air ranging from insouciance to despondency when talking to everyone from city officials to community activists in the city. Development happens—often haphazardly, often against or bending the rules, often by the large, powerful private development companies, in a context of fragmented urban governance and ineffective planning (cf. Douglass 2010; Salim and Firman 2011; Caljouw, Nas, and Pratiwo 2005). Within this rampant development, the plight of the urban poor—both “legal” and undocumented migrants in this “closed city”—has been a major flashpoint in debates about the future of the city. The rhetoric about the poor, from the highest circles of city government down, has often been relentless. The poor are blamed for the conditions of the rivers and canals, even as activists and researchers point to large-scale illegal dumping along the banks of waterways.37

Marginalization and Resistance: Kampungs

Kampungs in Indonesia, directly translated as “village,” refer to a fairly variable set of settlements—largely informal, often outside or straddling the bounds and regulations of municipal governance. Many have existed through colonial times, but have transformed dramatically in recent decades. In Christopher Silver’s history of kampungs in Jakarta, they are described as ethnically and class-defined enclaves, increasingly drawn, spatially and administratively, into the colonial city; cleared or encompassed by the city during early 1900s urban development;

37 Etienne Turpin (researcher, PetaJakarta), in discussion with the author, Jakarta, July 2014. Also see Turpin, Bobbette, and Miller (2013).
increasing in size and density due to mass rural-urban migration, and variously integrated into city administrative systems, in the decades following Indonesian independence; and in the late decades of the 20th Century subject to accelerated eviction and demolition (2008, 61). It is estimated that up 20-25% of Jakarta’s residents live in kampungs (McCarthy 2003), largely in social and spatial circumstances that do not fit in with the aspirations of the city’s leaders and economic elites for a modern, global city (Figures 3.18, 3.19, and 3.20).

Government officials plainly term residents in kampungs “illegal.” While this is often in reference to those who live in informal settlements outside of the longer established kampung areas, the attitude also reveals the systemic marginalization of the poorest residents of the city. Activists, in response, have pointed out the integration of the kampungs in extensive urban socioeconomic networks.

38 See as well Leaf (1993) for an in-depth discussion of the development of colonial and postcolonial land rights in Jakarta, including layers of conflicting, dichotomous land rights inherited through the colonial period, subsequent attempts at land reform, and privatized real estate development.

39 This sentiment was conveyed to me by various officials in the Jakarta DKI government, in response to questions about alternatives to relocation.

40 I. Sandyawan Sumardi (Activist, Ciliwung Merdeka), interview by the author, Jakarta, July 18, 2014. See also Sumardi (n.d.).
Figure 3.18. Kampung Bukit Duri, Jakarta, July 2013. Photograph by author

Figure 3.19. Kampung Pulo during flood, Jakarta, July 2013. Photograph by author
Figure 3.20. On the edge of Waduk Pluit, July 2013. Photograph by author

The history of government interventions into the lives and homes of kampung residents has often been brutal, with routine forced evictions (Human Rights Watch 2006; UN HRC 2013). However, it has not been monolithically so. In the 1970s, during President Suharto’s New Order, Jakarta undertook a Kampung Improvement Programme (KIP) to modernize infrastructure and services, winning the Aga Khan Award for Architecture in 1980 (Aga Khan Development Network, n.d.). Groundbreaking in its efforts to minimize the disruption of village settlements within the expanding city, the program focused on the provisioning of hardscape (paved roads and footpaths), water, and sanitation. While in many ways successful, the KIP did not predict the worsening environmental conditions forty years on. Nor did it prevent other threats to the settlements. Kampung areas decreased by half in the last two decades of the 20th Century, due to rapid urban development and renewal initiatives (UN-Habitat 2003). The plans to dredge and
normalize many of the city's rivers and canals threaten further displacement of residents.\textsuperscript{41} Kampungs now face double stress from climate change and increasing floods, and state and corporate-backed displacement.

Attention to the severe flooding problem in 2013 coincided with rapid political transformation in Jakarta. Joko Widodo (known popularly as Jokowi) won the governorship of Jakarta DKI in late 2012. His rapid rise was astonishing in a country that had only fully embraced democracy in 1998, and in which politicians, as a rule, come from wealthy political families. Jokowi, in both rhetoric and practice, prioritized a new kind of engagement between government and citizens, and a focus on spatial transformation. One of Jokowi's signature projects was to clear an area of kampung settlements in Muara Baru, along Waduk Pluit, a large retention basin in North Jakarta (Figure 3.20). This move was ostensibly to dredge the basin and build a park. Rapidly constructed, with fledgling trees propped up, Taman Kota Waduk Pluit (Pluit City Park) is now commonly known as "Taman Jokowi," even by kampung residents facing imminent evictions (Figure 3.21).\textsuperscript{42} It is widely held as a political win, and a turning point in society-government relations.\textsuperscript{43}

\textsuperscript{41} See elaboration on these plans in Chapter 5.
\textsuperscript{42} Based on informal conversations with kampung residents in Muara Baru area, North Jakarta, in July 2014.
\textsuperscript{43} Local news articles by Arditya (2013), Dewi (2013), and Setiawati (2013), among others, describe Jokowi's proposals and relationship with community activists.
While tangible benefits for the urban poor are still in flux, one can discern the change in attitude Jokowi brought to government. Even city officials express some bewilderment at his style, but concede that he seems to be getting things done. “It’s not good, but it’s working...” says Aisa Tobing, Chair of the Jakarta Climate Change Task Force, expressing that Jokowi’s style of showing up at district offices and visiting project sites doesn’t necessarily affirm his trust in city government employees. And yet, “…It’s working for these two years. Small progress…”

Jokowi’s habit of showing up, and his impromptu walks in various neighborhoods – *blusukan*, a term borrowed from the Javanese language, meaning, “walking around on a grassroots level,” as Sylvira Azwar, of the Jakarta Research Council, explained) – has shifted public imaginations

---

44 Interview by the author, Jakarta, July 16, 2014.
about government.\textsuperscript{45}

Only two years into his governorship of Jakarta, Jokowi launched a campaign for the presidency of Indonesia. On July 9, 2014, he won, beating retired Lt. Gen. Prabowo Subianto in highly factious national elections. Jokowi was officially sworn in as president of Indonesia on October 20, 2014.

\textit{Kampung Activism: UPC and Ciliwung Merdeka}

Even in the context of a brightening relationship with the city governor, local community organizations including the Urban Poor Consortium (UPC) and Ciliwung Merdeka (Free Ciliwung) have continued to resist eviction of kampung residents and plans for relocation. In the Muara Baru/Pluit situation, UPC, working with community architects and students from University of Indonesia, forged a working agreement with Governor Jokowi for a new, more socially-attuned social housing scheme (modern housing blocks with kampung-esque formal and social characteristics), as well as a commitment to rehousing within the area for residents impacted by further evictions.

\textsuperscript{45} See Dewi (2014a, b), Samirin (2013), and Tirtosudarmo (2014) for news and blog entries about Jokowi and \textit{blusukan}. The governor even brought Facebook founder Mark Zuckerberg on one of these famous impromptu walks when the latter visited Jakarta.
Explaining these successes, Edi Saidi, coordinator of UPC, stresses the organization's three-prong strategy, based on, first, "organizing from below... collective cooperation," second, advocacy in order to make constituents aware of the broader issues and city rules that impact their lives, and, third, coalition building and networking, bringing together various knowledge disciplines, including architecture and environment (Figure 3.23).\textsuperscript{46} He voices optimism about continued progress in the Muara Baru area, and stresses the change in process he has observed. I quote Saidi at length:

In the past, the government models have been ‘top down.’ There has never been dialogue, never had participation, never had discussions with the residents. What happens, then, is that the design of the housing offered to residents could never be a long-term prospect.

\textsuperscript{46} Interview by the author, Jakarta, July 15, 2014.
In the past, residents from the area were moved to Marunda [20 kilometers away, the northeast edge of DKI]... Residents were simply evicted, and forced to move. At the end... the residents only stayed there 3 months... 3 months! ...Finally, the residents returned to where they came from. Because there wasn't any process, dialogue, or discussion... I think that's different from the process happening now in Waduk Pluit. There, we have process for dialogue, participation, as well as a longer-term view; a model of housing that meets their desires and needs.

...Because it meets their needs, they will accept it. Location is important. The residents propose locations around the waduk, because they work around here... in the fishing industry. 47

Saidi, noting that the previous city governments were “anti-dialogue,” continues,

It's a win-win solution. The government will have an easier job, because residents won't have to be forced. They won't have to be evicted. They'll do it voluntarily. And there's a guarantee too... that they'll have a place [in the new housing nearby]. Therefore, both sides profit. The government will achieve their objectives to normalize the rivers, and the residents will have the security of a place to stay.48

Asked if Jokowi’s imminent presidency would change anything, he expresses conviction that UPC’s agreement with the governor would hold fast through leadership change and bureaucracy, and that Ahok49 would take on the responsibility of pushing forward the agreements and concepts. Concrete results in Muara Baru are spotty, as of mid-2014. There are several new low-
income housing blocks recently completed and under construction nearby, and several more promised. The new housing typologies have yet to be seen.

Ciliwung Merdeka organizes residents in Bukit Duri and Kampung Pulo (Figures 3.18 and 3.19), two kampungs that straddle a particularly flood-prone bend along the Ciliwung River in central Jakarta, and that are facing imminent relocation (Figures 3.25). Governor Jokowi had promised, before the election for the governorship, to visit Bukit Duri, a testament to his proclaimed populist agenda. During the meeting, Jokowi promised that he would support kampung residents' alternative housing proposal under three conditions, that it would have majority kampung resident support, be inexpensive, and not go against city regulations. The third stipulation is complicated. National government and city officials state that the rivers, including the Ciliwung, have to be dredged to 50 meters wide, with 7.5-meter easements, dimensions that would dramatically impact places like Bukit Duri and Kampung Pulo. Community organizers have continued these talks with the governor, pressing their case for alternative solutions, including conducting their own assessment of safety easement widths along the river, and producing designs for new typologies of river-edge housing and rehousing in place.

---

50 I. Sandyawan Sumardi (Activist, Ciliwung Merdeka), interview by the author, Jakarta, July 18, 2014.
Figure 3.23. Map of kampungs in relation to Jakarta landmarks, and the proposed NCICD Giant Sea Wall masterplan. By author based on Microsoft basemap.
Ciliwung Merdeka leader Sandyawan Sumardi explains the motivations behind their work, attesting to the economic relationships stemming from local kampung businesses, and the “extraordinary social model” of the kampungs. He voices frustration and optimism in the group’s dealings with city government. On the one hand, Sumardi’s group has had productive meetings with the governor – including his promise of support for their plans. On the other hand, he states that the process has been uncertain and unclear, and that there are disagreements and power struggles between branches of government, as well as infighting, a “pattern of conflict.” In particular, Sumardi takes issue with the national Ministry of Public Works and Housing, stating that they are intent on building “megaprojects” along the river.\footnote{Interview by the author, Jakarta, July 18, 2014.}

\textbf{Figure 3.24.} Ciliwung Merdeka with designers, researchers, and Bukit Duri residents, July 2013. Photograph by author
Figures 3.25a, b. Ciliwung River at Jatinegara, Central Jakarta, 24-hour difference during a minor flood on July 22, 2013. Kampung Pulo is on the left of the river, Bukit Duri on right. Photographs by author

These community-led counterplans by UPC and Ciliwung Merdeka have entered certain realms of public awareness and debate, including local and international media (see Chapter 5). Both organizations’ designs were included in Jakarta Vertical Kampung, a high-profile international exhibition housed in the Dutch Embassy. At the same time, it must be noted that these two kampung areas are particularly high-profile cases, in which organizers and residents have succeeded in building substantial activist coalitions and attracted the attention of international researchers and practitioners. They are the exceptions.

2007 Flood to the Great Garuda

Indonesians themselves were the first to admit that their capital was ugly and flat, with narrow streets and empty squares that are not parks, and with that disturbing Dutchmade canal system winding through the city.

- Indonesian Foreign Affairs Office, 1962 (quoted in Silver 2008, 100)
Jakarta’s struggles with infrastructure and water likely began the first time Dutch rulers built a canal in the colonial city of Batavia. The history between these two countries has been long and often deplorable. Contemporary Jakarta still very much exhibits the social, spatial, and technological legacy of more than 300 years of Dutch colonization. It is, in many ways, an arbitrary decision to pick up this story at a particular point in time. Yet, 2007 presents a watershed moment. That year, another devastating flood that inundated 40% of the city precipitated a series of developments that led to Dutch Minister Melanie Schultz’s unveiling of the Great Garuda plan in 2014. Hydrologists from Dutch research institute Deltares, surprised at the level of flooding during the 2007 flood – faster than sea level rise projections – conducted a flood hazard mapping study, and concluded that severe subsidence was dramatically exacerbating flooding conditions (Brinkman and Hartman 2009). The “sinking city” was courting disaster.

These findings led to the Jakarta Coastal Defences Strategy (JCDS), a joint study between the Indonesian and Netherlands governments, and developed by a team of consultants led by Deltares (Figure 3.26). The Indonesian coordinating body for the JCDS was the Kementerian Pekerjaan Umum (PU) (Indonesia, Ministry of Public Works 2011). The team completed its work in September 2011. The JCDS report is an extensive and detailed study of Jakarta’s flooding problems. It includes hydrological conditions, social and economic ties, infrastructural networks, and governance institutions in the metropolitan region. Directed towards coastal defenses, it includes key ideas about water protections and management, including a series of parallel floodwalls far into the Jakarta Bay and vast areas for water retention, making room for the water coming down along the rivers.

---

54 Also recounted by Kees Bons, director of Deltares Jakarta (interview by the author, Jakarta, July 11, 2014).
The findings and concepts contained in JCDS served as the foundational information in the development of the National Capital Integrated Coastal Development (NCICD) masterplan in 2014, known both as the “Giant Sea Wall” and “Great Garuda” plan (Figure 3.27). Again a joint project of the Netherlands and Indonesian governments, and financed by the Dutch, the coordinating body on the Indonesian side is, notably, the Coordinating Ministry for Economic Affairs (MENKO) (2014). The consultant team is lead by Witteveen+Bos and Grontmij, two infrastructure and urban development firms, with support from KuiperCompagnons (urban design and landscape architecture), Econys (an economic development agency), Deltareas, and Triple-A (Indonesian counterparts). The NCICD plan builds on the concept of a sea wall with new leasable land behind it – literally the Garuda figure – in order to raise funds for the
construction. Besides flood protection, the proposal includes plans for multi-modal transportation, a new financial district, civic spaces and parks, and massive freshwater reservoirs behind the wings of the Garuda, into which Jakarta's rivers will drain.

Figure 3.27. National Capital Integrated Coastal Development (NCICD) / "Giant Sea Wall" plan. Source: Indonesia, MENKO (2014)

The reasons for the shift from a Jakarta focus to a national focus in the NCICD plan are ostensibly for practical and symbolic reasons. In practical terms, the proposed plan includes upgrades to port facilities and transportation infrastructure that are under national purview. Symbolically, it enables the national government to take charge of a large-scale project,
particularly as an economic development plan. One of the Dutch consultants involved in the hydrological research opined that the embrace of Jakarta flood masterplanning as a national project was also motivated by politics.\textsuperscript{55} Jokowi had just been elected governor of Jakarta DKI, with rumors about a possible presidential run. The national government, at that point led by a rival party, did not want Jokowi to be able to take the credit for an important, symbolically powerful project.\textsuperscript{56} A member of the DKI government, in an informal conversation, also confirmed the political motivations behind this shift.

Hydrologically, the masterplan is remarkable. Flooding in Jakarta comes from two sources, the sea and the rivers. The solution, therefore, involves stopping the sea from entering the city, and allowing the rivers to drain out. The team proposed a set of no-regrets measures, designed to stop overtopping of flood protections in the near future. It then offered three long-term options: 1) retreat from North Jakarta, relocating 4.5 million people, 2) on-shore protections, including elevated sea wall and dikes along rivers, and retention ponds within the city totaling 10,000 hectares, and 3) a giant sea wall off-shore, with retention ponds between the new sea wall and the existing coast. Conceptually, after the outer sea wall is closed, the water in the ponds will be lowered, enabling the rivers and canals to better drain into them.\textsuperscript{57} Presented with these options, the Indonesian officials decided to proceed with the third, most extensive one. Reading the masterplan, and speaking to those involved, it is evident that the other two options were not seriously considered.

Four aspects of the plan are worth elaborating on. First, the draft masterplan

\textsuperscript{55} Kees Bons (Director, Deltares Jakarta), interview by the author, Jakarta, July 11, 2014.

\textsuperscript{56} Certainly not the first time that national politics intervened in the trajectory of urban policy in Jakarta – see, for example, Silver (2008, 92-103) and Bunnell and Miller (2011).

\textsuperscript{57} See further discussion about the specifics of the hydrological design in Chapter 5.
acknowledges but does not include in its scope a suite of very large reclamation projects that line the north shore of the city. The team was explicitly told that these reclamation projects were already tendered, and would not be changed or included in the new masterplan. Second, the plan, particularly the creation of freshwater reservoirs in what is now the middle of the Jakarta Bay, depends on the city's ability to stop land subsidence, and clean its clogged and toxic rivers and canals. These objectives have proven difficult to accomplish in the past, and it remains to be seen whether and how this will be accomplished now. Third, the scale of the masterplan basically ensures disruption to local ecologies and socioeconomic networks. The plan includes narratives about replenishing mangroves and wetlands, as well as social housing (30% of the Garuda plan, as stated in the masterplan) and the relocation of fishermen and fishing markets from impacted coastal areas. But details about the social housing and relocation, in particular, are not yet clear. Fourth, certainly related to the previous, the implementation of the plan is fully dependent on private investment. The masterplanning team has embraced a "flexible" approach. While there are concrete dates specified, like the proposed 2022 closing of the sea wall, the final shape and size of the Garuda would depend on the pace of real estate development.

The ambitious objective to turn the retention ponds into freshwater reservoirs is necessarily tied to other infrastructural projects currently under way, including the World Bank-funded Jakarta Urgent Flood Mitigation Project/Jakarta Emergency Dredging Initiative (JUFMP/JEDI) to dredge and channelize canals throughout the capital region, a masterplan conducted by the Japan International Cooperation Agency (JICA), and projects by the Ministry of Public Works to normalize and widen the Ciliwung River. This presents a significant

---

58 Arend van Woerden (Advisor, Regional and Urban Development, Grontmij), interview by the author, Houten, the Netherlands, September 29, 2014.
The Giant Sea Wall plan resituates the arena of debate – literally outside the current city. At first glance, it could be considered the latest in the line of urban development phases that turns its back on the old city and leaves it behind – "creative destruction" (Harvey 2006) via adaptation. Yet, its objectives are wholly tied with sociospatial changes back onshore. The political pressure to proceed with the plan will undoubtedly accelerate evictions along canals and rivers that are affected by the dredging and normalization projects.

For activists like UPC and Ciliwung Merdeka, after organizing around concrete issues such as easement widths and rights-of-way, building heights, and ownership terms, this presents a new front to their work that is somewhat abstract and distant. Its impacts on their constituents are not immediately tangible. For other groups like Rujak, an urban studies research and advocacy center that frequently collaborates with community organizations in the kampungs, this expanded terrain now demands not only research on the infrastructure and relocation plans that directly impact kampung residents, but the masterplans, technical reports on subsidence, flooding, and reclamation, and even broader issues like the national laws on the permitting of sand to be used for reclamation. Activists and researchers such as Dian Tri Irawaty of Rujak and Etienne Turpin of Petajakarta, a community-based flood mapping project, specifically question the masterplan’s basis of “knowing” what the real problem is and how to fix it. To Irawaty, the Giant Sea Wall effort is entirely in line with the city government’s previous efforts, ongoing since

---

1995, to encourage private reclamation development in the bay. The environmental scenarios, in her mind, are justifications to impose the development plan, and the promises in the masterplan about social housing and relocation of fishermen are means of deflecting criticism.\textsuperscript{60}

The iconic figure of the "Great Garuda" poses additional complexities. It is easy – literally by design – to visualize the massive bird-shaped new city in the bay. It is rather more difficult to visualize the impact of dredging and normalization along the rivers and canals. What is the difference between thirty-five feet versus fifty feet of river clearance? How do you “see” that impact in the dense kampung neighborhoods in which the river’s boundary conditions are not always so distinct? This issue will be addressed further in Chapter 5.

Critically, the NCICD Giant Sea Wall masterplan is not, at its core, a climate change-specific plan. Deltares hydrologists have asserted since the post-2007 floods study that the key threat to Jakarta comes from land subsidence, not sea level rise (Brinkman and Hartmann 2009; see also Deltares 2013). Sea level rise and stronger, more unpredictable storms will exacerbate the situation. Projected sea level rise, as Kees Bons of Deltares states, falls within the margin of uncertainty of subsidence.\textsuperscript{61} Yet, most accounts of the masterplan have stressed climate change as a motivator.\textsuperscript{62} Bons himself acknowledges that the invocation of climate change is the most effective way to garner attention for funding both nationally and internationally. By most accounts, subsidence in Jakarta is caused by over-extraction of groundwater,\textsuperscript{63} a particularly acute problem in the city because of its ineffective municipal water system. This condition worsens as

\textsuperscript{60} Interview by the author, Jakarta, July 10, 2014.
\textsuperscript{61} Email discussion with the author, February 4, 2015.
\textsuperscript{62} See, for example, news accounts like Ho and Rahadiana (2014), McNeill, Nelson, and Wilson (2014), Peters (2014), and Stedman (2014).
\textsuperscript{63} See, for example, Kagabu et al. (2013) and Chaussard et al. (2013) for hydrological and remote sensing studies of subsidence and causes.
rapid urban development continues. It is easy to see the irony – development is the problem, and, in this case, development is posed as the solution.

It would be a mistake to say that the progenitors of the plans are always their most ardent supporters. Deltas was a primary actor in evaluating the 2007 floods, and the 2012 JCDS plan, and now plays a supporting role in the NCICD masterplan. Well aware of the difficulty and expense of a large-scale hydrological feat such as closing off the retention ponds from the sea, Bons says, “So, just that it can be done doesn’t mean that it has to be done... We try to do everything not to close... because it’s the unsustainable solution.”

Analysis

The dominant state-led environmental plans in New York and Jakarta reflect the existing urban economic and sociospatial systems in which they are embedded. Rebuild By Design in New York, while created via an innovative set of mechanisms – meshing private philanthropy, targeted federal aid, and new transnational relationships – still relies on and works through a particularly US-centric set of planning principles. It is posed as a regional initiative, but it is not comprehensively so. The funding structure of Rebuild By Design – the use of CDBG-DR funds for a competition – guarantees that the individual proposals will be limited to specific localities. The intent of the funding, often much less than necessary to implement the plans, is intended to spur further private investment. The objectives are ambitious, the process novel, but the overall arc fits well within the preferred mode of urban governance – each municipality to its own, increasingly reliant on public-private partnerships for large-scale planning initiatives.

64 Interview by the author, Jakarta, July 11, 2014.
In Jakarta, the NCICD masterplan is ambitious and grand in urban and environmental design, and in infrastructural terms. It is equally as ambitious in its intent to capture very large-scale private investment in order to carry the vision out, in line with recent trends in urban development in the city. As massive as the plan is, its authors designed it to be implementable in phases, with variable end configurations, linked to levels of protection, and to the extent of real estate buy-in. Like many of Jakarta's other large-scale projects – the toll highways, stalled monorail, and canal dredging – it cannot be said to be comprehensive. The masterplan is proposed to solve many problems, but it also says little about a barrage of other problems – both social and infrastructural – back on land.

As political circumstances shift in Jakarta, so has the nature of contestation changed. Community leaders like Edi Saidi of UPC and Sandyawan Sumardi of Ciliwung Merdeka agree that this is a better situation than it has been in the past. Governor Jokowi's tenure enabled more open and effective lines of communication between residents and city government, and the possibility of significant agreements. Yet Jokowi too continued the push for privatized urban development, as has Basuki Purnama (Ahok), his successor as governor of Jakarta. These leaders as well govern a city that is sprawling in both physical space and bureaucracy. As Sumardi states, the fragmented nature of governance in Jakarta, and the often unsynchronized actions between levels of government, remain significant hurdles.

In both New York and Jakarta, climate change has indeed changed the situation. In New York, Superstorm Sandy prompted the focus on issues of resilience, and reinvigorated discussions on climate change. Sandy was a “tipping point,” as Cynthia Rosenzweig, co-chair of the New York City Panel on Climate Change (NPCC) recounts, that led Mayor Michael Bloomberg’s team to contact Rosenzweig to reconvene the NPCC, and update the climate projections for the
city. Beyond the science, the wake of Sandy and the prospects of greater risks arguably paved the way towards different structures of organization. The Hurricane Sandy Rebuilding Task Force's "Hurricane Sandy Rebuilding Strategy" report explicitly focuses on existing and future climate change-related threats (HSRTF 2013). Rebuild By Design, launched by the task force, has very clearly helped put not only design, but also climate change in government and public focus.\footnote{In contrast, the NY Rising Community Reconstruction program, overseen by New York State, significantly underplays climate change in its documentation, leaving it up to the communities themselves to refer to it in their individual plans and reports.} In Jakarta, the 2007 and 2013 floods brought on the specter of (at least partially climate-induced) environmental catastrophe for the city. This realization is intertwined with the long-running objectives to change the narrative of the city, to build, in this case, a world-class waterfront and river walks befitting a global city. What remains ongoing is how organizations such as UPC and Ciliwung Merdeka continue their fights on a local community level in the face of new kinds of threats that emerge across an extended spatial and scalar terrain, such as invocations of climate change, narratives of environmental catastrophe, and projects such as the Giant Sea Wall.

Spatial marginalization is inextricably intertwined with the impacts of urban environmental change in both New York and Jakarta. This is not always because of geographical conditions, for example, low-lying, coastal conditions, but also by the socioeconomic factors that accompany such spatial differentiation. In Red Hook and the Lower East Side in New York, the location of public housing areas in these neighborhoods certainly exacerbated the impacts following Superstorm Sandy, particularly with problems of access during the immediate recovery period, and longer-term repair and maintenance issues. This is not to suggest that public housing in New York, generally speaking, is located in environmentally vulnerable areas. But the scale and concentration in these two neighborhoods contributed to a marked susceptibility of
residents. In Jakarta, many at-risk kampung areas are precisely located in places that are most susceptible to flooding, perched on riverbanks or along retention basins and the coastal floodwall. In places like Muara Baru in North Jakarta, and in Bukit Duri and Kampung Pulo along the Ciliwung in Central Jakarta, the continual influx of migrants to the city, coupled with the pressures of development on the shrinking kampungs, have resulted in increasingly precarious conditions, socially and physically.

Of course, marginalization in New York and Jakarta are quite different. New York does not exhibit the same scope of informality that one finds in Jakarta (even though there are clearly informal living situations, contributing, for example, to the suggested undercounting of residents in Red Hook). Conversely, even though class and economic struggles play out in very real ways, the urban poor in Jakarta’s kampungs do not face the kind of systemic racism and violence that plague many residents of New York public housing and poorer neighborhoods. At the same time, both cities exhibit increasing socioeconomic and spatial inequities in the face of rapid urban and economic development, and both have a stated imperative to address socio-environmental issues with “green” projects.

In terms of organizing against marginalization, three key points are critical across the sites in New York and Jakarta, including the relationship between marginalization and resilience, the organization of local knowledge, and the building of broad-based coalitions.

**Marginalization and Resilience**

First, aspects of marginalization have been central to the potential for social and environmental resilience in Red Hook and the Lower East Side in New York, and in the kampungs of Jakarta. Jill Eisenhard's observations about Red Hook Initiative staff members' shared experiences in
facing adversity explains how they were able to respond quickly and effectively immediately after Superstorm Sandy. Damaris Reyes’ echoes this in her thoughts about the role of GOLES’ long-term struggles for housing rights in the Lower East Side, and how its reputation as rabble-rousers – born of a willingness to pursue contentious political action – became an asset in organizing a broader community coalition.

In Jakarta, poor urban residents face a withering onslaught: uncertain tenure rights, rampant and rapid urban development, increasing environmental threats, and social stigma. These oppressions continue even with repeated observations that stress the social and economic vitality of kampungs, their integral but often less visible ties to the fabric of the city. And yet, there exists long-running, cohesive organization among kampung activists and residents against the threats they face. In the key examples of Muara Baru, Bukit Duri, and Kampung Pulo – kampung areas facing the most immediate and disruptive evictions – UPC and Ciliwung Merdeka have succeeded in partially resisting or delaying demolition, putting together coalitions and proposing community-led alternatives, and maintaining effective lines of communication with city authorities. This resistance is based at least in part on the shared struggles, constituted spatially and socially, faced by kampung residents. (See more on these struggles in Chapter 5).

We often talk of low-income housing in the US, particularly public housing projects, in terms of segregation and isolation, and view it as somewhat of an anachronism at a time when privately-developed, mixed-income projects are the norm. We also often hear about the resilience of poor people confronting adversity. But, these examples suggest a more proactive, positive (in its definition of affirmation or inclusion) approach to weaving together social and environmental resilience. Importantly, it as well a way to consider form – both urban form and
settlement form – in the context of resilience, something that has so far resided largely in building structure and technology, landscape, and infrastructure.

Local Knowledge

Second, the organization of local knowledge is critical. In New York, this is particularly the case in the days immediately following a disaster like Superstorm Sandy. Eisenhard's statements about FEMA and government officials' reliance on RHI staff members to lead them around the neighborhood, and Reyes' realization about the need for coordination among the many long-running community groups in the Lower East Side illustrate two aspects of this. In Jakarta, the local knowledge base – including social and economic ties – integral to the kampungs largely form the basis for organizers' deliberations with government officials. Activists, too, invoke the lack of attention to local knowledge in their resistance to the Giant Sea Wall plan.

Coalition Building

Third, the forming of broad-based coalitions has proven very significant in each of the sites. In Red Hook, the Red Hook Wi-Fi project exemplifies the kind of project that is launched on a very local level, through the partnership of very different organizations, which then leads to broader and longer-term change. Reyes, in the Lower East Side, mobilized LES Ready as a proactive coalition building initiative based on her organization's experiences during Sandy – recognizing that the preponderance of community-based groups in the neighborhood would not alleviate confusion without such a coalition.

In Jakarta, UPC and Ciliwung Merdeka have been particularly effective at forming broad, diverse coalitions. These include local community designers, academics, students, and policy
advocates, as well as attention and engagement among researchers from around the world. This ability has been important in building knowledge, developing awareness, and maintaining their struggles through news cycles and political shifts.

This attention and engagement necessary for coalition building has no doubt been aided by the high profile nature of the disaster. For example, backlit photographs of kampung houses along the Ciliwung adorn the walls of the Rotterdam Architecture Biennale, presented as a kind of Ground Zero of one extreme of the global urban condition (Figure 3.28). The “picturesque” “slums” combined with dramatic deluge have proven to be irresistible to media, advocates, researchers, and designers alike, a kind of “disaster scenography.” While this long-emerging phenomenon brings attention and effort to just causes, it also represents, at its core, the objectification of struggles and reification of dominant worldviews.
Figure 3.28. Photograph of the Ciliwung River at the 6th International Architecture Biennale Rotterdam, June 2014. Photograph by author
Urban climate change adaptation plans, although often linked to a specific “city” and involving a bounded physical geography, are produced in the context of spatial, political, and economic relationships that span multiple scales and levels. This chapter explores the ways in which large-scale adaptation plans are conceptualized. Who’s behind them, and who stands to benefit? It focuses primarily on the actors, entities, and networks involved in the production of these plans.

One of remarkable things about this story – and increasingly others like it – is the role of the Dutch. Dutch infrastructure planners, hydrologists and engineers, architects, urban designers, and landscape architects, and economic development consultants are extensively involved in New York and Jakarta. They are as well in many other parts of the world, including New Orleans, Ho Chi Minh City, and Dhaka, all places facing significant climate and water challenges.

In March 2013, the Netherlands Ministry of Infrastructure and the Environment (IenM) and the US Department of Housing and Urban Development (HUD) agreed to a memorandum of understanding (MOU) for cooperation between the two countries in sustainable urban development and water management. Dutch Minister of Infrastructure and the Environment Melanie Schultz and HUD Secretary Shaun Donovan (also chair of the presidential Hurricane Sandy Rebuilding Task Force) signed the MOU in Washington, DC (Figure 4.1) (US HUD and Netherlands IenM 2013). A year later, in April 2014, Minister Schultz was in Jakarta, Indonesia, to announce the Dutch funded and authored Jakarta National Capital Integrated
Coastal Development (NCICD) / “Giant Sea Wall” masterplan, as well as to affirm the cooperative intents behind a June 2012 MOU between the Netherlands and Indonesia on issues of water and environment (Figure 4.2) (Dutch Water Sector 2014; Indonesia PU 2014; Netherlands Gov 2014a). The triangulation between the three countries is completed, when, in September 2014, the Netherlands Water Partnership, a business development coalition of public and private entities, organized a trip for a delegation from Indonesia to visit New York and New Orleans to learn about adaptation projects. Officials from both American cities and HUD as well as representatives from the Rockefeller Foundation were part of this trip (Figure 4.3) (Connecting Delta Cities 2014).

**Figure 4.1** (left). Shaun Donovan, HUD Secretary, and Melanie Schultz, Netherlands Minister of Infrastructure and the Environment, sign the MOU between the US and the Netherlands. Source: Dutch Water Sector

**Figure 4.2** (right). Dutch Minister Melanie Schultz and Djoko Kirmananto, Indonesian Minister of Public Works, at the announcement of the NCICD plan in Jakarta. Source: Dutch Water Sector
Even cursory studies of urban adaptation initiatives in both New York and Jakarta quickly affirm these Dutch connections. A key figure in the New York efforts is Henk Ovink, principle of Rebuild By Design and senior advisor for Secretary Donovan in the Hurricane Sandy Rebuilding Task Force. Ovink was, prior to this, director of spatial planning and water affairs in the Netherlands Ministry of Infrastructure and the Environment, and he had led Secretary Donovan on a tour of water management projects in the Netherlands after Sandy. No fewer then six of the ten teams participating in Rebuild By Design included Dutch design and engineering expertise.¹ In Jakarta, the extent of subsidence and flooding problems in 2007 was determined by

¹ See HSRTF (2013), Kimmelman (2013a), Netherlands Government (2013), Shorto (2014a) for elaboration on this relationship.
Deltares, a Dutch consulting firm and research institute extensively involved in water management projects around the world, including the United States and throughout South and Southeast Asia. The Jakarta “Giant Sea Wall” masterplan is not only being conducted with Dutch government funding, it is led by a group of Dutch engineering, infrastructure, economic development, and design firms.

Table 4.1. Table of Actors in Rebuild By Design and Jakarta NCICD Masterplan

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Rebuild By Design</th>
<th>Jakarta NCICD Masterplan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site(s)</td>
<td>Multiple sites, New York metro region, USA</td>
<td>North coast of Jakarta metro region, Indonesia</td>
</tr>
<tr>
<td>Local Coordinating Body</td>
<td>US Department of Housing and Urban Development</td>
<td>Coordinating Ministry for Economic Affairs, Indonesia</td>
</tr>
<tr>
<td>Primary Actors (bold denotes Dutch actors)</td>
<td>Primary RBD staff: <strong>Henk Ovink</strong> (Principal), Amy Chester (Managing Director), Eric Klinenberg (Research Director)</td>
<td>Masterplan team: <strong>Witteveen+Bos</strong>, Grontmij, Kuiper Compagnons, Ecorys, Triple-A, Deltares</td>
</tr>
<tr>
<td></td>
<td>Finalist design teams (bold denotes teams with Dutch firm participants, see detailed description later this chapter): <strong>BIG team</strong>, HR&amp;A Advisors Inc. with Cooper, Robertston &amp; Partners team, <strong>Interboro team</strong>, MIT CAU + ZUS + <strong>URBANISTEN team</strong>, OMA team, PennDesign/Olin team, Sasaki/Rutgers/Arup team <strong>SCAPE team</strong>, <strong>WB unabridged w/yale Arcadis team</strong>, <strong>WXY/WEST 8 team</strong></td>
<td>Program Management Unit: <strong>Royal Haskoning</strong>, Rebel Group, UNESCO-IHE*</td>
</tr>
</tbody>
</table>

*Institute for Water Education, part of UN-UNESCO, but based in Delft, the Netherlands, established jointly by UNESCO and the Government of the Netherlands
It's worth noting that MOUs between nation states and subnational parties, in and of themselves, are not unusual. However, in recent years these MOUs have been brokered towards cooperation on sustainable urban development and water management, explicitly towards climate resilience. They, more often than not, involve the Netherlands.²

Learning From… Policy Mobilities

There is a long history of countries “learning from” other countries, as well as policies being forced on countries. In terms of planning, these have ranged from one of authoritarian and/or contested impositions (often in colonial contexts) to degrees of borrowing and “synthetic innovation” (S. Ward 1999, 58). In the post-World War II, postcolonial period, these initiatives have often taken the form of development aid, technical assistance, and policy transfer, from richer, Western nations to poorer nations of the Global South.

In a time of globalization, neoliberalism, and technological permeation, modes of policy transfer, and the justifications behind them, are shifting. The implications of this have both theoretical and methodological consequences for this study. In Chapter 1, I outlined the reasons for, and some initial steps towards, a relational reading of sites (Amin 2004; Massey 2011; Roy 2009), including the strategies and policies that link them. Three threads of thought are helpful in elaborating on this objective – to trace and understand the making, sharing, and implementing of climate change-related projects today. The first, ideas around policy mobility, the second, the

² The Netherlands government has signed MOUs with Mexico, Egypt, Bangladesh, Colombia, Indonesia, and the United States on water management, primarily on issues of flood risk reduction and climate change adaptation. There are as well many more subnational MOUs between Dutch municipalities, firms, and agencies, and municipalities and agencies in countries such as Singapore, Vietnam, South Africa, and India (Dutch Water Sector 2015).
concept of “worlding,” and the third, the role of transnational networks in global environmental management.

*Policy Mobilities*

Jamie Peck (2011) asserts that policy-making processes are increasingly crossing scales and levels—horizontally across national and local geographic scales, and vertically between hierarchies of institutions—and accelerating, shortening the timespan between policy development cycles. He and others (primarily in the field of critical geography, see Cochrane and K. Ward 2012; J.M. Jacobs 2012; McCann and Ward 2012; Peck and Theodore 2010) critique the “rational universe” view of policy making, in which policy makers ostensibly look rationally across the full suite of options for the most effective policy solutions for identified problems. Peck’s notion of “fast-policy regime” illustrates how new geographies of “policy mobility and mutation” are characterized by pragmatism, iterations of practice, the increasing presence of intermediaries, and the use of evaluation science. More than a “transfer,” it is a “relational interpenetration of policy-making sites and activities,” including “global policy ‘models’, transnational knowledge networks, and innovatory forms of audit, evaluation, and advocacy” (2011, 2). He makes an important note about the “deepening transnational interdependence in political decision-making and policy development” (2011, 14, italics in the original).

These lines of thought have implications for research that attempts to trace the making and disseminating of policies between different sites in a context in which social relationships, economic ties, politics, and the environment itself are changing. Not simply concerned with what is transferred, how it’s done, and whether the transfer was a success, they invite, indeed demand, more reflexive ways of understanding. As Jamie Peck and Nik Theodore suggest, to be sensitive

---

3 See Dolowitz and Marsh (2000) for a more “orthodox” discussion of policy transfer.
to the movement and connections of ideas across space, and as well to the “embedding and transformation” of ideas in the intended target sites (2012, 24). This reflexivity, multiscalar, and multilevel approach applies to not just conceptual but methodological inquiry as well.

“Worlding”

Alongside the shifting global landscape of urban policy making, we might consider ideas about how to frame and situate our view of cities in the globe. Ananya Roy (2011) promotes the concept of “worlding” as a specific counterpoint to the dominant theoretical narrative of global/world cities, in which a limited number of so-called “command and control” cities define the global urban condition. Building on an array of thoughts (see Robinson 2002; Roy 2009; Simone 2001) that attempt to reframe, resituate, or otherwise destabilize urban theory from a position of privilege, she asks that urban researchers open our attention to the myriad strategies — “urban experiments” — that are playing out across the world. These include elite experiments, certainly, including the “inter-referencing” of popularly conceived successful city models, such as Singapore’s urban and economic development, or China’s special economic zones. But she emphasizes the potential of worlding from below, and as well unexpected, hybrid examples, including the circulation of bottom-up, South-to-North urban practices such as the Street Vendor Project in New York City.

Looking from the “third world” out (but, really, Asian cities), Roy and Aihwa Ong (2011) search out examples of the “ongoing art of being global. They cast a wide and often indiscriminate net around ideas, people, objects, and space, looking for actions that might be simultaneously problem solving at the very lowest level, and world changing at the highest. Invoking the Foucauldian milieu, Deleuzian-Guattarian rhizome, Latourian actor-network, and
a self-described promiscuity and shamelessness, Roy and Ong assert the “city as a field of intervention,” a “nexus of situated and transnational ideas, institutions, actors, and practices” (2011, 3). At base, their argument is that cities, like those Asian cities, are different — different from your historically dominant cities of the Global North, key to the formation of theories of capitalist urbanization, and from your quintessential cities of the Global South, central to defining postcolonial subaltern agency.

While not as promiscuous as Roy and Ong would have it – that is, without losing sight of the forces of global capitalism driving urban development, and the variable but yet global impacts of climate change – how would different views of the world, seen from different places – Dutch economic strategy seen from a kampung riverbank in Jakarta, for example – renew, revise, or extend our understanding of these new global and local relationships? A key question here is how the methods, processes, and protocols of urban planning practice respond to this kind of interrogation. Not unlike Stephen Ward’s (1999) view of the dissemination of planning practices – but perhaps more reflexive in potential – Roy notes that planning itself is a worlding practice (2011, 11), responsible for the transnational circulation of urban models.

*Transnational Climate Governance*

Turning specifically to climate change and “being global,” a number of scholars, principally among them geographer Harriet Bulkeley, have noted the increasing emergence of subnational governments, nongovernmental organizations, private firms, and individuals experimenting with new approaches to governing climate outside the realm of multilateral negotiations (such as the United Nations Framework Convention on Climate Change – UNFCCC), and transnationally, across borders (Bulkeley 2010; Bulkeley and Newell 2010; Bulkeley et al. 2014). “Indeed, it is not
possible to fully understand the politics of climate change without understanding transnational climate change governance,” assert Bulkeley et al. (2014, 3). The authors argue that what is happening in climate governance reflects a larger trend in global politics, with the fragmentation of authority and shifts in responsibility to local governments and non-state entities.

Two key points in these observations are particularly helpful towards situating our own purposes. First, as the researchers point out, what seems to be happening is simultaneously dynamic, exciting, and bewildering. These are experiments in the true sense of the word, often with new entities and organizational structures operating at new scales and levels in global politics. It’s Jamie Peck’s mutations and mobilities, within the significant constraints of climate change science; it’s Roy and Ong’s fields of experimentation and intervention, but beyond the urban – actually global.

Second, their work reminds us of the key issues that do seem to transcend scales and levels. Specifically, the issues of social and spatial marginalization appear to be reproduced across different scales, through various institutional structures (Bulkeley et al. 2014, 117-124). This is particularly important given the historical and present day disparities in the causes and consequences of climate change. Transnationalism does not appear to mitigate inequalities and inefficiencies in governance.

Analytical Framework

The key questions in this chapter involve the relationship between global networks and local adaptation plans. Building off of the concepts around policy mobilities, worlding, and transnational climate governance, I probe the actors, networks, and local and global contexts
behind the new geographies of transnational climate interventions. How did the Dutch take on such key role in urban climate change adaptation, particularly in the arena of water management? What kind of framework enables these global relationships to continue? And what are the consequences of this in a postcolonial – and perhaps neocolonial – world? I look at the recent history of Dutch water management and spatial planning, the key institutions that frame what is self-described by the Rotterdam Climate Initiative as its model for adaptation, the variable impacts on the ground with different relationships, and an analysis/synthesis of the global-urban network that is at play.

**Dutch Water Shifts**

The Netherlands is renowned for its spatial planning and water management. Much of the physical environment, whether “built” or “natural,” is constructed, reclaimed from drained peat bogs and shallow seas. Almost a third of the country’s current land mass is under sea level, with another third requiring protections from river flooding. Historically, the region known as the “Low Countries” has accomplished this massive reorganization of land and water through collective, democratic management – the “polder system,” a kind of socio-enviro-spatial framework through which groups of farmers contribute towards the drainage and maintenance of an area of land. The determinants of this interactive system between technology (wind-driven pumps), measures of land, and the efficient planning and construction of drainage channels and canals result in the familiar traditional polder geography, contributing to the “culture of order” (Van der Cammen et al. 2012) of the Dutch landscape. This “moral geography” (Schama 1987) arising from the ongoing struggle to retain control over the environment is a key factor in the
making of Dutch national identity. Spatial planning is central to nation building. The Netherlands is held to be the most planned country in Europe (Dutt and Costa 1985, cited in Van der Cammen et al. 2012).

The region has had some form of this collective water management since 1250, when the first regional “water boards” were formed to facilitate the management of hydrological systems, with increasingly extensive and centralized flood protections and drainage infrastructure over the next 700 years. The destruction caused by the 1953 North Sea Flood, however, galvanized the country into even more ambitious protection schemes. 1836 people died in the Netherlands due to this flood, and 136,500 hectares of land were inundated (Gerritsen 2005). A Delta Commission was formed, tasked with protecting the country from future disasters (Netherlands, Delta Committee 1962). Based on the Commission’s reports, the country embarked on the Delta Works, a series of monumental dikes, sluices, dams, and storm barriers in the southwest delta region of the country (Figure 4.4). These projects culminated in the Maeslant storm surge barrier in 1997 along the Nieuwe Waterweg (New Waterway) in Rotterdam (Figure 4.5). The Delta Plan required protections levels for a 10,000-year storm event for the most critical, highly populated areas (Delta Commission 2008; Van Der Most and Wehrung 2005).

4 Discourses of “survival” dominate Dutch public agendas (Van der Cammen et al. 2012), mirroring the historical, public discourse in Singapore, another highly planned nation. See Goh (2013a) for more discussion on this issue in Singapore.

5 See Van Koningsveld et al. (2008), de Jonge (2009); Hendricks and Bunstma (2009); Kuks (2009); Stive and Vrijling (2010), and Zonneveld (2010), for more detailed accounts of the historical and present day transformations of the Dutch landscape.

6 The Delta Works presents a particularly compelling model for adaptation in that it relied not on historical flood information, but a conceptual framework based on investment costs and modeled risks.
Figure 4.4. Map of Dutch Delta Works. Source: Delta Committee (1962)

Figure 4.5. Maeslant storm surge barrier, Nieuwe Waterweg, Rotterdam, September 2014. Photograph by author
No one, not living in the Low Countries and not having studied their history, can understand the struggle these placid lands have had.

- Johan van Veen, *Dredge, Drain, Reclaim* (1962, 29)

Dutch water management has been characterized in two primary ways. First, although framed within a multilevel governance structure, it is largely a national project, concerned about safety from flooding. Particularly in the last 60 years, in the wake of the 1953 floods, the plans and policies for water safety have been conceived and controlled by the national government in conjunction with the (much older) regional water boards (Kuks 2009; Van Leussen and Lulofs 2009; Zonneveld 2010). Second, it has focused, historically, on hard infrastructure and feats of hydrological engineering – “dredge, drain, reclaim” (Stive and Vrijling 2010; Van Veen 1962).

In recent decades, two factors – economic restructuring and climate change – have been substantively changing these characteristics of the Dutch sociospatial and policy landscape. First, economic liberalization has led to initiatives to decentralize decision-making and embrace more locally-coordinated, market-driven approaches to spatial planning and urban development (Gerrits, Rauws, and de Roo 2012; Marshall 2014; Van der Cammen et al. 2012; Waterhout, Othengrafen, and Sykes 2013). There is now a stated *de-emphasis* by the national government on urban planning and design, leaving the “balancing of urban and green space development” to provincial and municipal authorities (Netherlands IenM 2011, 4). In 2008, the effects of the

---

7 This is a significant, and deliberate change on the part of the Dutch government. Noting stagnating growth and uncertain economic futures, the “Action Agenda for Architecture and Spatial Design 2013-2016,” jointly authored by five national ministries, states, “The national government is using the basic cultural infrastructure and specific programmes to reinforce
global financial crisis reached the Netherlands, precipitating an economic contraction, the impacts of which are very much still being felt throughout the country in 2015. The trajectory of restructuring coupled with the impacts of the recession has meant that, on one hand, architecture and engineering firms with most of work in the country have suffered from a prolonged slowdown, and, on the other, city agencies and developers have been attempting to find different ways of conducting business and funding projects. In 2010, Dutch newspapers announced that cities had “stopped building” (recounted in Boelens and Wierenga 2010, 10), reflecting the pitched concern among built environment professionals and planners envisioning the future of cities in the country.  

Second, climate change now poses new threats to Dutch water management, not just from rising sea levels, but as well warmer temperatures, increasing precipitation, and uncertainty in a system in which balance and predictability are key. A new Delta Commission was formed in 2007, charged with long-term safety against climate change. In addition to proposing to increase flood protections of diked areas by a factor of ten – primary dikes raised ever higher – the commission’s 2008 report recommended more flexible responses. These included specific implementation goals for “Room for the River,” a program that began in 1996 in response to flooding around the Rhine and Meuse rivers (Rijke et al. 2012; Voogd and Woltjer 2009; Wolsink, 2006). The program involves reconstructing the banks and dikes around selected rivers to allow room for occasional, localized flooding. One example, for the Waal River in Nijmegen, moves the dike 350 meters away from the river, creating an ancillary channel for flood water, and initiatives by designers, authorities, private companies and private individuals who display their own ambitions for the quality and innovative strength of design” (Netherlands IenM et al. 2012).

8 Still very much on their minds, almost always brought up in my informal conversations with Dutch architects and urban designers in 2014.
9 https://www.ruimtevoorderivier.nl/english/
an occasional island with new development zones and recreational areas like beaches and parks (Figure 4.6). Approaches like “Room for the River” and the “sand engine” at Delfland – using the power of wind and waves to help distribute material – combine engineering with natural dynamics. Dutch proponents have termed this hybrid approach “building with nature.” These strategies are still technocratic, yet ecological, a self-described “paradigm shift” in Dutch environmental planning (De Vriend and Van Koningsveld 2012; Meyer, Bobbink, and Nijhuis 2010; Van Koningsveld et al. 2008).

![Room for the River at Nijmegen](http://www.ruimtevoordewaal.nl/en/room-for-the-river-waal/)

**Figure 4.6.** Room for the River at Nijmegen. Source: Municipality of Nijmegen
If there's more rain how could that actually become something you don't just solve by putting it away. How it could also contribute to an attractive city... Why not make central collection points in neighborhoods where the water can flow to, where you can buffer the water for a little while, instead of putting it under the ground?

- Florian Boer, De Urbanisten, on the motivation behind water squares\textsuperscript{11}

So, on one level, many environmental projects are now being conceived on a city, or local, scale. Rotterdam, for example, has developed an ambitious climate adaptation program, called Rotterdam Climate Proof, and promotes itself as a model. While adhering to the Dutch emphasis on design and spatial planning, it is strongly economic in strategy – in line with the national policy trajectory of decentralization and strategic economic development. According to Rotterdam Mayor Ahmed Aboutaleb, “climate change adaptation provides unique opportunities for growth” (Rotterdam Climate Proof 2013, 3). City officials tout urban design pilot projects, including car garages with stormwater storage (Figures 4.7 and 4.8), floating districts, and “water squares” – recreational spaces that also protect against flooding from cloudbursts. These projects play a dual role. They support the climate program’s claim as a model for adaptation. They are also widely displayed in city material promoting Rotterdam as a desirable place to invest and as a beautiful, livable city (not something it is historically known for). On another level, there is an outward shift, a focus on international relationships. The Rotterdam climate program, while situated within city government, is deliberately international in outlook. It started and now coordinates Connecting Delta Cities, a network that is part of the C40 Cities group, linking ten delta cities in shared knowledge and cooperation (including Jakarta and New York).

\textsuperscript{11} Interview by the author, Rotterdam, June 30, 2014.
Figure 4.7. Museumpark garage, Rotterdam, June 2014. Photograph by author

Figure 4.8. Rendering of Museumpark garage stormwater storage concept. Source: Rotterdam.nl
Rotterdam

Rotterdam is in many ways an unlikely foil to the other two cities here. Located in the province of Zuid-Holland (South Holland), it straddles the Nieuwe Maas river on the Rhine–Meuse–Scheldt delta, a key gateway to the German and Central European trading cities. Six hundred and sixteen thousand people live in the municipal boundaries of Rotterdam, with 1.2 million in the larger urban region.\(^{12}\) It is not even the largest city in the Netherlands, for which the total population of 16.5 million\(^{13}\) in the entire country is markedly smaller than that found in the metropolitan regions of New York and Jakarta. Rotterdam, along with Amsterdam, the Hague, and Utrecht – the four largest cities in the country – loosely ring a polycentric region known as the Randstad (literally “border city”), at the center of which is the Groene Hart (Green Heart), consisting of agricultural areas, nature preserves, and recreational areas. Rotterdam’s port remains Europe’s largest, and for many years claimed the title of the world’s largest port before being eclipsed by a growing number of Asian ports, mostly in China.

\(^{12}\) Rotterdam city and urban region populations in 2013 (CBS Statistics Netherlands, 2014).

\(^{13}\) Netherlands total population in 2009 (CBS Statistics Netherlands, 2013).
While quite disparate in terms of its scale of agglomeration, and size of population, two factors make it somewhat less unlikely that Rotterdam plays such a significant role in the urban environmental futures of both New York and Jakarta. First, the Netherlands, in particular the Randstad, has for a long time been perceived, represented, and planned as a dense, urbanized region. Rotterdam is in many ways the economic, trade engine of a broader urban system. Second, the Netherlands itself has had a long, checkered history in international affairs, through its colonial period and beyond.
Rotterdam poses an interesting counterpoint to the two other major cities, especially in regard to the issue of inequality. A 1999 study found ethnic and wealth segregation between large Dutch cities and their surrounding suburbs, and warned about “the growing spatial concentration of ethnic minorities and low-income groups in the cities” (Van Kempen and Priemus 1999, 647). As the primary port city of Netherlands, Rotterdam has historically functioned as a working class, immigrant city, largely poorer than the surrounding region. City managers in Rotterdam are unhindered in their welcoming of gentrification in the city. One of their stated agendas is inviting wealthier people to live in the center city. In some ways, this ties back to the new national policies relegating urban development issues to the localities. One official, pressed about the link between inequality and vulnerability, claims that there is no such link in Rotterdam. To her, there is an inverse relationship. The vast majority of social housing is in the center city, within the protective dike ring; it is the wealthier residents who tend to live in riskier areas along the river.¹⁴

*Rotterdam Climate Proof*

Rotterdam Climate Proof connects water with opportunities.

- Rotterdam Climate Proof (2013)

Rotterdam’s climate adaptation program is remarkable in many aspects. Launched in 2008, the Rotterdam Climate Proof program is tasked with ensuring the city is resilient to climate change by 2025. “Resilience,” in this case, includes 1) protection against flooding, 2) a “comfortable,

¹⁴ Chantal Oudkerk Pool (Senior Advisor for Rotterdam Climate Proof), interview by the author, August 7, 2014.
liveable and attractive city,” 3) continued accessibility of the port, 4) limited disruption by precipitation, 5) residents’ awareness of climate change, and 6) economic strength and a strong image for the delta city (Rotterdam Climate Proof 2013, 4). The second point about livability and attraction, and the latter point about economy and image, are particularly important. Rotterdam’s climate adaptation program is precisely a spatial and economic development initiative.

In terms of spatial, physical implementation, Rotterdam’s adaptation initiatives have focused on projects to address flooding caused by increasing rainwater, urban heat island effect, and new urban plans beyond the primary dike ring. Built projects so far have included the water square at Bentheimplein (completed in 2013); an underground water storage facility under the Museumpark garage (2011); a showcase floating pavilion in the Rijnhaven, a harbor basin adjacent to the fast-redeveloping Kop Van Zuid area (Figure 4.10) (2010); and a number of green roofs and green walls completed and under construction. The city has also initiated plans for “floating districts” in Stadshavens, another area previously dominated by port activities. In addition, it has conducted economic analyses showing that the adaptation initiatives will result in investments of four to five billion euros (2013, 6). But it’s obvious that the impact of Rotterdam’s adaptation program in the discourse on adaptation practice exceeds its actual plans and projects in the city. Compared to other adaptation plans, for example, London’s detailed 2011 strategy report (GLA 2011), Rotterdam’s is tightly focused, on one hand, on physical urban design interventions that are highly “imageable,” and, on the other, initiatives that have significant “marketability,” whether physical or otherwise.
Not unlike other cities, the making of the Rotterdam plan is specific to its spatial and political context, its relationship to geography, and its economic position within the nation state. But, for Rotterdam, this origin story is further elaborated and framed in such a way that it is now tied to the fortunes of many cities around the world.

Before 2005 water was a plague, and after 2005 water was an opportunity.

- Arnoud Molenaar, Rotterdam Climate Proof

A number of key factors lie behind the Rotterdam adaptation plan’s strong links to urban space and context, and international focus. The city had developed its first Water Plan in 2001,

15 Interview by the author, Rotterdam, October 1, 2014.
for the first time linking the vision of the municipal authorities with that of the three water boards with which it shares overlapping jurisdictions. But Arnoud Molenaar, manager of the Rotterdam Climate Proof program, as well as the city’s Chief Resilience Officer,16 and John Jacobs, strategic advisor at the Water Department of Rotterdam,17 pinpoint a particularly significant turning point in the city both reframing its attitude towards water, and its role in climate adaptation. In 2005, the city held its International Architecture Biennale, ominously/enthusiastically titled “The Flood.” Alongside the Biennale, the planning and economic departments and water boards developed the Rotterdam Water City 2035 vision – a “relatively wild vision, but inspiring” says Molenaar.18 This vision of a “water city” was then incorporated in the Water Plan 2, released in 2007, linking urban spatial development with water management (Rotterdam, City of, et al. 2007).

At this point, a number of significant parallel initiatives were taking place. The city launched the Rotterdam Climate Initiative,19 its municipal climate change program, in 2006. That same year, the International Advisory Board Rotterdam (IAB),20 an advisory council on economic affairs and urban development, issued its annual report, recommending that Rotterdam “shake off modesty” and capitalize on its “unique selling points,” including becoming “world capital of CO2 free energy” (IAB Rotterdam 2006). In 2007, two national programs began. The Knowledge for Climate research program, involving universities and applied

---

16 Rotterdam is among the first set of cities selected by the Rockefeller Foundation for its 100 Resilient Cities initiative. As part of this selection, the foundation financially supports the Chief Resilience Officer position, tasked as a city point person for resilience, coordinating across government departments and other stakeholders, and leading city resiliency strategies.
17 I interviewed Arnoud Molenaar and John Jacobs together.
18 Interview by the author, Rotterdam, October 1, 2014.
19 http://www.rotterdamclimateinitiative.nl/
20 http://www.iabrotterdam.com/
engineering and research institutes, was tasked with investigating the consequences of climate change for the Netherlands (Knowledge for Climate 2012). The formation of the new Delta Commission in 2007 as well reinforced the broader focus on climate change in the country.

Pressed to elaborate on how and why these events and initiatives came together as they did, Molenaar talks about “serendipity... using the coincidences that happen.” At the same time, Molenaar and Jacobs talk of working behind the scenes, urging the Rotterdam mayor at the time to take on a larger role in regional and national climate research initiatives, just as these initiatives were taking shape. They boast that Rotterdam’s programs were the first municipal climate plans in the Netherlands. Says Jacobs, “We started writing our own story. We changed it all. And that is coincidence... It is also because we had change agents in Rotterdam... chemistry on all levels.”

Jacobs recalls the development of the Water Plan in 2007 – how the urban planners, tasked with the design and wellbeing of the city, had to find ways to collaborate with the water boards, who were historically in charge of water management, but not engaged with city form. The plan brought water back to the city. But it could only be done when the two priorities – urban and spatial development, and water management – were brought together.

There are two distinct but related aspects to the Rotterdam planners’ narrative of their city. On one hand, Molenaar refers to the fact that Rotterdam was heavily bombed during World War II, the central city almost completely leveled. “We are able to design new things, in a sense, in our city,” he says. It’s like there are things in the DNA of the city, a propensity for or embrace of change. Chantal Oudkerk Pool, Senior Advisor for Rotterdam Climate Proof, agrees with this, saying, “Rotterdam, within the Netherlands, we are widely known for being

21 Interview by the author, Rotterdam, October 1, 2014.
22 Ibid.
independent, for wanting to do our own thing and for actually doing it.”23 She gives the example of the floating pavilion, a pilot project that tested the limits of Dutch planning law, “...that kind of experiment which, I think, is sort of in the character of the city. Just to, you know, try anyway.”24 On the other hand, Molenaar admits, “To a certain extent it’s a matter of storytelling.”25 And it’s both, intertwined quite neatly.

While it seems obvious that water management and urban spatial development in the Netherlands should be linked, many of the actors in this story stressed that it has not always been so. Indeed, water has played a key role in the sociocultural and spatial imaginaries of the Dutch, but not necessarily in the ways that urban space and development has progressed. Water – in the form of “protection from...” – has largely been under the purview of the national government and the powerful water boards. Environmental designer Florian Boer, principal of De Urbanisten, a design firm extensively involved in Rotterdam’s local climate adaptation projects, and as well a participant in Rebuild By Design in New York, affirms that the current trajectory of urban design reflects a change in understanding of water and urban spaces, as well as shifting relationships among city governments, water boards, engineers, and designers.26

Boer references developments like Amsterdam’s Bijlmermeer, a large post-war development of 40,000 dwellings that was constructed on a polder, as an unfortunate consequence of the “modern ideology,” and the sense that the country had conquered nature and was free to build as it pleased. These developments, according to Boer, were “...cut loose from

23 Confirmed via email communications, August 19, 2015.
24 Interview by the author, August 7, 2014 (italics added).
25 Interview by the author, Rotterdam, October 1, 2014.
26 Interview by the author, Rotterdam, June 30, 2014.
the underground, the soil, the *logic of the landscape*.” Boer illustrates the paradigm shift using his own experiences designing and constructing the water square in Bentemplein, Rotterdam, for which he was the primary designer. He notes the increasing buy-in by city officials and engineers around new ideas about water:

How can we design it in such a way also that it is still effective, from a water quality and quantity point of view, but also that it's a good space, a place actually that you can also really enjoy in such a moment. I thought it was really nice that the engineers were also really interested. They said, hey, this is interesting, because this is also giving something new to our vocabulary.  

*Timeline of Relevant Events in Rotterdam*

2001  First Water Plan released
2005  Key International Architecture Biennale Rotterdam, titled “The Flood”
2006  International Advisory Board recommendation to “shake off modesty”
2006  Rotterdam Climate Initiative launched
2007  Water Plan 2 released
2008  Rotterdam Climate Proof (adaptation program) launched
2010  First Connecting Delta Cities “Deltas in Times of Climate Change” conference
2014  Second “Deltas in Times of Climate Change” conference

---

27 Ibid.
28 Ibid.
Connecting City to Globe

But everything stated thus far explains the making of a municipal adaptation strategy – perhaps one economic and image-oriented in focus, but still produced and maintained within the institutional and jurisdictional space of traditional “city planning.” How did Rotterdam’s municipal climate program become so strongly linked to the international relationships fostered by the Dutch government? Three organizations, variously national, international, and independent, public and private, play key roles: Connecting Delta Cities, Deltares, and the Netherlands Water Partnership.

Connecting Delta Cities

The significance of the Rotterdam Climate Proof program, particularly beyond the municipal boundaries itself, is strongly tied to the Connecting Delta Cities (CDC) network.29 Formed by the Rotterdam climate program within C40 Cities,30 CDC links ten delta cities in shared knowledge and cooperation (including Rotterdam, New York, and Jakarta; see Figure 4.11). Coordinated by a secretariat based within the Rotterdam climate program, it functions as a depository of knowledge and best practices, and as a convener of member cities. Since 2009, Connecting Delta Cities has published three books, each including summaries of the climate threats and initiatives in each of the cities in its network (see Aerts et al. 2009; Dircke et al.

29 http://www.deltacities.com/
30 The C40 Cities Climate Leadership group (http://www.c40.org), started in 2005, is a global network of 75 cities (as of mid-2015) formed to cooperate on reducing greenhouse gas emissions. The network’s partners include the Clinton Climate Initiative, Bloomberg Philanthropies, ICLEI, World Resources Institute, The World Bank, Siemens, Citibank, and the Ford Foundation.
Oudkerk Pool of Rotterdam Climate Proof, who also serves as the coordinator for the Connecting Delta Cities secretariat, explains both the objectives of the network, and its potential benefit to Dutch business:

...Every city is struggling with the same thing. And it's not just knowledge; it's also about keeping things on the political agenda, or how to finance your measures in times of economic crisis, or how to involve your populations. So, the key objective is to learn, but there's also another element to it, to create economic spin-off for our city. We hope that, if Rotterdam within the Netherlands, or even within the world, is seen as a very important place when it comes to water management and climate change adaptation, that water-related firms move to Rotterdam, or that business from Rotterdam or the Netherlands will get more access to assignments abroad.\footnote{Interview by the author, August 7, 2014.}

Connecting Delta Cities is a network of cities, but not necessarily (or at least not yet) a flat, neutral one. The CDC online knowledge portal, as of mid-2015, is dominated by cases and sites in the Netherlands, primarily in Rotterdam. There are a reasonable number of cases from the United States. Most of the other non-Dutch, non-US cases are from Vietnam, where Dutch entities are playing a very large role. Its examples of inter-city cooperation include New Orleans – Rotterdam, Singapore – Rotterdam, and Ho Chi Minh City – Rotterdam, a clear pattern. Arguably, because of the disparities between cities, it cannot operate as a flat network even when organized as such. Places like Jakarta and Ho Chi Minh City have been conditioned – not just by a history of colonialism, but by postcolonial nation building and development aid, economic restructuring by global lending institutions, and the continuing economic inequities of global
capitalism – to rely on technical and financial assistance. Changing this dynamic is challenging (as I will explore further this chapter).

According to Oudkerk Pool, the CDC, as a relatively small network of member cities/participants, increases its reach and impact by linking with larger international conferences, including the C40 summits.\textsuperscript{32} In September 2014, the Rotterdam climate program helped organized – along with the Dutch Knowledge for Climate research program, the Netherlands ministries for Infrastructure and the Environment and Foreign Affairs, and C40 Cities – another of these larger events, the second Deltas in Times of Climate Change conference, titled “Opportunities for People, Science, Cities and Business.” The conference, attended by over 1300 people, featured panels by academics, practitioners, and industry experts, and information booths with Dutch climate and water agencies and major engineering and infrastructure firms (including Witteveen+Bos, Grontmij, Arcadis, Royal Haskoning, and Tauw). Delegations from Bangladesh, Vietnam, Indonesia, the United States, were well represented. In this setting, the connections between national and local government, nongovernmental organizations, private interests, and international constituents are made explicit.

\textsuperscript{32} Confirmed via email communication, August 19, 2015.
From its position as a *national* top institute, Deltares aims to become *internationally* recognised and acknowledged as an independent top institute for developing and applying knowledge on water, the subsurface and infrastructure in deltas, throughout the world... Knowledge is the core business of Deltares.

- Deltares Strategic Plan 2012-2015 (2012)
Deltasres, a Dutch research institute, plays another key role in the bridging between urban climate initiatives and international relationships. The institute was formed in 2008, with a merger of WL|Delft Hydraulics (a firm that specialized in hydraulics research and consultation), GeoDelft (a geotechnical research consultancy), and parts of TNO (Netherlands Organisation for Applied Scientific Research, an independent, nonprofit research organization) and Rijkswaterstaat (itself a part of the Netherlands Ministry of Infrastructure and the Environment, formerly the Ministry of Transport, Public Works and Water Management). This amalgam of private, public, and nonprofit consultation and research is central to the mission of Deltasres, which maintains and proclaims its independent research status while at the same time being partly funded by the Ministry of Economic Affairs, Agriculture and Innovation and the Ministry of Foreign Affairs (Deltasres 2012, 13).

While still operating primarily in the Netherlands, the institute's 2012 strategic plan, titled "Deltasres 2.0," strongly emphasizes its global ambitions, as well as its intent to function in symbiotic relationships with Dutch policies in trade and foreign aid, and Dutch businesses abroad. Headquartered in Delft and Utrecht in the Netherlands, in 2015 it has offices in the United Arab Emirates, Singapore, Indonesia, and Brazil, with an affiliated office in the United States. Deltasres has played a role in a number of high-profile water infrastructure projects around the world. It was involved in the Palm Islands and The World developments in Dubai, conducting coastal impact assessments, flow modeling, and beach design for these ambitious and controversial coastal reclamation projects. Delft Hydraulics, a precursor to Deltasres, was involved in the Marina Reservoir project in Singapore, a freshwater reservoir created by damming the mouth of the Kallang and Marina Basins. It developed water quality and operational

33 https://www.deltasres.nl/en/
management tools for the project. And Deltares was also invited, along with a number of other Dutch firms and consultancies, to participate in the Dutch Dialogues planning sessions in New Orleans after Hurricane Katrina, an effort that led to the Greater New Orleans Urban Water Plan.

Kees Bons, director of Deltares Jakarta, elaborates on the institute’s unique position with the water management sector, stating,

The role of Deltares... is that we are what we call the expert advisor... So we are in a luxury position in that we can really learn from the most challenging problems in the world. But that gives a responsibility. We are not a private firm. We are a foundation, and our task is primarily to... make [knowledge] available to the Dutch government and to the Dutch private sector.34

Netherlands Water Partnership

The Netherlands Water Partnership (NWP)35 is a network currently consisting of 200 Dutch and Dutch-affiliated businesses, government agencies, nonprofit organizations, and research institutes. Headquartered in The Hague, its objective is to help the Dutch water sector gain greater international impact by providing “network, knowledge, visibility and influence” (NWP, 2015). It prioritizes collaboration and cooperation among its participants, enabling targeted consortiums to enter “markets in clusters, offering expertise as a one-stop-shop.” An independent organization, it also partners with Dutch government agencies on national policy initiatives. For example, it is the co-coordinator of the Partners for Water program,

34 Interview by the author, Jakarta, July 11, 2014.
35 http://www.nwp.nl/en/about-us
commissioned by the Dutch Ministries of Economic Affairs, Infrastructure & the Environment, and Foreign Affairs. This program offers subsidies to consortia of Dutch companies, research institutions, and NGOs working in select target countries to undertake feasibility and pilot projects in water management around the world. Targeted delta countries, in mid-2015, include Bangladesh, Egypt, Indonesia, Mozambique, and Vietnam.36

At the Connecting Delta Cities conference in Rotterdam in September 2014, NWP was the convening organization for the panel on the Jakarta NCICD masterplan, bringing together the leaders of the Dutch private consultants, and key Indonesian national and capital city politicians (Figure 4.12). Paul van Koppen of NWP, the chair of the panel, and Ad Sannen of Royal Haskoning, in charge of the program management part of the NCICD plan, were in sync, imploring the Indonesians, “Who will be the champion [of this plan]?”37

Interestingly, one can see a similar effort in the way that Singapore, the island-city-state, has fostered hybrid public and private organizations, spinning off semi-private firms that then take on consulting projects on environmental, infrastructure, and urban development in other countries. Similar to Singapore, the Netherlands in many ways sees itself as a single urbanized entity, particularly in the Randstad. The two nations have always prioritized global links – bearing in mind, of course, the vastly different timescales of their respective histories as independent nations, also interconnected.38

36 The full list of Partners for Water target countries in mid-2015 include Angola, Bangladesh, Brazil, China, Colombia, Egypt, Estonia, Ethiopia, Georgia, Ghana, Hungary, India, Indonesia, Kazakhstan, Kenya, Malaysia, Mali, Mexico, Mozambique, Ukraine, Poland, Romania, Russia, Slovakia, Thailand, Turkey, Vietnam, and South-Africa (see Partners for Water 2015).
37 Session titled “Indonesia: NCICD, from planning to implementation,” at the Deltas in Times of Climate Change 2014 conference in Rotterdam, the Netherlands, on September 25, 2014.
38 Interestingly, the founding of modern Singapore as a British colony in 1819, by Stamford Raffles, was primarily with the intention of breaking Dutch monopoly in Southeast Asia.
Dutch Worldview

I would not say we are finished, in the Netherlands, but compared to other countries, there's not so much to do anymore.

- Ivo van der Linden, Netherlands Water Partnership

Dutch officials do not mince words about their objectives. Water management is a key export industry, one in which they hold undeniable pedigree. Climate change has only made more

---

urgent the need for solutions. And the economic crisis at home in the Netherlands has further motivated the focus on global relationships. So, here, environmental design and planning – given imperative by climate change – functions as economic development and foreign policy. But it’s not all about water. Water, as van der Linden of the Netherlands Water Partnership says, is a way for the Dutch to brand themselves in the world, a particular positioning to help broader business relations. A project like the Giant Sea Wall in Jakarta serves not only as a venue for continued involvement in Indonesia by Dutch firms, but also “a vehicle for the Dutch sector to show their expertise, to be a credible partner, especially for private investors… also as a showcase project for the rest of Asian city development.”

"Jakarta: Neo-Colonialism or Climate-Induced Shock Doctrine?"

In Jakarta, Indonesia, the deep involvement of the Netherlands brings up provocative questions. The Dutch government funded the NCICD Giant Sea Wall masterplan (even though its implementation is meant to be privately funded). The primary authors of the masterplan are Dutch, including infrastructure and engineering firms (Witteveeen+Box, Grontmij, Royal Haskoning DHV), urban designers and landscape architects (KuiperCompagnons), hydrologists (Deltares), policy analysts and researchers (Ecorys), and economic development consultants (Rebel Group) (Indonesia MENKO 2014).

Dutch infrastructure minister Melanie Schultz, on unveiling the plan in April 2014, said, “We Dutch feel very much at home here. We feel senang [at ease]” (Netherlands Gov 2014b).

This is a remarkable assertion to make in Jakarta, a city that served as the Dutch colonial outpost

---

40 Ibid., italics added.
41 See Chapter 3 for more detail on the origins and development of the NCICD plan.
of Batavia beginning in 1619, and that still bears the legacy of the more than three centuries of Dutch colonization. The Giant Sea Wall masterplan, in many ways, conforms to traditional notions of international development. It involves top down planning, Western expertise, and a technocratic approach. In the way that it relates economic development and private investment with imminent catastrophe, it is certainly a kind of a climate-induced disaster capitalism – perhaps a projective “shock doctrine,” what Naomi Klein (2007) has called the concerted efforts to capitalize on and secure private profits around disasters and wars. Even beyond that, it is tempting to see this as an example of environmental neocolonialism – in the context of what J.N. Pieterse (2004) and Ananya Roy (2006) have called “neoliberal empire,” and David Harvey (2003) “new imperialism.”

In any case, it is not that straightforward. Van der Linden of the Netherlands Water Partnership talks about the struggle, in fact, of proving that they are ideal long-term partners – the “trusted partner,” in van der Linden’s words. In the case of Jakarta’s flooding problems, Korean and Japanese infrastructure companies are promising solutions for much less money. He recounts, with some bemusement, a story of Dutch consultants being asked to accompany Indonesian officials as advisers as they traveled to South Korea on invited trip to observe examples of infrastructural projects.42

---

Figure 4.13. “Great Garuda” sketch hangs in the NCICD planning office, in the Indonesian Ministry of Public Works building, July 2014. Photograph by author

New York: Narratives of Water and Culture

The international relationships being fostered by the Netherlands are not only with so-called developing countries. Many of the firms and individuals associated with Dutch adaptation are also involved in Rebuild By Design in New York. One of the principals of Rebuild By Design is Henk Ovink, Dutch director for spatial planning and water affairs. In a now almost mythic story, Ovink met HUD Secretary Shaun Donovan when the latter was touring the Netherlands to observe water management infrastructure and spatial planning projects after Superstorm Sandy. According to one magazine profile, Donovan was impressed by Ovink’s approach to water and

safety – tied to culture as much as engineering – but it was Ovink who suggested to Donovan that he come help with the presidential task force effort.

Asked about his role on the project, Ovink describes his background in architecture, engineering, and policy in Dutch government, experience in public and private sectors, as well as academic ties and skills in building coalitions of partners. He further explains:

...That combination of having the responsibility for the Netherlands when it comes to water management and spatial planning. Knowing how to bring design to that approach. And knowing how to create these alliances, made me an ideal partner for the US.44

Four out of the six winning teams in Rebuild By Design have substantial Dutch involvement. These include:45 46

- BIG team, “The BIG U” proposal for Lower Manhattan: One Architecture (a small architecture, urban design, and planning firm based in Amsterdam) and Arcadis (a large, multinational design, engineering, and project management firm with 28,000 employees, based in Amsterdam with offices and affiliates in 18 countries around the world).

- Interboro team, “Living with the Bay,” Nassau County South Shore: Bosch Slabbers (a landscape architecture and urban design firm based in The Hague and Middelburg in the Netherlands), Deltares (a research institute dealing with water and infrastructure),

H+N+S (an established landscape architecture firm launched in 1990 and based in

---

44 Interview by the author, November 24, 2014.
45 See Figure 3.13 in Chapter 3 for map of Rebuild By Design proposal locations. Data taken from Rebuild By Design documentation, including website and published material, and individual firm websites and marketing material. Information current on websites and published material as of May 2015.
46 See Shorto (2014b) for a summary of Ovink’s own description of each finalist team and their proposals.
Amersfoort, Netherlands, a leading consultant in the Dutch Room for the River initiative), Palmbout (a small urban design firm based in Rotterdam), and TU Delft (technical university in Delft, the Netherlands).

- **MIT CAU + ZUS + URBANISTEN team, “New Meadowlands,” Meadowlands, NJ:**
  ZUS (a small architecture, urban design, and landscape architecture firm based in Rotterdam), De Urbanisten (a small urban and environmental design firm based in Rotterdam, designer of the Watersquare Benthemplein project in Rotterdam), Deltares, and 75B (a small art and graphic design firm based in Rotterdam).

- **OMA team, “Resist, Delay, Store, Discharge,” Hoboken, NJ:**
  OMA (a renowned architecture and urban design firm, founded in 1975 and led by Rem Koolhaas, based in Rotterdam, with offices in New York, Hong Kong, Beijing, Doha, and Dubai) and Royal Haskoning DHV (a large, multinational engineering and project management firm, with almost 7,000 employees, headquartered in Amersfoort, Netherlands, with offices and affiliates in 39 countries across the world).

There is no explicit Dutch firm involvement on the PennDesign/OLIN and SCAPE teams. Interestingly, these teams’ designs do in fact rely primarily on a different set of concepts than the teams with significant Dutch presence. Among the other four finalist teams, two have Dutch firm involvement, Arcadis on the WB unabridged w/ Yale ARCADIS team, and West 8 and Arcadis on the WXY/WEST 8 team. The teams’ design proposals will be discussed further in Chapter 5.

The extensive involvement of Dutch firms in New York evidently preceded the post-Sandy initiatives. The involvement of engineering and project management firm Arcadis in three
out of the ten finalist teams on Rebuild By Design is testament to this. However, the strong focus on New York after Sandy reveals the maneuverings that large, influential firms like Arcadis are able to undertake in an environmental risk scenario. At the Connecting Delta Cities conference in September 2014, Edgar Westerhof, senior planner at Arcadis, presented the firm's New York work. He told what amounted, basically, to a revisionist history where, in his story, Sandy precipitated the bulk of the climate engineering work in New York, and Arcadis was central to that effort. This was right in front of panel moderator Cynthia Rosenzweig, a scientist who has been working on climate in New York for more than a decade, who promptly corrected the engineer. Rosenzweig stepped up after the presentation to put a word of caution, asserting, “It is a mischaracterization to say that nothing was happening before Sandy.”

For his part, Henk Ovink takes a more optimistic, diplomatic stance. At this point he is essentially an ambassador with dual roles – for Rebuild By Design as well as for the Dutch water sector. He states that the competition created a process that was,

…Totally connected with everybody, and able to infuse all stakeholders. So it means that the people in that region now understand climate change differently. They now understand mitigation and adaptation differently than when we started. It also means that those engineers and designers from New York now understand comprehensiveness differently. And it means that those designers and engineers from the Netherlands now understand regionalism and fragmentation and community approaches differently.

An evaluation of the first phase of Rebuild By Design, commissioned by the Rockefeller Foundation, in a 21-point summary, found that: first, HUD Secretary Donovan’s leadership and

---

47 In a session titled "Managing urban water under changing climate conditions," at the Deltas in Times of Climate Change II conference, September 26, 2014, in Rotterdam.
48 Interview by the author, November 24, 2014.
commitment of federal community development block grant funds were critical, and, second, so was the “charisma and vision” of Henk Ovink (Urban Institute 2014, x).

**Figure 4.14.** Rebuild By Design presentation boards exhibited at the 6th International Architecture Biennale Rotterdam, titled “Urban By Nature,” June 2014. Photograph by author

**Analysis: Global/Urban Networks**

What we see, then, is a multiscalar, multilevel network – through which the diffusion of capital, knowledge, and influence takes place. Consider, first a “static” view of nation states (Figure 4.15a), defined by external state-to-state relationships, and internal national policies – reflecting the assumptions of a stable Westphalian order of state territoriality, long critiqued (see Brenner 2004), but a useful counterpoint for our purposes. A new relational view of this network, seen in the context of the entities and relationships discussed here, reveals the interpenetrations across scales and levels (Figure 4.15b).
Figure 4.15a. “Static” diagram of national and subnational relationships.

Figure 4.15b. “Relational” diagram of global-urban networks. Diagrams by author
What's particularly notable is the way in which national strategy might be operationalized through cities. In this case, Netherlands national priority industry sectors – “topsectors,” “knowledge-intensive and export-oriented” industries including water, “creative industry,” and logistics (Netherlands Gov 2015; Topsectoren.nl 2015) – are made visible and understandable by urban design projects, municipal planning and marketing, and a web of institutions linking across scales. This is supported by organizations, like Connecting Delta Cities, that function as global urban networks, and entities such as Deltares, essentially a Dutch research institute, but given the latitude to function as a global consultant, with public ties and private opportunities. These networks and entities are part of new relationships that, conceptually, start to pull the global and the urban together. Besides enabling symbiotic links between urban and national, this emerging situation also makes it possible for very local scale urban, physical interventions such as the water square in Benthemplein, Rotterdam, to play an outsize role in international discourse, and as well in the strategic marketing (and market-making) of very large multinational private firms.

Like the dissemination of planning ideas internationally in other historical periods – colonial imposition, postcolonial nation building, globalizing International Style modernism – these networks and entities circulate ideas and influence that reflect actual concrete spaces. But, in the context of climate change and water management, they mobilize and transform ideas about the spaces of society and water, bringing the biophysical workings of infrastructure and hydrology into the realm of interconnected economic flows. It is a sort of socio-hydrological addendum to Castells’ (1989, 1996) “space of flows” – ideas and images about actual flows of water joining the organizational processes of capital, information, and technology.

49 “Concrete” often both in terms of theoretical level and physical materiality.
A recognition of the broader network – and the roles and agendas of multiple actors – is important in light of the prevalent recent discussions in planning and urban and economic development that stress – overstress, in my view – the importance of cities as the focus of solutions. These include, for example, books like *The Metropolitan Revolution: How Cities and Metros Are Fixing Our Broken Politics and Fragile Economy* by Bruce Katz and Jennifer Bradley of the Brookings Institution (2013), *If Mayors Ruled the World: Dysfunctional Nations, Rising Cities* by political theorist Benjamin Barber (2013), and *A Country of Cities: A Manifesto for Urban America* by architect and planner Vishaan Chakrabarti (2013). Such assertions of the “obvious” importance of cities and other invocations of the “Urban Age” (Burdett and Sudjic 2007) leave out a huge part of the motivations behind why cities, as such, might choose to initiate plans and projects, and veils the reasons why the focus has been so much on cities.

To examine why this view has become so prevalent, one might look at the possible political agendas of its proponents. Chakrabarti, the former New York City planner, current director of the Center for Urban Real Estate at Columbia University and partner of SHoP Architects (responsible for many of the city’s new large-scale developments, from the Barclays Center/Atlantic Yards to the South Street Seaport redevelopment), provides an interesting point of view, having served prominently in public, private, and academic sectors. He has brought attention to urban sustainability; he has also long professed his support of higher density urban development, and leveraging the market to achieve it. The Brookings Institution is very clear about its disillusion with federal government and its support for decentralized governing power. The organization’s metropolitan research is explicitly geared towards helping cities engage world markets to foster economic growth. Katz himself is an unapologetic cheerleader for urban
innovation districts. Their backgrounds, approaches, and outlook vary, but these authors/authoring institutions are in sync in their alignment with urban development. It's not surprising, in this light, why they would stress the rise of cities.

And what about Barber? He writes, “If mayors ruled the world, the more than 3.5 billion people... who are urban dwellers... could participate locally and cooperate globally at the same time – a miracle of civic ‘glocality’ promising pragmatism instead of politics, innovation rather than ideology, and solutions in place of sovereignty” (2013, 5). How does this relate to Sassen’s (1991) underclass of global city service workers? A sentence like that is so strikingly rose-tinted it almost comes off as extremist belief (ironic, for the man who wrote Jihad vs. McWorld). Barber’s end game seems to be democracy. But his disavowal of politics in his embrace of the rise of cities ignores the realities of power relationships within cities, between cities, now and in the past.

A recognition of the broader relationships reaffirms the assertion by Hodson and Marvin (2010, 118) about the “metropolitanization” of ecological resources, and that, “World cities and these economic-ecological coalitions are clearly positioning themselves as being the obvious actors and places to address the 'threats' of resource constraint and climate change.” But, at the same time, it complicates these findings. It suggests that we should not too quickly accept the discourse of cities as sole or primary actors, even if we wholly agree with the precept of strategic security and protection of economic interests as the key driver. But that we should be clear about how cities operate, whether these operations are part of larger, possibly national, agendas, and whether the focus on cities is itself driven by a self-reinforcing urban development vision.

In the Jakarta context, this network remains much more weighted in one direction. The flow of capital and influence, at least during the masterplanning phase of the Giant Sea Wall plan, is
almost entirely from the Dutch actors to the Indonesian sites. The claim to knowledge, however, is less evident. There are certainly claims to “expertise” on the part of the Dutch consultants. But some of the most strident opposition and questions about the project are from activists and researchers such as Dian Tri Irawaty from Rujak Center for Urban Studies and Etienne Turpin from PetaJakarta who specifically question the basis of “knowing” what the real problem is and how to fix it (see Chapter 3).

In the New York context, the network is more reflexive and multidirectional. Of course, the Dutch-American relationship was never going to be misconstrued as one of development aid. Learning about “regionalism, fragmentation, and community approaches” (as Ovink claims) aside, the conception relayed by popular press is that the Rebuild By Design effort is about the US learning from the Netherlands. Asked about this, Marion McFadden of HUD says:

First thing I would say is we learned from the Dutch that we’re not alone. We are not only the country on the planet that has serious water challenges and so by forming our partnership with the Dutch, we really learned the importance of communicating with others who have technical expertise in the hazards that face all of us. And then, more broadly, the importance of collaboration. I’m not sure what’s the Dutch and what’s Henk Ovink in terms of that role of collaboration but absolutely getting the best minds together and starting with what should we do, not here’s what I want to do, tell me how can I can accomplish it.50

One thing that is highly evident is the way that economic development, primarily in terms of private urban development, is a critical part of the reasons why Netherlands actors are so heavily invested in both Jakarta and New York. This in itself is not surprising – why does anyone

50 Interview by the author, Washington DC, October 31, 2014.
do anything? But how it is accomplished across the two sites is noteworthy. In Jakarta, the presence of a very large-scale, high-profile development such as the Giant Sea Wall — established with effort and at some cost to both the Dutch government and consultants — constitutes a framework, a scaffolding, to be more suggestive, onto which Dutch private firms can establish themselves in Indonesia and in the broader context of Asian urban development. That is why it is important for the Dutch to establish themselves as key long-term partners.

In New York, a different context for urban and economic development, an initiative like Rebuild By Design offers a means of reinforcing the importance of Dutch hydrological expertise. On one level, this could enable the consolidation of work in the region and country by firms such as Arcadis (who so blithely laid claim to New York City climate planning history). But it also opens new opportunities for small design offices such as Rotterdam-based De Urbanisten. Director Florian Boer talks about the uncertainty of participating in the Rebuild By Design work moving forward, but he says that he’s received other requests to discuss potential projects in the US since the competition.51

The urgency of climate change — both in rhetoric and reality — opens new avenues of exchange. The networks and entities examined here play critical roles in bridging territorial scales and political boundaries.

51 Interview by the author, Rotterdam, June 30, 2014.
5 SOCIOPOLITICS OF ADAPTATION DESIGN

Plans and Counterplans

Why do these projects take the forms that they do? This chapter explores design for urban climate change adaptation. At its heart is a perhaps confoundingly circular question: What is the story behind what we see? And how does what we see influence the story? In interrogating design for climate change, I begin with a rather general question – What constitutes design? I then explore two more specific questions. How does design relate to climate change adaptation and how do we assess this? What are the motivations behind design for climate change adaptation, in particular focusing on the social and political factors?

Questioning (Urban) Design

Reviewing the various theoretical strains behind climate change and adaptation (see Chapter 2), it’s evident that an exploration of design and climate change brings up disciplinary silos – and disagreements in methods and objectives. One approach might be to attempt to bridge these siloes. But beyond the simple objective of bridging – say, bringing proponents of landscape urbanism in conversation with researchers in environmental policy and planning conducting research on adaptation, in theory or in actual space – we find that there are serious tensions and contradictions, not just methodological, but epistemological. Broadly stated, social science research (which describes much urban and environmental policy and planning research) is to understand and explain. Design is to envision new possibilities and futures. Of course, this is a
reductive way to make the distinction, but, as I will explain, it is not a trivial one. Another issue is the definition of design itself. Design is not simply the intended physical form – at whatever scale – of a project outcome. For designers, it is often considered a process, and a way of thinking through problems and coming up with solutions. It is necessarily iterative, and not exclusively spatial. It is less useful to embark on an elaborate deconstruction of design itself, which would quickly take us to too many other fields and debates on design. But in the next sections I attempt to illustrate the problem in terms of urban design, environmental planning, and climate change. For this study, I consider design in its most reflexive usage – as concept, as process, as practice, and as the social and spatial vision of intended outcomes.

City of Modernist Design / the Functional City

The planning program must be based on rigorous analytical studies carried out by specialists. It must foresee its stages of development in time and space. It must coordinate the natural resources of the site, its topographic advantages, its economic assets, its social needs and its spiritual aspirations.

- Athens Charter, 1933 (CIAM 1946)

Theories of urban design are fragmented. One might trace a lineage of the professional field of urban design, as Eric Mumford (2009) does, that proceeds from CIAM’s1 vision of a “functional city,” clarified through post-World War II American modernism (and the influx of European immigrant architects over that period), given form by the likes of Josep Lluís Sert and Louis Kahn, institutionalized by the Harvard Urban Design Program, implemented to scale by urban

---

1 Congrès Internationaux d'Architecture Moderne was founded in La Sarraz, Switzerland, in 1928
renewal, challenged by the historicism of Colin Rowe and Aldo Rossi, and brought to chaos with the demolition of the Pruitt-Igoe housing complex in 1972 and the broader dissolution of faith in modernism and large-scale urban projects.

The foundation of this lineage is an interest in the broader social context of architecture, and a firm belief in the ability of the designer to envision form and function that is completely in sync with the ideal nature of society. According to Le Corbusier in 1930, this is a "doctrine of urbanism" that interweaves "architecture and town planning with social evolution" (quoted in E. Mumford 2009, 4). The Athens Charter, published by CIAM 4 in 1933, makes the modernist principles of urban design explicit. The ideal city is scientific and analytical, technological, human scale, and bridges the needs of the individual with that of the community. Psychological and biological constants form the basis of the city, over which economy, politics, and social relationships are overlaid. Its design solves, harmoniously and efficiently, the four functions of the city of dwelling, work, recreation, and transportation (CIAM 1946). The charter asserts that there could be a science of town planning, creating order out of chaos in the city.

And yet, it is this broader social context of a practice that has often been constituted as architecture on an urban scale that has been fiercely critiqued. James Holston, taking on the CIAM principles and modernist doctrine in design, states, "modernist planning does not admit or develop productively the paradoxes of its imagined future... it attempts to be a plan without contradiction, without conflict" (1999, 46). In his view, modernism, in envisioning utopian futures, ignores the reality of existing social relationships. Simply put, you can't get there from here. James Scott (1998, 85), extending his analysis of modern forestry management to the design of cities, critiques the anti-democratic tendencies of "authoritarian high modernism." He focuses his intellectual ire on Le Corbusier (clearly the arch-villain of modernism), who he
considers megalomaniacal, and, like Holston before him, on Brasília, the *tabula rasa* Brazilian capital city designed by Lúcio Costa and Oscar Niemeyer. Scott states,

> In some important respects, Brasília is to Sao Paulo or Rio as scientific forestry is to the unplanned forest. Both plans are highly legible, planned simplifications devised to create an efficient order that can be monitored and directed from above. (1998, 125)

The main power that enables the despotic designer/planner, for both Holston and Scott, is the state. For Holston, the prioritizing of collective interests in CIAM's principles is based on the ideals of the modern state as the only legitimate source of citizenship rights. For Scott, the modernist design of cities enables the state to embark on the management of the social order.

These critiques, while powerful, are revealing in their predictability. The single-minded rehashing of convenient tropes of design and planning – Haussmann, Corbusier, Brasília, Jacobs, etc. – reveals too often the disappointing inadequacy of design analysis when approached from the point of view of anthropology or political economy. How many more times will *La Ville Radieuse* be held up as the archetypal functionalist plan?

*City of Social Complexity*

Another lineage of urban design has its bases and origin in more sociological, anthropological, and journalistic studies of urban space – in line with the strident critiques of modernist principles demonstrated by Holston and Scott. This lineage begins, at least polemically, with Jane Jacobs, whose *Death and Life of Great American Cities* (1961) continues to be a hallmark in the movement against modernist, functionalist urban design. The concepts Jacobs espouses – including “ballet of the sidewalk” and “eyes on the street,” all inspired by the largely unplanned social functions of dense urban spaces – have become common lexicon for urban designers of all manners of style
and ideological persuasion. The lineage finds form and theory in the work of Kevin Lynch, who
attempted, in *The Image of the City* (1960), to understand the relationship between urban form
and resident perceptions. Lynch is particularly attuned to the gradual development of cities and
the myriad actors involved in their making. For him, urban form, function, ideas, and values are
intertwined, and not easily understood from physical patterns, necessitating an understanding of
the “actual experiences of places by their inhabitants” (1984, 36). If the members of CIAM
thought that they could understand society in order to control it, the proponents of this – let’s
call it “social complexity” – view of the city is that it is too complex to be entirely harnessed and
utilized by designers. But there are lessons to be learned, things that seem to work, that form the
guiding principles for good urban design.

The ideas of Jacobs and Lynch have attained canonical status in early 21st Century urban
design. The mere invocation of Jacobs, especially, has become shorthand for a certain urban
sensitivity, wielded by everyone from architects, city planners, public policy analysts, community
activists, and real estate developers. Themes of “compact, mixed-use, walkable cities” reign in the
development plans of city halls, design studios, and board rooms. As counter-narratives to state
power and modernist planning, what is less evident is whether these ideas still maintain, if they
ever did, transformative political objectives. What does the social complexity view of cities say
about urban design and injustice? Holston and Scott’s analyses are inherently political – what was
at stake was the control of social relationships in the city, democracy, and citizenship. Jacobs’
famous battle with New York City planner Robert Moses certainly implicated power, the state,
and community – but her own writings are quieter on the issue of systemic power.

---

2 See V. Chakrabarti (2013) for a recent, particularly well-illustrated, version of this, by an author
equally versed in municipal governance, the urban design profession, and real estate
development.
Indeed, the mainstream discourse around urban design, post-Jacobs, post-Urban Renewal, post-Pruitt-Igoe, is often completely depoliticized. At best we see constant debates about compactness and sprawl, “transit oriented development” with few transformative efforts at public transportation, myriad park and waterfront revitalization schemes without addressing access and inequality, an overall acquiescence to privatized “public” space. One example: Jonathan Barnett’s (2009, 102) claim that a well-designed city is one that is responsive to natural environment, offers a desirable public realm, and encourages social interaction, reveals the absence of a political analysis of urban processes or structural systems.

CIAM principles may have been in the service of state control, as Holston and Scott contend, but they also, from a somewhat narrow point of view, took aim at physical “disorder” in cities, and envisioned social and spatial change, with an explicit collective emphasis. Modernism was a political project, even if its purveyors did not always see it that way. This political project is now largely missing. Indeed, it is thinkers such as Rem Koolhaas, outside the traditional boundaries of urban design and planning (and an iconoclast for much of his career in architecture), who now hold the most political – and polemical – attitudes towards design of the urban. In an essay titled “Whatever Happened to Urbanism?” Koolhaas (1995) asks, “How to explain the paradox that urbanism, as a profession, has disappeared at the moment when urbanization everywhere... is on its way to establishing a definitive, global ‘triumph’ of the urban condition?”

Sometimes, we see striking examples that merge design and political claims on urban space, as in Jeffrey Hou’s (2010) edited volume on “insurgent public space.” Too often, in

---
3 “Plans are not political,” claimed Le Corbusier (quoted in Fishman 1977, 228), betraying his own amenability to ideological persuasion rather than the political content of the work itself.
eschewing the politics of modernism, the normative principles of good urban design now reside largely in the making of much ballyhooed yet unprovocative urban spaces that cater to a diversity of uses and people, built within the confines of dominant modes of market dynamics and associated permissive styles of urban governance. Even urban design acts that are termed “tactical urbanism” lose their overtones of military maneuvering, to devolve into a series of pop-up plazas and temporary “parklets,” friendly and benign, and easy on power structures (see, for example, Lydon and Garcia 2015). In this relative vacuum, the urban political agenda is largely taken up elsewhere. In planning, it is often driven by proponents of radical planning, who have built on John Friedmann’s (1987) work on a transformative theory of planning. The problem comes when these critiques, as in Friedmann’s case, boil down to a legitimate, sobering, yet unsatisfactory end. It is all politics, no space. Some of the most incisive studies on urban politics, including uneven urban development, have come from critical geography scholars. But they often stop short of proposing alternatives, their own normative theories, let alone anything resembling design.

City of Urban Nature

Finally, we could focus on an urban nature lineage of design. Taking a design viewpoint that builds towards and ultimately parallels, in many ways, the theoretical position of the urban political ecology scholars (see Chapter 3) – with an important caveat – practitioners of the many shades of ecological urbanism envision the form of cities as a continuing interaction and negotiation between the systems of society and nature. The history of considering cities and nature together is long and informed by place, time, and cultures. For contemporary ecological urban design, one may start with Patrick Geddes’ (1915) ideas about the evolution of cities and
Frederick Law Olmsted’s pioneering landscape designs and urban nature theories in the mid to late-1800s (Spirn 1996), developed and systematized by Ian McHarg’s (1969) exhortation to “design with nature,” and, at the turn of the 21st Century, splintered into a diversity of ideas about the relationship between environment and urban form, variously termed ecological urban design, landscape or ecological urbanism, or sustainable design.

As suggested, the urban nature lineage is by no means a cohesive one. On one hand, Anne Whiston Spirn’s (2012; cf. Spirn 1984) account of ecological urbanism emphasizes urban design in synergy with the “natural” systems in cities, aligned with McHarg’s (1970) “ecological approach.” One may find more ecologically attuned ways of constructing buildings and open spaces, and determine ideal land use patterns based on an understanding of ecological systems – places in which natural processes are protected and allowed to flourish. On the other hand, many practitioners and researchers look to “hybrid ecologies” (Reed 2010), to increasingly merge anything that may be considered “built” and “natural” – a “conflation, integration, and fluid exchange between (natural) environmental and (engineered) infrastructural systems” (Waldheim 2006, 43). They embrace equally ideas about wetlands and watersheds, and the infrastructural forms of globalized economic flows (Bélanger 2006; Waldheim and Berger 2008) and the waste sites of current or previous modes of industry (Bélanger 2009; Berger 2006). In considering the socioecological as hybrid, intertwined, these designers and researchers hew close to the theoretical position of urban political ecology scholars. However, even though grappling with issues of clear political content and consequence, they often avoid directly taking on the power relationships that are so central to urban political ecology.
These three lineages are not necessarily exclusive, although there are dominant themes, principles, and worldviews within each that make them distinct from each other. They propose that, 1) we can understand and design the city, or 2) we can productively develop the social complexity of the city, or 3) we can exploit the socio-natural systems behind city form. Each prioritizes a different approach to knowing the problem, and knowing how to effect change in the form of constructed environments. In Chapters 1 and 2, I discussed the specific ways in which climate change challenges traditional modes and methods of planning. This extends as well to the ways that we might conceptualize urban design for climate change. Our task, then, is to weave between these lineages, in order to discern the modes of knowing and making change that effectively addresses the multiple scales and levels that climate change necessitates.

**Design and Climate Change**

What can one say about urban design and climate change? A lot, and yet, for our purposes, not much. There are three ways in which climate change planning has dealt with design. The first is one of neglect. One book on the topic of spatial planning and climate change, by Wilson and Piper (2010), looking largely at cases and sites in the United Kingdom and the Netherlands, says nothing about design, save a handful of peripheral sentences. This, even when discussing “how plans work out on the ground” and the “delivery of spatial planning” (2010, 15), and focusing on plans in places like Rotterdam that prioritize design. Another edited volume by Davoudi, Crawford, and Mehmood (2009) on the same topic does better, integrating discussion of urban design into topics including urban form, climate, and building standards. Yet, the focus tends to be on planning policies and frameworks for design – not design itself. There is no analysis of
design in the context of the social and spatial planning challenges brought up. And, these are examples of research that focus on spatial planning. There are numerous books on planning and climate change – on governance, policy, community, justice, etc. – that often ignore spatial issues altogether, let along design. Simply put, design is often not an object of analysis in climate change planning research.

The second is one of responsible professionalism. Another book, titled *Two Degrees*, written by McGregor, Roberts, and Cousins (2013), all principals of Arup, the international engineering and design firm involved in scores of urban, environmental, and infrastructural projects around the world, specifically addresses the design of the built environment in the context of climate change. The book focuses concretely on the facts of the problem at hand – the science of climate and greenhouse gas emissions – and what to do about it, providing strategies for both mitigation and adaptation. The authors offer myriad examples of frameworks for design, including steps to approaching zero energy and low carbon use from the scale of buildings to communities. They stress their approach of “integrated design,” to ensure that the whole project is “optimized,” a “harmonious whole” (2013, 115). It is an explicit response to a time when engineers believed technology could solve all problems.

This book offers what I would consider one of the most helpful overviews of design for adaptation and resilience. It strongly ties built environment interventions to the scientific bases for action, and pays due attention to planning scenarios and issues of vulnerability, uncertainty, and risk. While the book provides valuable guidelines for design and planning – what to do, what to look out for, how long to consider, where to look for examples – it does not dwell too deeply in more reflexive questions, or those that are more sociopolitical in nature. Why? Who?
Arguably this goes back to the initial supposition that this is not necessarily the role of design. It is not a theory of design for climate change.

Arup has also been developing a “City Resilience Framework” (Arup 2014; see also da Silva, Kernaghan, and Luque 2012) in conjunction with the Rockefeller Foundation – an initiative that builds off of and links to, in particular, two of the foundation’s initiatives, the Asian Cities Climate Change Resilience Network (ACCCRN) and the more recently launched 100 Resilient Cities. The “City Resilience Framework” extends even more broadly into questions of resilience, defined here as “the capacity of cities to function, so that the people living and working in cities – particularly the poor and vulnerable – survive and thrive no matter what stresses or shocks they encounter” (Arup 2014, 3). The framework consists of twelve indicators in four categories, covering urban systems and services (including mobility, communications, critical services), economy and society (finance and stability), leadership and strategy (matters of governance and development), and health and wellbeing (including livelihoods and vulnerabilities). It strives to be comprehensive – “holistic” – tempting one to ask: What’s the difference between a resilient city and, simply, a “good” city? (I return to this question in the final chapter.)

And, third, climate change planning has sometimes engaged with speculative design. In *On the Water: Palisade Bay*, Nordenson, Seavitt, and Yarinsky (2009), a group of engineers, architects, and landscape architects, conduct a prescient study on the New York – New Jersey Upper Bay. Their project involves scientific studies of dynamic systems and ecological flows, hydrological analysis, histories and precedents for waterfront design, extensive sets of mapping, and speculative design interventions, focusing on soft infrastructures like wetlands, barrier
islands, and reefs to guard against rising seas and stronger storms, as well as new modes of energy production and transportation.

The On the Water study served as a key background project for the influential Rising Currents: Projects for New York's Waterfront exhibition at the Museum of Modern Art in 2010. The MoMA exhibition brought five interdisciplinary, architect and landscape architect-led teams to re-envision ways to “occupy the harbor itself” with adaptive infrastructure (see Seavitt 2010). The exhibition, sponsored by the Rockefeller Foundation, formed the context for Rebuild By Design later. One can trace ideas through these initiatives. Landscape architecture firm SCAPE’s “oyster-tecture” concept, now under construction as a winning Rebuild By Design project, was first presented at Rising Currents. Both On the Water and Rising Currents affirm the broadly constituted differences between design and more traditional modes of science and social science research. Design, generally relieved of the responsibility of explanatory theories and replicable findings, finds firm footing, so to speak, as informed provocation and as a mode of influence and inspiration. This is how design often works best – able to observe problems across scales and fields, and to synthesize new solutions.

But, often, it is not enough. These design initiatives, provocative and inspiring as they are, rarely probe the context in which they operate. In other words, these approaches to knowing and effecting change, and the lineages they spring from, are often not reflexive. They are often underequipped to delve into the sociopolitical relevance of design in the urban settings in which they operate. They rarely investigate the contestation around their own practice, or the multiple constructions and understandings of design in envisioning and making urban space. It’s evident from the conversations with various actors in New York, Jakarta, and Rotterdam around urban

4 http://www.moma.org/explore/inside_out/category/rising-currents
climate change adaptation projects that the idea of design is vague, and the role of design is unclear. To illustrate the diverse understandings of design, I quote five figures involved in and around the Rebuild By Design effort in New York, and one from a quite different context.

For Henk Ovink, Dutch spatial planner and Principle of Rebuild By Design, design is an expansive process, able to broach new possibilities: “You have to be able to step out of your preconceived idea about how you deal with these things, and create a place, a space in time, but also physical, in a process, where you can step outside of that reality, step outside of your normal world. This is what Rebuild By Design [was intended to be]. A process on the edge of the real world.”

For Damaris Reyes, community organizer and Executive Director of Good Old Lower East Side (and community participant during the Rebuild By Design public meetings), and Amy Chester, Manager of Rebuild By Design (with a community organizing background), design is much more about the aesthetics, the form of the urban proposal. Reyes states, “…The design itself people like. What they don't like is what’s getting done during what phase.” For her, the “design itself” is distinct from the process, and the implementation. Chester states, “…I'm interested in design as something that is beautiful… bringing aesthetics into the conversation. …It creates a sense for people who are using the building to act differently, to use space differently, to think about their workspace differently, or the way that they live differently, or their community differently. That's how I just think about design.” Design affects community; it can change their lives. But for her too, it does this through aesthetics and form.

---

5 Interview by the author, November 24, 2014.
6 Interview by the author, New York, NY, December 18, 2014.
7 Interview by the author, New York, NY, June 19, 2014.
For Michael Marrella, Director of Waterfront and Open Space Planning for New York City, design is, perhaps not surprisingly, more multivalent:

For coastal protection projects, given that the physical form that these projects take will define how the public is able to use the waterfront... how do you physically compromise the view corridors and allow for direct line of sight to the waterfront edge for resiliency or public safety. How do those two get reconciled? That oftentimes comes down to a question of design.

That is the procedural aspect of urban design. But Marrella is as well in tune with design as an instrument of influence and provocation. He says, “…There were two important things that came out of Rebuild by Design. One was getting climate adaptation planning literally on the front page of the New York Times magazine. The other is that it was using design as the means of discussing these issues.”8

And for Florian Boer, environmental designer and Director of De Urbanisten, a Dutch design firm involved in both Rotterdam’s municipal climate plan and Rebuild By Design, design is similarly more complex. Design is a process that weaves, and shows the interface between, infrastructural and ecological systems, and physical space. He says, “…If you want to make a more resilient city, it should become more interactive with the surface [of the city]... These types of [design] measures can make the city more resilient but it makes it also more visible, tangible. You can involve people into that. It makes it also more comfortable and more pleasant.”9

Anna Brown, Senior Associate Director of Bangkok, Thailand-based ACCCRN, explains what design might mean in working with multiple, often very different cities. She offers

---

9 Interview by the author, Rotterdam, the Netherlands, June 30, 2014.
a parallel perspective – appearing on some level aligned with Ovink’s, but in a very different context:

I would say that design has probably been most within the process. So it’s not [necessarily] that kind of physical design aspect, but I think the process that cities have gone through, through facilitation support by our partner organizations… This is critical particularly going into very different contexts. And needing to understand the set of different factors, how they play out in local contexts where there are physical, spatial realities, and [also] political realities, relationship realities, and ecological realities.¹⁰

For each of these figures, there is certainly an overlapping, broad understanding of design as the manipulation and organizing of spatial form. But, evidently, they view the potential of design through their own backgrounds and, as described earlier this chapter, ways of knowing.

Framework: Analyzing and Explaining Design

To analyze and explain the design of urban climate change projects, I proceed according to the following framework. Design is part of the production of space. Space is contested, and the design of space is as well. The value of design is often unclear. Buildings have to stand up; sea walls have to hold back water. The value of engineering and hydrology is simple to assert. But what defines effective, and affective, design? Beyond proposing a solution that fulfills programmatic, spatial, and social objectives, design also has to work on two additional levels, to legitimize itself, and to legitimize the project.

¹⁰ Interview by the author, Bangkok, Thailand, July 3, 2014.
Descriptive

- What is it? What does it promise to do?
- Who is involved in decisions about its production and development? Who does it propose to serve?
- Does it appeal to precedents? What are they?
- How is it paid for (both the production of the design, and the implementation of the project)?

Analytical

- What are the categories of adaptation design in terms of form?
- What are the social relationships involved? Who does it exclude?
- How does the design address the actual or stated problem? To what extent is there a gap between what is needed and what is envisioned?
- How is design – and discourse around design – used to legitimize the plan?

Jakarta

"Great Garuda"

The NCICD Giant Sea Wall plan is likely one of the largest municipally and nationally approved urban adaptation projects. It is also one in which the symbolic, formal nature of the project rivals its infrastructural ambitions. Aerial renderings produced by Rotterdam-based urban design and landscape architecture firm KuiperCompagnons depict the new city/seawall as a
bright bird with open wings protecting the dark city behind it (Figure 5.1). Gleaming white
towers trail off into green parkland and the cool blue of the retention lakes. On the surface,
references to the winged Brasília, and the feeling that this is a happier, softer version of utopian,
modernist visions, are hard to shake. The renderings present an idealized society living smoothly
through the transition of environmental change, with ample prosperity, recreation, and urban
nature on the other side.

Figure 5.1. Rendering of Jakarta NCICD / “Giant Sea Wall” masterplan. Source: Indonesia,
MENKO (2014)

The initial sketches behind the Garuda design, by landscape architect Gijs van den
Boomen of KuiperCompagnons, show a slightly different side. They are large, immediate, and
gestural, the contradictions of scale, ecology, and politics smoothed over by the broad marker strokes (Figure 5.2). In their roughness and indeterminacy, the sketches are aspirational in and of themselves. A large printout of one of van den Boomen’s sketches hangs on the wall in the NCICD planning office, located in the Indonesian Ministry of Public Works building (see image in Chapter 4). The sketches are visions of the future yet to be interrogated by the precision of the digital renderings (let alone the sociopolitical conditions on the ground). When asked about the design, these sketches are what van den Boomen chooses to show.

Figure 5.2. “Great Garuda” sketch. Source: KuiperCompagnons

Formed by the laws of nature, flow and efficiency, this elegant foil-shaped waterfront city resembles a great bird, an eagle spreading its great wings to protect the people of Jakarta, the national capital.

- NCICD Masterplan (Indonesia MENKO 2014, 50)
On a technical level, the design refers quite directly to a number of hydrological strategies apparent in water management infrastructure in the Netherlands, and to other large-scale reclamation and damming projects around the world. The inner, existing sea wall is first reinforced. An outer sea wall is then built out in the bay, keeping the sea out. The wings of the Garuda are created by landfill along the outer sea wall, with a typical cross section of 400 meters (although this can vary by scope of eventual development). This creates large retention lakes (of a minimum of 7,500 hectares, about 22 times the size of Central Park in New York City) between the outer wall / new city and the current coastline (Figure 5.3). The water levels in the retention lakes will be allowed to fluctuate by 2.5 meters. Excess water will be pumped out to sea – 730 cubic meters of water per second, according to projections, slightly larger in magnitude, incidentally, than the average discharge of the Hudson River at New York.\textsuperscript{11} This pumping keeps the lake levels lower than the existing canal levels in the city, allowing the canals to drain out.

Simply put, the plan calls for a large enough body of water that can be pumped low enough so that the canals and rivers running through Jakarta might be able to drain into it during the heaviest rain and the highest tides – the largest sink in the world, drained by the biggest pumps in the world. In addition to controlling flooding, these lakes are meant to become freshwater reservoirs in the future, as captured seawater is gradually replaced by freshwater from the canals and rivers. This, of course, will depend on whether the canal and river waters are suitably unpolluted. The Giant Sea Wall marries large-scale, iconic reclamation projects like the \textsuperscript{11} All projections for NCICD plan from Indonesia, MENKO (2014); Hudson River discharge data from USGS (2015).
Palm Islands in Dubai and complex hydrological works like the Marina Reservoir in Singapore—both, not coincidentally, projects worked on by Deltares, as discussed in Chapter 4.

Figure 5.3. NCICD masterplan showing retention ponds (directly below the "wings") and water management systems. Source: Indonesia MENKO (2014, 86)

The dynamic behind discussions on the design of the Great Garuda is revealing. In a video on the Jakarta work, JanJapp Brinkman of Deltares, a key figure in the post-2007 research on hydrology and subsidence, talks about how "bright architects came in and they thought about how this dike should look... they saw wings in the form of the Jakarta coast" (Deltares 2014).

Design, for him, comes after the engineering, after the decision to build coastal protections. At a presentation at the Connecting Delta Cities conference, Victor Coenen of infrastructure firm Witteveen+Bos, the project manager of the NCICD plan, half-jokingly said of designer van den
Boomen, that he was “playing with his iPad... while we were working very hard on serious matters.”\textsuperscript{12} Van den Boomen, in his office in the Van Nelle Factory building in Rotterdam – itself an icon of modernism, designed by Johannes Brinkman and Leendert van der Vlugt – speaks about how he destroyed his hotel room in Jakarta making the sketches, covering the walls with large sheets of paper, and going at it freehand.\textsuperscript{13} It is back to basics, urban designer as rock star.

I literally demolished the hotel room...

- Gijs van den Boomen, urban designer & landscape architect, KuiperCompagnons\textsuperscript{14}

Nevertheless, van den Boomen strongly emphasizes the necessity of local stakeholders in Indonesia to embrace the Giant Sea Wall. For him, it is critical for it to be an Indonesian project. He says, “Our role was also to capture... the technical processes, and integrally shape them in such a way that the people of Jakarta, our counterparts in the process, could become enthusiastic about the initiative.” Well aware of the parallels to Brasília, he brings up the comparison himself in presentations to Jakarta’s officials, posing the question to them: How will Jakarta be different? He contends that the project is not really about a dike, but about “changing the city.”\textsuperscript{15}

If Holston (1999) had asserted that modernist design did not take seriously existing social relationships, then what van den Boomen is advocating for is a kind of post-modern design (of

\textsuperscript{12} Presentation at Deltas in Times of Climate Change II conference, Rotterdam, September 2014.
\textsuperscript{13} Interview with the author, Rotterdam, October 1, 2014.
\textsuperscript{14} Ibid.
\textsuperscript{15} Ibid.
course, not in the usual architectural sense, but as a process). It is a time in which the designers, so mindful of modernism's checkered history, both in design and in development, have themselves adapted to a new global environment. The new design doctrine is one that negotiates capital, authority, and participation. It will no longer be Le Corbusier proclaiming the "prodigiously true" nature of his Plan for Algiers (recounted in Scott 1998, 112), but the Dutch urban designer / landscape architect inviting a shared possession of the legitimacy of his vision. As if to say, why wouldn't you want to take ownership of this? Why wouldn't you want to be behind the vision to a new kind of city? Dutch designers, engineers, and economic development officials alike reiterated this approach and point of view.

The complex ways in which the various actors invoke the symbolic form of the Great Garuda emphasizes the necessary, indeed powerful, element of design in the building of legitimacy in such a project. But it is not well understood. Design is regarded, alternately, with dismissiveness, bemusement, and detachment. This confusion presents both hurdles and openings for those who are in the design role.

Kees Bons of Deltares recalls the pivotal role of the design:

If you go to the meetings before [the design]... it was all rather technical. And so the image contributed to people realizing that this was more than just a number of technical activities. They started to see the city and the whole activity as something else. From a collection of technical activities it became one new icon for which several technical activities were necessary. That's the shift that happened.  

---

16 Interview by the author, Jakarta, July 11, 2014.
Bons then stresses the key point powerfully. The Garuda design turned a “Dutch development aid project into a national ambition.”

I can make it even more explicit. At its most stripped down, the Giant Sea Wall is merely that, a wall. It is an engineering project, a “defense strategy” – born out of disaster, and motivated by the specter of worse disasters. It is an expensive fix for decades, if not centuries, of bad decisions. This was, in essence, what the Jakarta Coastal Defense Strategy embodied, authored largely by hydrologists from Deltares two years before. But, formulated as the Great Garuda, it is proposed to be a national development plan – a step into a different kind of world citizenship.

In the sense that adaptation is social and spatial, the initiatives of adaptation have to negotiate multiple measures, experiences, and representations of space, essentially shuttling around the Lefebvrian triad of perceived, conceived, and lived spaces. It is a kind of political ecology of design, in which the biophysical and ecological challenges and constraints are messily mapped to the sociopolitical maneuverings and struggles. Here, design achieves a critical objective. Design connects the pragmatic to the emotional.

*Kampung Design Activism*

But design also connects the emotional to the pragmatic.

Some of the Jakarta residents most vulnerable to floods are those living in the informal “kampung” settlements along the thirteen rivers and coastline, especially along the notorious Ciliwung River. Kampung residents, basically synonymous with the urban poor in Jakarta, are

---

17 Ibid.
18 Lefebvre (1991), see Chapter 2 for discussion on this.
plainly called "illegal" by city officials (see Chapter 3). These officials blame kampung residents for the floods, saying that their actions degrade the waterways, while turning a blind eye to illegal garbage dumping and uncontrolled development, two much more likely causes.

This is where the ambitious Giant Sea Wall plan intersects with the plight and struggle of the kampung residents. The plan to create large retention lakes between the outer wall / new city and the current coastline, and to turn them into freshwater reservoirs, counts on clean rivers and canals flowing into the retention lakes. These rivers and canals have long been clogged by sediment and refuse, and increasingly overstressed by runoff caused by rapid and rampant urban development. This places renewed urgency on projects by the World Bank and Japanese agency JICA to dredge and widen canals and rivers – to increase their flow, "normalize" them in the words of city officials. The dredging and widening projects directly threaten the displacement of kampung settlements (Figures 5.4 and 5.5). A presentation by the Regional Development Planning Board of Jakarta DKI (Jakarta BAPPEDA 2012a) shows 1,183 houses to be impacted just in the two kampungs of Bukit Duri and Kampung Melayu along an approximately 3,450 meter (2.2 mile) stretch of the Ciliwung.

The work on the NCICD masterplan coincided with a number of resistance initiatives on the ground, in the kampungs. Both the Urban Poor Consortium (UPC) and Ciliwung Merdeka succeeded in forging working agreements with city officials for alternatives to the kind of forced evictions and displacement that has characterized recent struggles in Jakarta. They both achieved this with innovative design initiatives and coalitions.20

---

19 Contributing to decreased ground permeability and increasing stormwater runoff to drains and canals. See Susetyo (2013) for a discussion on causes of flooding in Jakarta by Marco Kusumawijaya, director of Rujak, an urban research and advocacy organization.

20 See Chapter 3 for some introduction to these issues.
Figure 5.4. Houses in Muara Baru, on the edge of Waduk Pluit, July 2014. Photograph by author

Figure 5.5. Bukit Duri houses perched at the edge of the Ciliwung River, July 2014. Photograph by author
In Muara Baru, adjacent to Waduk Pluit and where “Taman Jokowi” replaced a stretch of demolished kampung houses (see Figure 3.21 in Chapter 3), UPC’s coalition includes community architects, students from University of Indonesia, and researchers from Rujak (Figure 5.9). Coordinator Edi Saidi recounts how UPC’s organizing strategy and its use of broad-based coalitions, including designers, started in the aftermath of the Indian Ocean Tsunami in 2004. At that time, Saidi worked alongside Marco Kusumawijaya, an architect and director of Rujak, Yuli Kusworo, an architect from Arkom Jogja (JogJa Community Architects), and local community network Uplink Banda Aceh to help design and rebuild communities.21 UPC, Rujak, and Arkom continued their collaboration on the Stren Kali upgrading project in Surabaya, Indonesia, a notable example of community-led rehousing in place along a riverfront (Figure 5.10). At Muara Baru in Jakarta, UPC’s design departs from the previous upgrading-in-place projects, partly in recognition of the challenges in remaining directly along the retention pond amid the political and environmental pressures. UPC’s design comprises five-story apartment blocks, with collective spaces for economic and social uses on each floor (Figure 5.6). Organizers also secured promises from Governor Jokowi that the new housing would be built on nearby land (see Chapter 3 for more discussion on UPC’s organizing).

---

21 See Vale, Shamsuddin, and Goh (2014) for more information on rebuilding in Banda Aceh, ten years after the tsunami, including the work of Uplink.
Figure 5.6. UPC's participatory design concept for a new kampung typology at Muara Baru, exhibited at the Jakarta Vertical Kampung exhibition at the Dutch Embassy in Jakarta, July 2013. Source: UPC
Ciliwung Merdeka (Free Ciliwung), organizing residents from Bukit Duri and Kampung Pulo in Central Jakarta, two of the most threatened kampungs along the Ciliwung, have built a coalition that included, at one time, Kota Kita, a citizen planning group, designers and planners from Harvard and the Bartlett, and housing advocacy organizations like the Asian Coalition for Housing Rights. Ciliwung Merdeka has also been in talks with city officials, and has continued to press its case for alternative solutions, including proposing designs for new typologies of river-edge housing and rehousing in place. In their vision for a “humanitarian vertical kampung” for Bukit Duri, they proposed to conduct community-led mapping of the kampung and river, determine the best course for river widening, and designed new stacked, higher density kampung dwellings to house selectively relocated residents within the existing area, maintaining neighborhoods and livelihoods (Ciliwung Merdeka n.d.).

These initiatives by kampung activist coalitions bring up clear provocations and questions about the relationship between design and social justice. In recent years, there has been a fair amount of attention paid to humanitarian design – Design Like You Give a Damn, in the words of the founders of the recently shuttered Architecture for Humanity (2006). These efforts are motivated, in large part, by the premise that the skills of professional designers are much needed, and often neglected, in the places with the most pressing social and environmental problems. So we see projects like schools and clinics in Africa and South Asia designed by young architects, usually from the US or Europe, sometimes from more local places.
Figure 5.7. Ciliwung Merdeka’s design for a “humanitarian vertical kampung,” exhibited at the Jakarta Vertical Kampung exhibition at the Dutch Embassy in Jakarta, July 2013. Source: Ciliwung Merdeka
But these alternate visions in Jakarta – these counterplans – are not simply examples of humanitarian design. Nor are they a form of post-Hernando de Soto design-driven “entrepreneurial” slum dweller (2000, see also McFarlane 2012), kampung residents empowered to take their fates (and their homes) into their own hands. It is more coherent and multi-level. Kampung organizers build on the exigency of real, shared struggles, conditions of notoriety, a history of political activism, and the vision and ability to form new coalitions.

Design becomes part of a platform for organizing. Design makes political vision tangible – documents, numbers, urban and architectural forms – to explain and negotiate. Both coalitions’ visions were presented in an exhibition titled Jakarta Vertical Kampung in the Dutch embassy in 2013, and they have succeeded in building a working, if tenuous, relationship with city officials.

Says Sumardi of Ciliwung Merdeka,

For years, the urban poor in Jakarta had a very negative stigma, that they were lazy, passive, illegal, only taking welfare, and didn’t want to participate, didn’t want to be organized. We proved that a collective planning process, with plans and mappings,
could be made by the community themselves... that they had the imagination to form the ideals for their own kampung, in ways that were concrete.  

Design connects the emotional to the pragmatic. It gives form – and legibility, the design equivalent of hard copies – to what might have been summarily dismissed as emotional appeals, or fought off as political activism.

Ariel Shepherd, the community architect with the Asian Coalition for Housing Rights (ACHR), who has spent more than a year living in Bukit Duri and working with Ciliwung Merdeka, agrees with this assessment, and adds some complexity. In her view, design does legitimate and give form to organizing. But if design is done too quickly, without organic, broad-based community support, it can overplay a sense of completion, and diminish participation. (Shepherd 2014).

---

22 Interview (translated from Bahasa Indonesia) by the author, Jakarta, July 18, 2014.
23 Also discussed during an interview by the author, Jakarta, July 17, 2014.
Figure 5.9. Architect Yuli Kusworo of Arkom leads design session with Muara Baru kampung residents, July 2013. Photograph by author

Figure 5.10. Stren Kali upgrading project in progress in Surabaya, July 2014. Photograph by author
New York

Rebuild By Design

The development of design as a central concern in the New York context is complex. It is partly due to timing, prior research, and fortuitous connections of powerful people including HUD secretary Shaun Donovan, Rockefeller Foundation president Judith Rodin, and Henk Ovink, Dutch director of spatial planning and water management. One should be reminded: this is not a typical thing, having innovative design for climate change as the focus of a federal program.

Nancy Kete, Managing Partner of the Rockefeller Foundation, the primary funder for the Rebuild By Design competition phase, discusses the “resurgence of the design perspective” around their work immediately following Sandy. I quote her at length:

My colleagues at the Rockefeller Foundation had funded the Rising Currents exhibit at MoMA [in 2010]. I see that as the precursor to Rebuild By Design, because it helped people think differently both about how to live with water, and the role of design in finding innovative ways to do just that. When Dr. Rodin was asked to co-chair the NYS 2100 Commission, and pulled a few of us in to contribute, the first thing I did was look back at Rising Currents. It had an interesting history: Guy Nordenson was one of the NYS 2100 commissioners. He had won the Latrobe Prize, and [with Catherine Seavitt and Adam Yarinsky] produced the Palisade Bay book. Then they teamed up with the head of architecture for MoMA and ran the Rising Currents contest. The Foundation then made a relatively small grant, for us, to support the MoMA exhibit. In a certain way the full value of that support wasn’t obvious until Sandy hit. Everybody on the NYS 2100 Commission had either seen the exhibit, or heard about it.
It made my job much easier on the land use and environment sub-committee [of NYS 2100]. Because while there were some commissioners who were saying, Okay, Sandy proves we need these big gates, others said, Well, what about all those ideas from Rising Currents? So the commissioners and a lot of the press, they had this design memory; they had this visual vocabulary, and this spatial vocabulary, that I don't think most people would have had if it hadn't been for Rising Currents.²⁴

Kete is careful not to overplay her own role or the role of the Rockefeller Foundation more broadly. But she stresses this moment without hesitation:

And you know, frankly, I made sure people remembered it. We got copies of the exhibition guide from MoMA, we gave them to all the commissioners, and [we included] the language in the 2100 report... Because it had been so visual, because it had been at MoMA,... It really informed the recommendations in the land use chapter of the NYS 2100 Commission report, which were to use nature and nature-based solutions as your first line of defense. Which was pretty good!²⁵

Ovink was also part of bringing this focus on design and the built environment. As someone who, in a moment’s notice, can go into detail about the history of and motivations behind Dutch spatial planning and water management – what he calls a culture of “living with water” – he stresses the need to bring in line the process and the outcome, and for comprehensive planning, stating,

This is something we developed in the Netherlands over time, which is that, on a regional scale, there are interdependencies when it comes to infrastructure. And those

²⁵ Ibid.
interdependencies make it very clear that if you put them on a real agenda – if you make a plan – you gain a lot. You see missed opportunities, you can bring benefits together and investments together to create more benefits. You can define the process in a comprehensive way so you don't lose out in the implementation. 26

We see this in the proposals themselves – New York’s version of that idealized society post-climate change.

Figure 5.11. Proposal for “A New Urban Ground” by ARO and dlandstudio, part of the Rising Currents exhibition at MoMA in 2010. Source: dlandstudio

Winning Teams

The BIG team proposed “The Big U” for Lower Manhattan, a series of buildings, landscape elements, and demountable protections that wraps around Manhattan (Figure 5.12). While the conceptual scheme envisions a very big “U” looping around the island from East 42nd Street,

26 Interview by the author, November 24, 2014.
along the East River, down around the Financial District, and then back up to West 57th Street, along the Hudson River, the competition proposal itself focuses on the south-east third of that, from East 23rd Street down including the Battery-Financial District. The teams calls this the “Lower East Side,” but New Yorkers would know it as everything on the east side from Stuyvesant Town down through Battery Park. The team’s design documents stress the “needs and concerns of the Island’s diverse communities” and “integrated social and community planning.” (Awarded $335 million.)

Figure 5.12. Rendering of “The Big U” at the south tip of Manhattan by BIG team. Source: Rebuild By Design

---

27 This amount, like the other winning team awards, is less than necessary to complete the designs as proposed. The “BIG U” proposal, according to the design team, is projected to cost $1.09 billion. (My own informed guess, judging by their conceptual cost breakdown, is that that is a low estimate.) Further discussion of funding will follow in this chapter.
The **Interboro** team takes a comprehensive view of Nassau County’s South Shore. Titled “Living with the Bay,” the team’s plan stresses a regional approach, looking systems-wide at the south shore of Long Island before focusing on the area around Long Beach and Mill River (Figure 5.13). The team proclaims a process that intersects a “systems approach,” and a “community approach.” Its proposal is explicitly ecological in strategy, with wetlands and combination of soft and hard infrastructure. It also takes on issues of racial segregation, affordability, and governance, although the implementation of ecological infrastructure is better defined than its social and governance objectives in the proposal. (§125 million.)

![Figure 5.13. Aerial rendering of “Living with the Bay” proposal by the Interboro team. Source: Rebuild By Design](image-url)
The final boards for the MIT CAU + ZUS + URBANISTEN team’s “New Meadowlands” project in New Jersey are unusually simple, a single sectional perspective rendering in three parts, emblazoned with “protect,” “connect,” and “grow.” Set in a context in which fragile wetlands ecosystems abruptly meet expanses of concrete, asphalt, and steel – the support systems for the New York City-area urban agglomeration, the team’s strategy encompasses the environmental to the economic (Figure 5.14). A nature reserve serves as the backbone of storm protections, while enhanced transportation networks and recreational spaces offer impetus for more urban-scale densification and residential development. ($150 million.)

Figure 5.14. Concept drawing of “New Meadowlands” proposal by MIT CAU + ZUS + URBANISTEN team. Source: Rebuild By Design

The OMA team, addressing Hoboken on the New Jersey shore west of Hudson River, proposed a comprehensive strategy to “resist, delay, store, discharge” water (Figure 5.15). In line
with the lead architecture firm's approach—what might be called a rhetorical pragmatism—the plan proposes a series of enhanced hard and soft infrastructure protections along the coast (to resist), permeable areas within the city (to delay), a set of storm water holding areas within the city (to store), and pumps and drains (to discharge). "Defended Coastline," it proclaims in its briefing book. It appears that the OMA team stresses least the sociopolitical and community relationship matters, compared to the other winning proposals. ($230 million.)

Figure 5.15. Rendering of “Resist, Delay, Store, Discharge” plan for Hoboken. Source: Rebuild By Design
The PennDesign/OLIN team, looking at Hunts Point, in the Bronx, zeroes in on the specific challenges of the neighborhood, one beset by poverty, environmental vulnerability, and undesirable land uses (Figure 5.16). But it also stresses the strengths of local activism, including the work of groups like Sustainable South Bronx, who have led local environmental justice and green jobs initiatives. The proposal, called “Hunts Point Lifelines,” seizes on the fact that the neighborhood is host to one of the largest food distribution hubs, and highlights opportunities for effective community-based planning, new jobs, new methods of intermodal food and supply distribution, and local economic development. Livelihoods matter as much as flood protection. ($20 million.)

Figure 5.16. Aerial rendering of “Hunts Point Lifelines,” South Bronx, proposal by PennDesign/OLIN team. Source: Rebuild By Design
The SCAPE team proposed “Living Breakwaters” for the eastern coastline of Staten Island (Figure 5.17). Eschewing conventional “hard” protections, the proposal entails a series of breakwaters – submerged and exposed partial barriers – to dissipate storm surges. These are built of hybrid construction, a combination of proprietary “ECOncrete” blocks and gabions to encourage oyster habitats and other marine life. SCAPE also stresses the community links, making the point that these developments would provide educational and cultural opportunities for local residents. A diagram on its design board depicts “culture,” “risk reduction,” and “ecology” in relation to each other. ($60 million.)

Figure 5.17. Rendering of “Living Breakwaters” proposal by SCAPE team. Source: Rebuild By Design
The operative scales of the projects are rather divergent. The OMA and BIG teams looked at highly urbanized areas (appropriate and unsurprising, given the thrust of the main team members’ practices and research activities). The MIT team looked at a very large, industrialized and urbanizing landscape. The SCAPE team, led by landscape architects, took on more of a coastal protection and community engagement project, rather than an integrated scheme. The PennDesign/OLIN team looked at a somewhat smaller scale, a neighborhood.

Each of the teams emphasizes community engagement in its process. Each, with the possible exception of the OMA team’s proposal, tries to make this engagement an evidently discernible part of its design. At the same time, these scales, and the scope of the projects, bring up clear issues in terms of the engagement objectives. When your list of stakeholders includes ten New York City municipal departments, four city council districts, four state senate districts, six state assembly districts, eight US congressional districts, three New York State departments, numerous federal agencies and departments (including Army Corps of Engineers, Coast Guard, Homeland Security, Interior, Transportation, EPA, General Services Administration, and National Parks Service), as well as various real estate developers and property managers, nonprofit organizations like Friends of the High Line, Battery Park Conservancy, and community groups such as Asian Americans for Equality, as the “BIG U” proposal does, who, actually, are your stakeholders?

According to Ovink, Rebuild By Design attempted to bridge two cultures, to merge “entrepreneurship, individualism, winning, and competition, with a collaborative approach, this polder model, and a focus on the common.” This is an ambitious task in the urban spatial politics
of New York City. Ovink himself recognizes this: “So, collaborative, inclusive, competition. That’s actually impossible!”

Process and Participation

The Rebuild By Design award process was set up in a very specific way. Federal community development block grants targeted towards disaster recovery (CDBG-DR) were assigned to local municipalities (as detailed in Chapter 3). The CDBG-DR funds are specifically meant to aid low-income communities after disaster (US HUD 2015). Given this structure, design teams had to win the backing of a broad group of local stakeholders in order to win the project. Design, then, was tuned towards a particularly communicative fashion – aligned with normative planning principles.

For example, in the proposal by the BIG team for Lower Manhattan, designers attempted to hybridize Robert Moses and Jane Jacobs – meshing top down and bottom up, large-scale infrastructure and community relationships. Interestingly, one could argue that the designers attempted this Moses-Jacobs meshing on two levels – in terms of the spatial objectives of the design itself, combining waterfront infrastructure, prominent cultural buildings, and spaces for local gathering, and in terms of their own practice, necessarily engaging with a broader “public” on a city-scale (after all, this team had the most high-profile site), and attempting to bring community groups on board with their proposal.

The community stakeholders here, including long-time Lower East Side housing advocates, ended up quite happy with the vision and their participation. It did not start out that way. “We have a history of seeing beautification further exacerbate gentrification,” says Damaris

28 Interview by the author, November 24, 2014.
Reyes, Executive Director of Good Old Lower East Side and Chair of LES Ready.29 Reyes explains her concerns about the community design process,

Let me give you some background. The west side gets everything, okay? The west side gets everything, they get everything! So, here is this moment where the ‘Big U,’ you know, is moving forward for all of Lower Manhattan and they're now directed by the city to focus on our community. That was like flag number one. People are, like, what, oh, really, now you want to come over here? You know, they start looking at you, you know, side eyed, like of course they want to protect the land there because they want to make sure that they can still sell it, that’s what people think and so yeah, people drew those conclusions.30

Reyes here brings up longstanding issues in Manhattan urban politics. The west side of Lower Manhattan, including the West Village, Tribeca, and Battery Park City neighborhoods, has long become affluent and influential. The disparities she mentions can be quite obvious. The dismantling of the elevated West Side Highway made way for the new Hudson River Park; yet the FDR Drive on the east side remains, community and recreational uses much less developed, after multiple planning initiatives. And after the 9-11 attacks, the Chinatown area of the Lower East Side was hit particularly hard, first by the immediate economic impact, then by inequitable distribution of housing and job creation funds (Gotham and Greenberg 2008), and spatial segregation by security barriers and rerouted transportation from the Wall Street area (Asian American Federation of New York 2002).

29 Lower East Side Long Term Recovery Group (http://lesready.org), a coalition of community groups and institutions coordinating our response and preparedness planning and training for future disasters, formed in the wake of Superstorm Sandy.
So, the fact that the design team was focusing on her community was not immediately a positive. Yet, Reyes and members of her coalition were heartened by Amy Chester’s (manager of Rebuild By Design) involvement:

Amy [Chester] in her role was a significant factor because she’s been an organizer, she’s from New York, she knows the challenges so she knew immediately what I was talking about. You know, I can’t tell, you know, the designers before this, where they were at, if they’re inclined towards these things. I understood that they were designers and really that I want them to do was to be prepared to listen and then act from that space.

After we made the agreement to work together, our focus quickly shifted towards making it successful...

Chester herself notes the challenges of making this connection between the designers and the community stakeholders. She recalls going to three-quarters of all the public meetings, announcing herself, and stressing to the audience,

...We are here today because the teams have to get your feedback and have to prove to us that your feedback was taken into consideration.

Rebuild By Design ensured a level of community engagement on the part of the design teams by asserting this link between the outcome of the competition and community and political support. After a process that was, to Damaris Reyes, both contentious and productive, LES Ready convinced elected officials to support the BIG plan.

31 Ibid.
33 The BIG team’s “BIG U” project is arguably the most high-profile of the Rebuild By Design proposals, and LES Ready’s experiences during the competition phase and beyond present an important assessment of community engagement. One can find alternative opinions of community participation for the case of the OMA team’s Hoboken proposal (Hine 2015).
Two of the challenges to the Rebuild By Design strategy are tied to the very innovation it is credited for. The first is the uncertain relationship between the competition phase and the implementation phase. After the winning teams were declared, the CDBG-DR funds were released by HUD to either the city or state in which the effected localities reside. Then, each city or state body began their own program to manage the funds and move the projects along, subject to the local and state politics and legislative processes. By mid-2015, a fragmented picture of this has emerged across the localities with winning proposals, including states and cities issuing requests for proposals, conducting environmental reviews, holding further community workshops, and continuing the refinement of project design scopes (Rebuild By Design 2015).

In the New York City case, Michael Marrella, Director of Waterfront and Open Space Planning, notes,

With Rebuild by Design in particular, there's so much political and public attention to these projects, we're certainly not looking to shift course dramatically – in part because Rebuild by Design did a very good job of building public anticipation, public desires for these projects... I think what it really amounts to is determining the scope of the project given the funds that were allocated... the city is not going to be able to take the money and change course drastically.34

The BIG team’s “BIG U” proposal was awarded $335 million – a lot of money, but a fraction of what it would take to build defenses surrounding Manhattan, midtown-down. The initial award, in line with the broader Rebuild By Design strategy, is meant to spur further private funding, to create a “new form of public-private financing mechanism” (US HUD 2014b). After the

competition phase, HUD released the funds to the city, which then started its own proposal process for what is now called the East Side Coastal Resiliency project. In this case, the design team members were retained largely intact.

Early in the implementation phase, in the fall of 2014, there was already debate and contestation over which areas are protected first. Community members in low income areas in the Lower East Side — the very ones who helped bring the elected officials on board to support the project — contend that they are not being prioritized, even though their neighborhoods were the hardest hit, and the lowest lying (see Malesevic 2014). This emerging situation, ongoing as of mid-2015 as the city begins anew public meetings for this project, illustrates very well what is perhaps the key challenge of the Rebuild By Design initiative. Design works to engage communities, “win” block grants, and capture imaginations. But, in this case, it doesn’t attempt to change social relationships and political structures.

Ovink, not shy about grand pronouncements, is modest about envisioning social transformation. “My goal is to change the world, he says, “but it’s not me who will change it.”

---

35 This was before the starting of the city’s own community engagement process, to begin in December 2014 (NYC 2015b).
36 Of note: if the community members’ contentions of unfair implementation and phasing of the “BIG U” play out as such, it would not be the first time in recent history in the Lower East Side that post-disaster recovery planning is manipulated against the interests of low-income communities. In their study of post-disaster recovery in New York after 9-11 and New Orleans after Hurricane Katrina, Kevin Fox Gotham and Miriam Greenberg found that the Lower Manhattan Development Corporation, tasked with planning and coordinating the rebuilding and revitalization of Lower Manhattan after the attacks, sought waivers for the income requirements and “public benefit standards” for the CDBG funds then allocated to the city (2008, 1047). They also found that capital grants favored the Financial District and Tribeca over the Lower East Side and Chinatown.
37 Interview by the author, November 24, 2014.
Analysis

In many ways, the objective of this chapter has been to unearth the complexities behind what is often (mis)understood as a rather straightforward proposition – to design. As we’ve seen, what constitutes design depends on which lineage of design thinking one refers to; it also depends on the audience, or the recipient of design ideas. Often what is seen as a multilevel process by urban designers is understood to be the aesthetic, desired outcome by the community participant or the politician.

Jakarta

In Jakarta, the Giant Sea Wall masterplan – the Great Garuda – shows off its intentions and its affectations. It is eye opening, this plan, in this location. There is an almost simplistic narrative to be wrought: the sophistication of the hydrological plan meets the obduracy of the canal conditions; the immediate, figural Garuda, a cultural symbol, in a plan that has not yet allowed any public participation. If one were doing a straightforward design review, one might harshly critique this overbearing use of symbol and figure to achieve design goals. But in reality the plan eludes such easy dismissal. In political terms, balancing Dutch vision and Indonesia aspirations, the Great Garuda design achieved an important goal. It won the political support of city and national government officials – even through a contentious election and transfer of power that changed both the city and the nation. The design gave form to a previously technical process. It allowed officials to see beyond a wall, even beyond a real estate development project, to national ambition.
Will it work? Work for whom? On one level it may already be working. In Chapter 4, I explained the Dutch objectives in developing the masterplan, and asserting themselves as the credible, long-term partner. They look to strengthen their position in Indonesian regional and broader Asian urban development. The first phase of the NCICD plan broke ground in October 2014. The flexibility in scope and extent, as well as the hydrologists’ earlier options to do less, suggest to me that parts of the masterplan will likely be built, even if confronted by less than perfect economic and political conditions. The question of whether it will work, in this regard, hinges on whether the project moves forward in a productive manner, regardless of final scope, accomplishing some of its objectives, whether other objectives, including the canal dredging, move forward productively, perhaps with successful kampung rehousing initiatives, and in what ways the Dutch consultants and governmental organizations will move forward with it.

In Muara Baru, and in Bukit Duri and Kampung Pulo, community organizations UPC and Ciliwung Merdeka along with their coalitions have marshaled design towards productive agreements with then-governor Jokowi. Design here enabled kampung residents to give form to a sociopolitical campaign. The visions and the measures afforded by the design process and documents enabled new platforms for negotiation between organizers and city officials.

New York

In New York, organizers for Rebuild By Design intently foregrounded community participation, ensuring a level of engagement between design teams and community stakeholders. At the same time, each of the teams reveals priorities that reflect both the local
sites they designed for, and the makeup of their team. Among the winning design teams, the BIG, Interboro, and SCAPE teams proposed designs that explicitly intended to bridge between ecology and infrastructure, on the one side, and community inclusion, on the other side. It’s certainly interesting that this particular dualism is perpetuated even in the projects that attempt to bridge it. The MIT + ZUS + URBANISTEN and OMA teams privileged infrastructure and economy, while PennDesign/Olin stressed socioeconomic goals.

An Alternative? Red Hook Initiative

To close out this chapter, I offer one example of an alternative approach in New York, a project I am very familiar with. In 2010, I designed a community center for the Red Hook Initiative in Red Hook, Brooklyn. The RHI space was designed in a collaborative process, by and for the community (Figure 5.18). We made a collective sense of ownership by participants a priority. When Superstorm Sandy hit the New York region, Red Hook was one of the worst hit neighborhoods in the city. RHI’s space survived the storm, and in the days after, emerged as a hub of grassroots recovery efforts (Figure 5.19; see elaboration on this in Chapter 3).39

In Red Hook, community building, social and environmental resilience, and space and design were inextricably intertwined. It serves as an example for how designers can engage with deeper aspects of justice and equity. Eric Klinenberg, NYU sociologist and research advisor for Rebuild By Design, explicitly made this connection – and, unsaid, broached larger questions about the relationship between Rebuild By Design and grassroots initiatives – when he brought

38 With full acknowledgment that it is problematic to summarize complex design projects so reductively.
39 See Chapter 3 for elaboration on RHI’s work and their key role in post-Sandy recovery.
members of the selected design teams to the RHI space, asking: “Can we design spaces like this?” (Kimmelman 2013b).

Jill Eisenhard, executive director of RHI, has said that she has no idea how the space remained safe after the storm. I can offer some thoughts about this. One aspect was sheer luck and topography. The flooding reached the streets adjacent to the RHI space, but did not go beyond. Another was a matter of architectural design and economy. The building was built by the developer/owner as a warehouse space – involving the least expensive materials and structural system, with a concrete, slab-on-grade floor construction. It does not have a basement. All the mechanical systems had to be placed on the roof, or mounted on the walls, out of the way of floodwaters. (Mounting critical equipment above the ground floor is now a standard architectural design recommendation for storm surge and flood resilience. The Red Hook Houses, just across the street, do have basements, and did not fare quite as well.)

Those points explain how the space stayed relatively dry, and how the electricity remained on. What happened after is just as important. How did the space, along with the staff members and volunteers, become a recovery hub in the wake of Sandy? In my view, three points stand out: First, our design team paid particular attention to the relationship between spatial design and social organization. We prioritized openness, transparency, and accessibility, aligned with RHI’s approach as a community space, as well as a diversity of spaces to account for the fast-changing and often unpredictable uses. This included leaving the large warehouse doors as glazed, roll-up doors. In the days after the storm, this enabled volunteers to set up soup kitchen service just inside the doors, with lines spilling out the sidewalks. Second, the location of the building, “catty-corner” to the Red Hook Houses, allowed the RHI space to function as it was intended – as a place for the community. Third, there had been “buy-in” from the community
members – the staff and participants, almost all who have ties to public housing. The RHI space, completed only two years before the storm, had become a center of social life. Eisenhard has related stories of youth participants exclaiming in wonder that it was the most beautiful building in the neighborhood, and that it was theirs.

A project like the Red Hook Initiative space does not replace the kind of large-scale infrastructural and landscape design projects that Rebuild By Design envisions. There is a space for big plans like that, especially in circumstances in which there is broad consensus for high levels of protection, embraced as part of the sociocultural and economic lives of residents. But the RHI project allows us to consider that crucial weaving of social and spatial – in particular the place of agency of marginalized residents.

So it’s not that one project changes much – but this one project is successfully embedded in a broader process of organizing for social and political change. In the words of Jill Eisenhard, executive director of RHI, “People from the community have the power to create their own social change… you have to create opportunities for people to take action ahead of time.”

Design connects the pragmatic and the emotional; it bridges social and spatial. But, like most things, it is not neutral. Design is political, intertwined with foundational ideas about society – concerning symbol, image, identity, and legitimacy. Indeed, it is often invoked for nation building. Design opens terrains of contestation. It can be a part of resistance, a mode of political organizing.

---

40 Interview by the author, Brooklyn, NY, September 13, 2014.
Figure 5.18. Red Hook Initiative, March 2010. Photo by author

Figure 5.19. Red Hook Initiative during Sandy recovery. Photo by RHI
6 A POLITICAL ECOLOGY OF DESIGN

Syntheses and Implications

In the face of climate change and uneven social and spatial urban development, how are contesting visions of the future produced and how do they attain power?

The research question that drives this study is framed by a specific context – the environmental threats caused by or linked to climate change, and the forms of urban development under global capitalism in the early 21st Century. Within this context, New York, Jakarta, and Rotterdam form a particular set of sites. They are knitted in time and space by historical colonial relationships, present day diplomatic and economic missions, a set of overlapping actors and institutions, global flows of capital (including aid and trade), and environmental and climatic shifts that are globally constituted, but with disparate local impacts.

They are, as well, connected in less tangible ways – through ideas, symbols, and representations. The environmental plans proposed for New York and Jakarta are not simply delineations in space, ideal forms to accomplish stated social, environmental, and economic objectives. They appeal to, and trade on, a set of currencies. When Dutch Minister Melanie Schulz refers to the Dutch feeling “very much at home here” [in Indonesia], she means something more than the current efforts at managing water.¹ She invariably alludes to a long background of colonial dependency and post-independence nation building. When Henk Ovink

¹ In Minister Schulz’s speech at a roundtable on coastal development in Jakarta on April 2, 2014, in conjunction with her announcement of the NCICD masterplan, she says, “...We Dutch feel very much at home here. We feel senang [at ease]. The reason is related to today’s theme: the battle against water.”
shows a slide with “We All Hate You Sandy” spray-painted on the side of a damaged building, and states, “If you've lost everything you've built up, you want it back, you don't want to look ahead... This fact drives Congress... not the science, this emotion,”² he invokes a cultural and political familiarity with the United States, and offers a tacit statement that he knows that this is not an engineering problem, even as he brings with him the significant authority of Dutch engineering reputation (Figure 6.1).

Figure 6.1. Henk Ovink explains what we all think of Sandy at Deltas in Times of Climate Change II conference, Rotterdam, September 2014. Photograph by author

² From Ovink’s presentation, titled “Rebuild by Design: Recovering New York after Sandy,” at the Deltas in Times of Climate Change 2014 conference in Rotterdam, the Netherlands, on September 25, 2014.
An Initial Synthesis – Marginalization / Networks / Design

In this dissertation, I trace across the spectrum of more and less tangible interrelationships. As laid out in Chapter 1, the question at hand deals in an interrelated manner with politics, environment, space, and design practice. In engaging this question, the primary and intertwined issues cut across the sites and actors, including:

1. Power relationships locally and regionally, between the processes of urban development and those caught in its path, and often between institutions of the state and on-the-ground communities.

2. Power relationships globally, across national boundaries, variously between state and non-state actors.

3. The mechanisms and processes of urban planning and design, including the production of plans, and the institutional frameworks through which such plans are disseminated and implemented.

4. The mechanisms of policy and idea diffusion and adoption – through what means do ideas actually exist and move?

5. The symbolic nature of ideas and images – how visions of the future attain meaning, legitimacy, and power.

In disentangling these issues, I've focused on questions that can be analyzed in a more direct, abstract manner: How is power constituted in these sites (and, conversely, how is marginalization made and enforced)? Amid the increasing global interconnectedness in policy and planning, how are large-scale environmental plans produced? And, in the context of contesting visions of urban futures, how are specific visions legitimized?
Nature of Contestation

In Chapter 3, I explored the interrelationships between environmental initiatives in the context of climate change and uneven urban development, looking at sites and strategies in New York and Jakarta. I developed the analysis building on theories of urbanization, nature, and uneven development, and on “urban ecological security,” the ways in which urban climate change plans are increasingly strategic, selectively tuned towards economic security, not necessarily a broader environmental transformation.

In both cities, dominant state-led adaptation plans made in response to environmental threats generally conform to, reflect, and are re-produced by the urban sociospatial systems in which they are embedded. In New York, in the context of reinvigorated climate change planning and attention to urban resilience post-Superstorm Sandy, Rebuild By Design offered an innovative model of collaboration and financing, and an aspiration to think and plan regionally. At the same time, its implementation structure makes certain that the various winning concepts must negotiate the complexities of local urban politics as they move forward, including decisions about what to build, where to build, and how to fully pay for it. At the end of the competition phase – in mid-2014, the initiative comprises a set of ambitious, high profile, yet splintered urban proposals within the New York metropolitan region. In Jakarta, the Dutch-led NCICD Giant Sea Wall masterplan comes amid a growing imperative to mitigate the severe flooding in the city. It is posed as a comprehensive solution to flooding and transportation problems, and offers the city an iconic world-class waterfront. Perhaps like a good strategy should, it changes the conversation, and broadens the realm of possibility. In linking its implementation to the fortunes of large-scale privatized real estate development, the masterplan resorts to what is by all
counts the “preferred” and problematic means of getting things done in this city – a rapid, well-fueled, but haphazard means of development.

In each of these sites, historical trajectories and geographic conditions are intertwined with the production of social and spatial marginalization, and the form of urban nature. They are terrains of contestation, across which such social and spatial inequities have informed the ways that marginalized communities were impacted by, and responded to, environmental and climate change threats. In many ways, the burdens faced by these communities have simply continued, and have been replicated through the new environmental conditions. In other ways, community groups in Red Hook and the Lower East Side in New York, and in the Bukit Duri / Kampung Pulo and Muara Baru kampungs in Jakarta, have exhibited innovative, important responses to environmental threats.

A number of key factors appear in common across the sites and community responses. First, the specific condition of marginalization, spatially and socially, plays a significant role in enabling these groups to organize in the wake of, and in expectation of, disasters. Not simply reinforcing the relationship between social and environmental resilience, this link between shared experiences and action suggests that community organization and urban spatial form can be harnessed together, something possibly planned and designed. Second, the place of local knowledge remains important. The criticality of such knowledge does not arise simply in the most immediate sense, to aid in disaster recovery – as in Red Hook, Brooklyn, directly post-Sandy. It also arises as a means of organizing towards better responses, as in LES Ready’s work to form a coalition in the Lower East Side. In Jakarta, the assertion of local knowledge across urban scales by disenfranchised communities and advocacy groups is a key part of resistance in a context in which the dominant plan is visually and technically ambitious, but still working largely
in a technocratic sphere. And, third, broad-based coalition building can have extended impact.

In the Lower East Side, coalition building is both community-based preparation for future disasters, and as well a means of political organizing. In Jakarta, the forming of multilevel coalitions among activist groups – including kampung leaders and community organizers, as well as designers, students, and researchers both locally and globally – is an effective means of local political organizing, and gaining international awareness and support.

Global / Urban Networks

In Chapter 4, I looked at the global geographies of climate change planning, in particular the ways in which new global-urban networks enable interrelationships across scales and levels, linking urban scale environmental planning to national and global policy. Building off of theories of policy mobilities, “worlding,” and transnational climate change governance, I investigated the increasing role of Dutch government agencies, nongovernmental entities, and private firms in the making of urban adaptation plans in New York and Jakarta, set in a broader global context.

Probing the actors, networks, and local and global contexts behind the development of these new geographies, I found critical relationships behind a number of concurrent events and policy shifts. First, in recent decades, decentralization of power and decision-making on a national level in the Netherlands refocused spatial planning and urban development to the cities. Second, increasing awareness of climate change prompted new research initiatives in 2006–7 on national and local scales – including a new Delta Commission report and a national research program Knowledge for Climate. Third, also around that time, specific Dutch national policies and municipal planning programs coalesced with a strategic focus on urban water management and international relationships – including the creation of Deltas as a research institute, and
the launch of Rotterdam Climate Proof program (which subsequently initiated the Connecting Delta Cities network). Fourth, internationally focused initiatives such as the independent body Netherlands Water Partnership (NWP) and the Netherlands “Top Sectors” provide aligned, cross-sector funding and support. All of this enables a Dutch global strategy that knits entrepreneurs, scientists and researchers, government policy makers, and aid and investment mechanisms with very specific national priorities.

In tracing these strategies, and the way they land on the ground, embed, and transform themselves in places like Jakarta, and New York, I found that, increasingly, global, national, and urban scales are intertwined. These entities and relationships constitute a multiscalar, multilevel network, through which the diffusion of capital, knowledge, and influence takes place (see Figure 4.15 in Chapter 4). While on some levels structured as a “flat” network – memorandums of understand (MOUs) that are presented as cooperation between countries, or city-to-city networks that are organized as means of sharing and knowledge accumulation – the direction of the diffusion is often readily apparent, usually from the Netherlands out.

Three critical points emerge: First, nation states (a key example of which is the Netherlands) develop environmental planning as an economic development strategy. The global-urban networks illustrated here explain the way that national strategy is operationalized through cities. Conceptually, global and urban are pulled closer together, to a point where relatively small, urban-scale ideas in Rotterdam have outsize impact in the broader arena of global environmental management and urban development. Second, even though constituted through these global-urban networks, urban adaptation plans are embedded within modes and levels of local and global urban development. Climate change is global, but urban politics and local growth agendas influence specific environmental planning responses. Third, climate change is a real predicament,
but also something that serves to make more urgent the need for solutions, and opens new avenues for capital exchange and accumulation. The relationships between Dutch actors with Jakarta and New York are substantially that of economic development, primarily in the form of privatized urban development.

Sociopolitics of Adaptation Design

In Chapter 5, I explored the role of design in urban adaptation. Why do these projects take on the forms that they do? Design presents visions of alternate futures, and brings to the foreground choices and motivations. Considered simultaneously as process, practice, and outcome, the maneuverings and contestation around design exposes sociopolitical motivations and power relationships in cities. The discourse around design, therefore, offers insight into the making and disseminating of adaptation planning. I discussed, first, a range of lineages of urban design theory – ways of knowing and effecting change in the constructed environment. I then built on the framework of these worldviews to explore how design effectively grapples with urban adaptation. A key problem involves the nature of design itself. At its best, design works as informed provocation, able to influence and inspire, but not necessarily to understand and explain. The investigation of adaptation design requires a conceptual framework that enables a more reflexive look at design process, practice, and outcome.

Design in the dominant plans in New York and Jakarta negotiate between the structure of their organization and the sociopolitical contexts of their localities. For Rebuild By Design in New York, organizers were cognizant from the start that community engagement was necessary – based on the organization’s objectives, and as well to make possible implementation (by local authorities), and to comply with funders’ requests. It made for a context in which the design
teams stressed this engagement more than they might have otherwise. In Jakarta, the objectives of the NCICD Giant Sea Wall plan, with its “Great Garuda” design, is particularly clear. The symbolic form of the design is meant to resonate with local culture, meaning, and ownership. And in some ways it has – particularly with those in political power. And yet, for all the Dutch efforts, there is reticence among local leaders to open a broader engagement with constituents in Jakarta. Symbol, in this case, may not be enough. Judging by conversations with city officials and kampung organizers alike, Jokowi’s *blusukan*, his impromptu walks, has proven more compelling, more engaged than the larger masterplanning efforts.

More generally, design plays multiple roles in the production and legitimization of adaptation plans. Design connects the pragmatic and the emotional. In this way, it bridges social and spatial. The marshaling of design can be used to connect a more technocratic process of planning with the messier, more unpredictable priorities of communities on the ground. This is what the “Great Garuda” vision attempts in Jakarta; it is what Henk Ovink’s appeals to process and emotion is meant to accomplish in New York. But, inversely, design, and the production of the documents of design, can give measurable weight to what might be dismissed as emotional appeals. This is what UPC in Muara Baru, and Ciliwung Merdeka in Bukit Duri and Kampung Pulo have been able to do. Beyond giving form and measure, design as well is invoked to dispel stereotypes about marginalized residents.

Design is political. It is intertwined with foundational ideas about society, concerning symbol, image, identity, and legitimacy. Indeed, urban design is often invoked for nation building. Critically, design can also be a part of resistance, a mode of political organizing.
**Theoretical Reflection**

How do these findings reflect back on the foundational theories framing each topic? Table 6.1 draws out the various implications of the findings in each chapter.

**Table 6.1. Theory, findings, and implications**

<table>
<thead>
<tr>
<th>Theoretical framework(s)</th>
<th>Ch. 3 Nature of Contestation</th>
<th>Ch. 4 Global/Urban Networks</th>
<th>Ch. 5 Sociopolitics of Design</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Urban as a site of contestation; socio-ecological change is co-determined; climate plans often for strategic economic security</strong></td>
<td>New policy mobilities; “worlding,” urban inter-referencing; transnational networks in global climate governance</td>
<td>Urban design lineages/ways of knowing; design &amp; climate change; design as informed provocation; not a reflexive practice by nature</td>
<td></td>
</tr>
</tbody>
</table>

| Research findings | “Top-down” plans tend to reflect economic/sociospatial systems; spatial form of marginalization & social/environmental resilience linked; local knowledge & broad-based coalitions critical to counterplans | Global, national, urban scales intertwined through multiscalar/level networks; environmental planning as economic strategy; adaptation plans embedded in local & global development; climate change facilitates accumulation | Design negotiates between organization & sociopolitical context; connects pragmatic to emotional, bridging social and spatial; design is not neutral, can be a mode of organizing |

| Implications | Socio-ecological change, but also informed by state; climate change facilitates plans; attention to sociospatial form of resilience | Historical (colonial/postcolonial) relationships matter; national policies matter; how strategies move across scales & levels | Design is political; reflexive design discourse a possible missing link in resilience planning; a design for climate change? |
A Political Ecology of Design

I offer a preliminary synthesis.

In this new landscape of climate policy mobilities, urban adaptation projects, globally constituted, are embedded within and reflect existing urban sociospatial systems. In each of the sites, the dominant, state-led (or state-supported), “top-down” plans generally conform to modes of urban development, constitution of market forces, levels of governance, cohesion of climate policies, and patterns of institutionalized community participation. Climate change motivates relationships and plans, but plan objectives often transcend climate-specific goals. Climate, in fact, exposes and enhances motivations and contradictions in existing global relationships. It also facilitates new avenues for capital exchange and accumulation. The production of alternative visions of the future opens terrains of contestation, enabling modes of organizing and resistance to hegemonic systems. In these counterplans, the building of new coalitions is critical. And these as well reflect local specificities.

To return to the research question: how are contesting visions of the future produced and how do they attain power? I elaborate on the last point in the synthesis – specifically, how counterplans gain power – by delving further into the issue of contestation in these sites, and the production of the counterplans themselves.

Contestation and “Counternetworks”

The history of urban social and spatial movements is indeed rife with narratives of direct confrontation – the “classic” 1968 urban uprisings in Paris and other cities, for example, with
strikes, occupation, and taking to the streets, and the protests against the World Trade Organization in Seattle in 1999. We saw this again more recently in the Arab Spring and Occupy Wall Street movements. The counterplans in this study have exhibited various ways of asserting or wresting agency and power. One important point is that they do not do this as direct confrontation all the time. In the context of a multiscalar, multilevel, relational network, challenging dominant plans is not necessarily about direct contestation.

Leitner et al. (2007), in searching out forms of resistance to the hegemony of neoliberal urban governance, propose means of unconventional urban resistance – beyond direct response. The authors map the recursive relationships between “imaginaries” – ideals, norms, discourses, and ethics – and “practice,” and between forms of capitalism and contestations of capitalism (2007, 9). These “alternative social imaginaries” might include opposition to specific outcomes instead of the larger system, non-aligned yet collaborative movements against a common target, a more diffuse contestation against a more immediately evident source of oppression or threat (quite relevant to this study), or in contestation against each other.

In Jakarta, these imaginaries/practices operate at a number of different scales. First, at the scale of the immediate site. The floods – and the normalization plans – threaten kampungs along the Ciliwung, and have been the primary focus of community-designed alternatives, in particular the design by Ciliwung Merdeka. Second, the relationship between normalization projects and broader rules and regulations. Rujak’s work to compile and disseminate national laws on dredging, reclamation, and landfill, and plans is a response to an expanded territory of contestation. And, third, at a regional scale. UPC has shown success in developing a cohesive,

---

3 Yet, it's not solely about direct contestation for digitally networked urban movements, as Castells (2013), Wasik (2012), and many others have pointed out.
networked movement across a number of Indonesian cities confronting a diverse set of threats, from post-tsunami recovery work in Banda Aceh, to ongoing riverside settlement restoration in Surabaya, and to the current struggles over space in Muara Baru / Pluit.

This flexibility and diversity of scales is important. In Chapter 4, I examined the global-urban networks that enabled the production of large-scale, generally top-down urban adaptation plans. Notably, the strategies of counterplans as well form and operate through networks, although often somewhat more limited in scope and reach. In Jakarta, UPC, on one level, functions as a network of local organizers across a set of Indonesian cities. On another level, it forms networks across disciplines, with architects such as Arkom Jogja, and academic researchers. Through its close relationship with Rujak it links to a broader initiative of urban advocacy, and an extensive network of Indonesian and international scholars and activists. This kind of “counternetwork” presents a way of thinking of new, reflexive modes of resistance.

Counterplans

In the synthesis table (Table 6.2), New York and Jakarta – the cities in which I examine dominant strategies, the “big plans,” as well as the counterplans, the ground-up alternative visions – flank Rotterdam – the city in which sites and strategies function as a key node in a global network of interactions, and a node in this study, a kind of relational pivot. The top section lays out the descriptive context in each site. The main section illustrates the key categories and relationships of the dominant plans (reading top down) and the counterplans (reading bottom up). The middle of this section shows the analytical categories: the structure, organization, and spatial form of both plans and counterplans.
As we have seen, climate plans are formed differently in order to account – less for environmental risks – but for structures of governance and modes of development. Resistance too takes different forms. In New York, community organizations like the Red Hook Initiative and Good Old Lower East Side relied on the long-term building of social relationships, developed in spite of / because of shared social and spatial marginalization. They constitute localized, community-specific approaches to social and environmental resilience. Not so much presenting themselves as substitutes for initiatives like Rebuild By Design, they offer ways of conceiving risk and resilience that integrally encompass the agency and voice of their constituents. In Jakarta, kampung activist groups including UPC and Ciliwung Merdeka confront the imminent, direct threats of flooding and eviction, and the more diffuse threats of a process of city-making often relentless in its pursuit of modernity and global citizenship (“city-zenship?”). In response, they developed broad-based coalitions and new tools to forge negotiations with city officials that are unprecedented in their effectiveness, at least in recent decades. These approaches, in New York and Jakarta, center marginalized voices, and do not take their presence/participation as a hurdle to be surpassed.

What about the role of design? Specifically, in the case of the work of the Red Hook Initiative: space functions as part of broader transformation. Design aids political organizing; it literally provides space for it. In Jakarta, organizers marshaled design to produce social and spatial form alternatives to a top-down, technocratic plan – imaginaries to bring the life of the kampung to the organization of space – in a context in which alternatives have not, as a rule, flourished. In this case, design changes modes of political organizing.

The counterplans in both New York and Jakarta share one critical characteristic. They envision transformative social and spatial change as part of environmental resilience.
### Table 6.2. Synthesis of plans, counterplans, and connections

<table>
<thead>
<tr>
<th>URBAN REGION</th>
<th>New York</th>
<th>Rotterdam</th>
<th>Jakarta</th>
</tr>
</thead>
<tbody>
<tr>
<td>POLITICAL/ ECONOMIC</td>
<td>US &quot;free market&quot;; global economic driver and financial center; stable growth ≈ 2%</td>
<td>NL, corporatist, welfare state; neoliberalizing; economic crisis</td>
<td>Indonesia, postcolonial, po growth economy; 6% econ</td>
</tr>
<tr>
<td>ENVIRONMENTAL RISKS</td>
<td>Sea level rise, extreme events, storm surge, floods</td>
<td>Sea level rise, precipitation</td>
<td>Subsidence, precipitation,</td>
</tr>
<tr>
<td>KEY MOTIVATOR</td>
<td>Superstorm Sandy 2012</td>
<td>1953 floods / 2008 climate plan</td>
<td>2007 / 2013 floods</td>
</tr>
<tr>
<td>DOMINANT PLAN</td>
<td>Rebuild By Design</td>
<td>Rotterdam Climate Proof</td>
<td>Giant Sea Wall</td>
</tr>
<tr>
<td>NATIONAL RELATIONSHIPS</td>
<td>US HUD</td>
<td>Netherlands Gov</td>
<td>Indonesia Gov</td>
</tr>
<tr>
<td>GLOBAL/URBAN NETWORKS</td>
<td></td>
<td>(Infrastructure &amp; Water)</td>
<td>(Public Works Ministry)</td>
</tr>
<tr>
<td>OBJECTIVE</td>
<td>Regional resilience; economic growth; innovative design</td>
<td>Local climate preparedness, economic growth, &quot;comfortable &amp; attractive,&quot; int'l relationships</td>
<td>Flood protection, economic growth, global / national icon</td>
</tr>
<tr>
<td>STRUCTURE</td>
<td>INSTITUTIONAL/ GRASSROOTS</td>
<td>NATIONAL/ INSTITUTIONAL</td>
<td>MUNICIPAL</td>
</tr>
<tr>
<td></td>
<td>DISPERSE</td>
<td>COHESIVE</td>
<td>COHESIVE</td>
</tr>
<tr>
<td></td>
<td>COHESIVE</td>
<td>FRAGMENTED</td>
<td>COHESIVE</td>
</tr>
<tr>
<td>ORGANIZATION</td>
<td>Local alternatives to an innovative framework challenged by market-reliant, fragmented policy; space/design as part of broader transformation</td>
<td>Production of direct technocratic top-down changes modes of o</td>
<td></td>
</tr>
<tr>
<td>SPATIAL FORM</td>
<td>Long-term building social relationships; alternative socioecon &amp; tech visions</td>
<td>Systemic oppression, race, class, poverty; public housing</td>
<td></td>
</tr>
<tr>
<td>MODE OF ORGANIZING</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MODE OF MARGINALIZATION</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COUNTERPLAN</td>
<td>Community Resiliency</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
On Adaptation: A Sociospatial Typology

Urban adaptation measures are often categorized in a number of ways. They are divided along spatial, physical interventions, social or community-based measures, or governance initiatives. Or they are divided by hard and soft infrastructure. Or low-risk/no-regrets measures versus more ambitious, long-term efforts.

Building off the previous analyses, I present a different approach to typology here (Figure 6.2). This is developed based on the specific sites and strategies in this study, and reflects best the measures taken by coastal cities facing water risks – floods, sea level rise, surges, cloudbursts. However, the protection measures can be generalized, and appropriately rescaled/reconfigured a different set of sites and risks. The development of these types is very much reflective of the means and modes of contestation as previously illustrated. The types are categorized according to the organization and form of the strategy (see Table 6.2). A key proposition here is that these strategies are simultaneously social and spatial – organizational and formal.

- Type 0 shows the default condition. A city confronts threats from environmental change, and does nothing. Type 1 shows what is perhaps the preferred option, if one were primarily concerned with protection and safety for all constituents of a city. A cohesive organization (possibly of many scales and levels) plans cohesive, comprehensive protection. We might take, for example, major Dutch cities as part of this type, but only in its idealized form, when we consider the extensive multilevel governance, including national government, water boards, and local agencies that must be in sync. As we’ve seen here, the loosening of national support can change the way local agencies choose to act.
• Type 2 shows a cohesive organization and fragmented measures. Because of urban policies, funding structures, or prioritizing of security and protection, an organization chooses to plan selectively. It is not comprehensive. For example, Rebuild By Design, at least in its competition phase, has developed a cohesive organization. But the strategies as such are delimited by locality/municipality. As it moves into implementation, these are sometimes further dissipating into neighborhood/subneighborhood strategies.

• Type 3 shows a disperse organization with a cohesive form. Groups with aligned or unaligned motivations (perhaps a coalition) plan cohesive measures for specific areas and/or communities, in response to specific threats. In reference to more classic social movements, the strength of organizing here is critical, a political vision that drives social and spatial strategies. Protection might be planned as comprehensive, but it is not necessarily physically so. For example, the Red Hook Initiative forms a number of linked, mutually reinforcing initiatives based on a well-formed theory of change, in the process relying on coalitions and partnerships with a variety of groups (technology advocates, designers, neighborhood organizations) with diverse interests. It is not comprehensive by design, prioritizing select marginalized groups and organizing goals.

• Type 4 shows disperse organization and fragmented form. Disperse groups plan fragmented measures, possibly in response to direct threats to some constituents, and more diffuse threats to others. Plans might be strategically selective, measures necessarily ad hoc, and experimental. In Jakarta, for example, in confronting a situation that is rife with uncertainty and rapid change, Ciliwung Merdeka, UPC, and allies embark on a suite of initiatives that address multiple sets of risks. Ciliwung Merdeka’s humanitarian
kampung vision is selective, constrained to a strategically bounded site. UPC, in its Muara Baru organizing, shifts from previous strategies to upgrade protections in place, ready to allow fairly extensive demolition in return for secure, innovative housing.
Figure 6.2. A sociospatial typology of coastal urban adaptation strategies. Diagram by author
On Resilience

In Chapter 2, I outlined some of the emerging discourse around resilience. It continues to be a useful and problematic concept. I’ve used it liberally throughout this study to refer to its most common definition, a general ability to recover from and adapt to shocks and stresses.

Theoretically, the diverse and slightly chaotic treatment of resilience is perhaps to be expected, with the array of disciplines invoking it. Concretely, a primary threat stemming from this is that resilience is operationalized to further the agenda of privatized urban development; and, alongside, to justify the continued oppression of historically marginalized groups. How do we do this term justice?

I frame the following discussion around two broad-based explications of resilience. Susan Fainstein, in “Resilience and Justice,” proposes a “progressive” approach to resilience. She critiques the depoliticizing tendency of ecological analyses in resiliency studies, and suggests that a more just approach to resilience would involve prioritizing the lives of the most vulnerable when making planning decisions. She illustrates this with a New York example. Taking issue with Mayor Michael Bloomberg’s plan for “a giant new real-estate development on the East River adjacent to the downtown financial district... [a] megaproject [that] will simultaneously act as a buffer against rising waters and be an economic driver” (2015, 165), she proposes that a more just strategy would be to focus on poor people on the barrier islands of Brooklyn and Queens, retrofitting houses and relocating residents to safer ground. Certainly, I find Fainstein’s proposition agreeable. Of course, we should do that (with caveats). But why don’t we ever do

---

1 I agree that we ought to be prioritizing the use value of the most vulnerable residents when considering climate plans, as Fainstein proposes. But the issue on rebuilding on vulnerable sites
that? Fainstein references New York City’s Special Initiative for Rebuilding and Resiliency (SIRR) plan,\(^2\) not Rebuild By Design, but the project she cites is essentially BIG’s “BIG U” proposal from the city perspective. From my research here, we understand that the Lower Manhattan proposal does not only gain traction as a giant real estate plan, it does so as a vision of a future city – not the one on the cover of *New York*, shrouded in darkness – that literally includes appeals to all manners of urban residents. Furthermore, its location by (and including) the Financial District does not preclude the poor – in fact it is a site of contesting voices and struggles of the poor.

The Arup / Rockefeller Foundation “Resilient City Framework” (2014, 8), striving for comprehensiveness, proposes 12 indicators in four broad categories – health and wellbeing (people); urban systems and services (place); economy and society (organization); and leadership and strategy (knowledge). The indicators, including livelihoods, social stability, strong finance, mobility and communications, and effective leadership, prompt the question, what’s the difference between this resilient city and simply a *good city*?

As asked about this, Nancy Kete of the Rockefeller Foundation agrees that this point bears attention and distinction, and explains their work on the framework:

...We’ve really tried to keep sharp on that question. In the resilience framework, there’s a version that could be just a description of the functions of any city that works, so we really challenged ourselves: What is it about a city that enables it to deliver so many essential functions? In fact, it is that city’s ability or capacity to be resilient. From the research, and lots of case studies, we have been able to systematically define the qualities like barrier islands demands more debate and deliberation, including on issues of whether to rebuild at all, and, if so, in what form. Retrofitting by itself may not be the best path forward.

\(^2\) The same SIRR plan does include a “Comprehensive Coastal Protection Plan” (51
or characteristics of the city and the systems within the city that allow it to keep delivering all of these functions - no matter what kind of chronic stresses it’s facing, or particularly what kinds of shocks it might endure. So, that’s the difference.

There’s also the matter of sustainability. The way I see it, you want cities to be both resilient and sustainable in the long term, but you can’t get anywhere unless you are resilient now, and in the near term. One of the core elements in that process is inclusivity. Look at New York. And all the theory on resilience suggests that a lack of inclusivity or a widening of the gap leaves you not resilient to future shocks and stresses. A resilient city is resilient for everyone – and its people embody that, too.³

Both Fainstein and Kete stress attention to the poor. But, while Fainstein takes issue with apolitical invocations of resilience, Kete downplays politics in the Rockefeller Foundation’s resilience framework. She emphasizes that the effort to be comprehensive enables people with different political viewpoints to take part in the process, and make their own decisions about what to prioritize.⁴

Based on my own research, I assert that a critical political analysis is a necessary component of urban resiliency. Politics is central to the making of plans, the mobilizing and disseminating of ideas about resilience, and the appeals to legitimacy. This is particularly crucial with an eye to justice, given the tendency in the typical mechanics of urban development to ignore existing or projected disparities. Alongside, I argue that Fainstein’s propositions – while accordingly political – lack sufficient attention to the contestation on the ground, including the voices of the marginalized, and the kind of social imaginaries/practices earlier discussed.

³ Interview by the author, New York, NY, June 16, 2014.
⁴ Ibid.
It would be beyond the scope of this section to attempt a comprehensive (re)assessment of resilience. But I do want to emphasize one issue I raised in Chapter 2. How might resilience be made accountable? Emphasizing the relationship between resilience and justice, as Fainstein does, is a start. Operationalizing it, via attention to and lessons gained from the political agency and voices, and social imaginaries and practices of those historically marginalized offers a path forward.

**On Method: Network Formation and Reflexive Sites**

In Chapter 1, I pointed out that this is, in essence, a multiple case study set within a relational reading of sites. But when we really consider where a relational study takes us, we might make the argument that this is actually a particular snapshot into dynamic global phenomena – a single case, perhaps the critical one in a set of many possibilities, or a single sample of a network formation.

But how do we actually do that? Network analysis in urban planning often refers to the quantitative analysis of flows and large datasets. In sociology, it refers to the study of social structure. Neither of these offers an appropriate approach for this particular urban network condition. At the same time, the appeals to relational geography tend to be more evocative rather than illustrative. Researchers are asked, for example, to “make something of the tracings of varying length and duration of material, virtual and immanent relationships...” To see cities and regions as “spatial formations... summoned up as temporary placements of ever moving material and immanent geographies, as ‘hauntings’ of things that have moved on but left their mark” (Amin 2004, 34).
There are a few somewhat more concrete hints about what to do:

- "...View all cities from this particular place on the map" (Roy 2009, 822) – to resituate one's point of view to the global no matter where one may be investigating locally.
- "...Use one site to pose questions of another" (Roy 2003, 466) – to be able to understand a site differently when interrogated not in and of itself, but from the point of view of another site.

Things get more complicated, if not already so.

- "...[Reconceive] the spatial and scalar relations between research sites as conjunctural nodes within three-dimensional webs of relations (scalar x spatial), across which transformative processes operate, evolve, break down, trigger countervailing forces, and so on, rather than as experimental settings in which 'global' imperatives/theories/powers are somehow 'implemented’” (Peck and Theodore 2012, 27).

So, building off of these, and considering some early empirical findings, I develop a preliminary method of relational urban research. Some guidelines: The unit of analysis is the design strategy, for example, the Jakarta Giant Sea Wall masterplan, or Rebuild By Design (as a strategy that includes multiple sub-strategies in the various design proposals), or kampung design activism as practiced by Ciliwung Merdeka along the riverbanks of the Ciliwung in Jakarta. The sites are the “spatial formations” (Amin 2004), the “cities” as such, that serve as the territory of governance and the terrain of contestation. New York and Jakarta function as primary sites, Rotterdam as a reflexive site – itself and its relationships with the other sites illuminating the whole. Actors and institutions take their place in producing the strategies, with their own relationships to one or more sites. Networks link the strategies across the sites. The networks
include the relationships between actors and institutions (in Chapter 4 illustrated as relationships of financing and influence, or ideas and concepts).

I outline a process of relational analysis:

1. Begin with the snapshot of the network. This might be the entire network, or a specific sample of the network. In this study, it was a preliminary observation of a set of actors and institutions conducting actions for a particular purpose – urban climate adaptation plans – linked and overlapping in unexpected ways.

2. Define the strategies, actors, institutions, and relationships between each of them.

3. Conduct an initial overview analysis of the similarities and differences across the relationships; map power relationships, and define expectations of what we might observe. In this study, it was clear that Rotterdam was not a parallel site, where comparable observations were happening, but a reflexive site, through which one could gain more acute knowledge of the network.

4. Disentangle the key topics or issues that animate the relationships that one observes. In this situation, power relationships, the production of the network itself, and the legitimization of plans appeared to be critical issues. Analyze each issue, with sites viewed relationally.

5. Synthesize findings, pulling out key factors that crosscut the issues and sites.

Why do this? What does it get us? I propose that what is observed here cannot be understood without a relational approach. It would not make sense to look at these sites strictly as comparative studies. New York and Jakarta may be comparable based on territorial and population size. But the motivations that drive environmental planning in each city are so different, and so much based on their political histories and broader relationships to global
economy. Likewise, to look at either of those sites without an analysis of Netherlands spatial politics and political economy, and Rotterdam municipal plans, would be to bracket out an understanding of the Dutch institutions, designers, and planners, and therefore the sites and strategies themselves. Further, I propose that we cannot fully understand even the internal contestations of these sites without a relational analysis. Kampung activism takes on new light when seen in relation to the heightened awareness brought on by transnational activity, particularly in terms of coalition building, and the extended terrain of contestation provoked by large-scale, high-profile projects and the networks through which they are produced.

**Counter Arguments and Limitations**

Counter arguments to this study likely hinge on one of two broad issues, 1) case selection and method, and 2) research worldview.

**Case Selection and Method**

This study attempts a new relational analysis of cities, searching out a way to “see” the multilevel and multiscalar relationships between strategies, across the sites. Much like the oft-stated criticisms of small-n case studies, one might assert that this study examines only one specific network formation, possibly two examples of reflexive sites. Perhaps, if we were to look at a different formation, we would see different dynamics. I think that is true. At the same time, I think that the relational method itself serves as resistance against simple dismissal. Its very relationality suggests that we might reformat or reframe this study to look at shades of difference,
for example, looking at strategies in Dhaka or Ho Chi Minh City instead of Jakarta, or inquiring whether Hamburg or London plays a similar role to Rotterdam.

Relatedly, if you always see something relationally, do you miss the place? Peck and Theodore exhort us to look both at the movement as well as the sites of embedding and transformation. They also invoke Burawoy’s caution against succumbing to methodological tourism, “tripping around from site to site” (2001; quoted in Peck and Theodore 2012, 25). In this study, there is symmetry, in a manner of speaking, between the global networks and the local contestation. Which, at least, doesn’t lend itself to tripping.

This dissertation has treated the two kampung activist coalitions similarly in terms of their power relationships. They are not the same. A study focused more on the shades of strategies and organizing, and a more in-depth ethnographic exploration of the activism and coalition building would unearth these differences. In New York, the focus is clearly on the broader Rebuild By Design strategy, and less on the individual team proposals. This is appropriate given the objectives and scope of the research, in particular the emphasis on broader relationships. At the same time, a deeper investigation into the design teams might reveal a lot more about team motivations and community engagement experiences.

Finally, because of the framework of the research, Rotterdam plays a distinct role. On one level, the city (and its country) is prioritized, a key part of the method and analysis. On another level, the local “embedding” and “transformation” of concepts is not necessarily given the same level of analysis.
Research Worldview

In proposing the problem and framework for research, I have already determined that the typical ways of looking at these issues and these sites are inadequate. Arguably, there was never going to be a simple answer, just because of the way the question was asked. This particular approach led the study to wrestle with method—productively, I think. But also in a manner that led me to disentangle, and perhaps, to re-entangle a number of rather complex issues. And to cut through a large swath of theories while doing it. Perhaps this is Roy and Ong’s promiscuity after all.

Speculations on Insurgent Urban Landscapes

I end with a discussion of possibilities. A central part of this study has been the production of, and conflicts over, urban ecologies—the multivalent place of nature in the city. What I’ve determined, what I can assert, coming out of this research:

1. Urban ecologies are contested, part of social and spatial power relationships in the city.

2. The production of such urban ecologies are interconnected across multiple levels—on one hand local sociocultural practices and political contestation, on the other, global networks of cultural, political, and economic exchange.

3. Understanding the relationship between urban landscapes and these social and cultural practices might produce alternative narratives to—and ways of intervening in—hegemonic processes related to global capitalism and urbanization.

So, consider the urban ecological design project. A critical project of urban ecological research and design in the last decade or so—spearheaded especially by proponents of ecological urbanism and practitioners in the field of landscape architecture—has been to assert the
centrality of urban landscapes in the understanding and ordering of urban form. Scholars and practitioners have unearthed and exploited the complex interplay of “built” and “natural,” contested the false dichotomies between city and nature, and, importantly, showed us that the operations of urban ecologies transcend boundaries – of the project, also of governance and traditional planning and political institutions – always in relation to, and ideally in tune with, the appropriate ecological systems and scales (the watershed, for example). They’ve made the case that landscape is the appropriate scale of envisioning urban sustainability (Figure 6.3a).

Now, the critical project might be to extend those frameworks – and to probe the relationships between urban landscapes and two sets of interconnected forces, both larger and smaller (Figure 6.3b). The first is that of global urban development, at the nexus of urban and national development initiatives and global economic flows and geopolitics. The second is grassroots movements for change, operating at the level of local social relationships.

So how do we do this? One might observe, in any number of design studios or schools, the approaches that designers bring to their work. Often these include diverse, reflexive sets of tools and ideas. In designing an urban ecological project, for example, one might work between physical and parametric modeling – looking at different scales of hydrological interaction – and multiple levels of urban social and spatial networks. Designers are often very good at translating information – environment, to systems, to form. So how do we tune this to engage more deeply with the multiscalar, multilevel processes and interconnections that inform the way that sustained change is made?
Figure 6.3a. “Standard” conceptual diagram of urban/landscape design in the urban region

Figure 6.3b. Extended conceptual diagram of urban/landscape design, connected to local social relationships and global networks

Further, how do we do this at a time when designers, in academia and in practice, from humanitarian initiatives to megaprojects, are increasingly working in an international context,
tasked with envisioning projects across the world over relatively short timeframes? There are challenges to understanding problems and solutions in places we do not live in and are often quite far from, spatially and socially. These challenges are particularly acute when faced with the aspiration to consider sites and points of view in an interrelated manner, as this research has explored. When we cannot know everything, how do we situate learning in a relational sense, to understand the limits of our knowledge and yet have impact? In other words, how do we effectively not know?

I look to two concepts. James Holston, in claiming that modernist utopian planning did not reconcile societal contradictions, coined the term “insurgent citizenship,” and urged that planners pay attention to “new kinds of practices and narratives about belonging to and participating in society,” outside of formal concepts of nation building and statehood (1999, 53). To do this, he proposes the embracement of ethnographic methods – tracing, decoding, rearticulating – to understand and re-envision the realm of possibilities that might develop from, to riff on a phrase, actually existing social relationships. Manuel Castells, investigating new urban social movements in a time of pervasive digital networks, speaks of the “space of autonomy” – the “space of movement” as “an interaction between the space of flows (of digital communications)… and the space of places (of occupied sites and protest actions)” (2012, 222).

Building off of these possibilities, I propose that designers engaged with questions of urban ecologies, landscapes, and resilience embolden their conceptual array, in order to operate across scales and levels. On the one hand, to engage the multitude of social practices on the ground, cognizant of their own situated limitations in understanding these, and, on the other, to build hybridized, networked design movements in the manner of Castells’ space of autonomy.
1. Designers should take more seriously political education, including theories of social change, and critical world histories, learning how to learn from diverse, global sites.

2. Designers should create new forms of collaborative, networked practices that are globally informed, but situated in the local.

Consider, then, what we might call practices of insurgent landscapes that situate themselves firmly in Holston’s “ethnography of the present” while building movements across the global networks that we are all learning to be effective in.

Final Thoughts: Towards a Critical Theory of Urban Climate Change Adaptation

On August 20, 2015, Jakarta security personnel began the forced eviction of residents in Kampung Pulo, and the demolition of their homes along the Ciliwung River. This followed a sequence of contradictory announcements and news stories in the previous month – with DKI Governor Ahok first agreeing to re-house residents in place, and then apparently changing his mind. In the lead up to the evictions, kampung residents were termed squatters (in Bahasa Indonesia, pemukim liar, literally “wild residents”), with no legal rights...

We need new ways of seeing, and new ways of doing. If we know anything, we know that the future will be urbanized, and that the urbanized future will be defined by what we have done to

---

5 Almost a year after the primary research activities for this dissertation.
6 See Van Voorst and Padawangi (2015) for detailed commentary on the events leading up to and including the evictions, and Elyda (2015) for a news account of Ahok's initial decision.
climate. No matter what we do now, we will be fighting the mistakes of the past and present for a long time to come.

Most people involved in urban governance – politicians, city managers, urban researchers, the informed public – who have given these issues a second look understand and acknowledge that climate change is a critical, and terrifying, problem. In a relatively short time, there has been an explosion of activity among cities to develop initiatives to mitigate and adapt to climate impacts. But, as I've explained in this research, even the more innovative and ambitious initiatives to respond to climate change are, first, embedded in the sociopolitical systems of cities, and often circumscribed by historically determined norms and regulations, and second, a part of the networks in which they are formed, and by design, captive to the aims and structures of those networks. Through all this, one aspect remains constant among those in power. There is a strong, indeed resilient, belief that there are urban development solutions to climate change problems – if done properly. Many climate plans across the world, rich and poor, South and North, are propelled by this dictum. But how might this be the case when it is those same systems of urban development that created, and continue to perpetuate, these problems? This is, for me, the key quandary.

When we look at the situation now, in places like New York and Jakarta, there are striking glimmers of hope. The work of the Red Hook Initiative in cultivating a social milieu that enabled a cohesive, positive response in the wake of Sandy, the clear impact and scalability of a project like Red Hook WiFi, and the widespread acknowledgement of the value of this work all hint at transformative possibilities beyond the immediate constituents and neighborhood. The same can be said of the work of GOLES in tying long-term struggles for housing rights to the broader issue of climate justice, and its effectiveness in forging strong coalitions in a very
contested urban context. That someone like Henk Ovink cites Damaris Reyes as a key motivator to get things done is a marked step in the right direction. The work of UPC and Ciliwung Merdeka in Jakarta to form innovative, effective resistance in the face of sometimes extreme challenges is unprecedented. Alongside, the clear acknowledgement of the importance of local buy-in on the part of the Dutch consultants in Jakarta hints at the possibility of a different kind of development.

But are any of these efforts about to transform urban development in New York or in Jakarta? The answer is short and simple. No. As yet, such initiatives – even in their incipient networks – remain locally transformative, effective on a smaller scale. Sometimes their limitations emerge abruptly, and forcefully, as in Kampung Pulo on August 20, 2015.

I've suggested that some of these smaller scale initiatives are not necessarily posed as substitutes for the big plans. But what if they could be? These grassroots initiatives cannot simply be “scaled up.” Consider, for example, the typology of sociospatial adaptation I presented earlier in this chapter. Some of the “counterplans,” such as the example of Jakarta kampung activism, are organizationally disperse, and fragmented in form. These initiatives are often selective, and necessarily ad hoc. Scaling up, in the usual sense, does not make a cohesive whole out of fragmented parts. I've asserted throughout this research that the making of – and contestation over – urban nature is part of urban processes, and suggested that it is in these processes that social change might be formed. If so, then what needs to happen is that the relevant aspects of these alternative urban processes are scaled up – and networked out. These aspects might include, for example, centering the agency of marginalized voices, and an explicit positioning of strategies in opposition to specific hegemonic power structures – in Red Hook, Brooklyn, the
reproduction of systemic poverty and racial oppression, in Jakarta the continual delegitimizing of kampung residents as participants in urban society.

Here is where insurgent urban landscapes might play a critical role. Design, as I’ve argued, often avoids and neglects sustained sociopolitical reflection. Exploring design as a terrain of contestation reveals the power relationships and motivations underlying the making of urban ecologies. Alternately, marshaling an insurgent urban ecological design as an overt critique of such power relationships exposes and possibly disrupts such systems. In this scenario – it politicizes, if you will, big plans, global networks, and invocations of resilience.

More generally, this approach opens pathways towards a critical theory of urban climate change adaptation. The field of urban adaptation has so far developed as a set of literature, institutions, and practice heavily based on the lessons learned from practice and normative appeals, resulting in bundles of strategies and frameworks best suited for specific circumstances – rich and poor, north and south, infrastructure and governance, physical and sociopolitical, designed and whatever might be termed “non-designed.” The findings from this research suggest that new approaches to urban adaptation are taking shape that are not easily grasped in terms of dichotomies. And that, if these specific dichotomies still exist (if they ever did), they will begin to – not converge, necessarily, but intertwine.

Confronting, at the moment, chaotic concepts of resilience, variable concepts and practices of adaptation, and ill-formed assumptions about design theory and practice, we face tremendous challenges simply in deciding why, where, and how to produce adaptation plans, in the context in which long-term implications hinge on these present-day decisions. In this situation, invocations of the threats of climate change and the corresponding necessity to procure “ecological security” and “resilience” often take on an uninterrogated urgency. A comprehensive,
critical theory to address this is beyond the scope of this research, for now. But it is necessary.

Building off of the ideas about insurgency and design, I propose that such a theory will have, at its core, the production of alternative visions.

Such a critical theory of adaptation design would work towards understanding and explaining the spectrum of approaches, and the critical social, spatial, and historical interrelationships under which they are proposed.
Appendix 1: List of Interviews Conducted by Author

Azwar, Sylvira, Researcher, Jakarta Research Council, Jakarta, Indonesia, July 16, 2014

Boers, Florian, De Urbanisten, Rotterdam, the Netherlands, June 30, 2014

Bons, Kees, Director, Deltares, Jakarta, Indonesia, July 11, 2014

Brown, Anna, Senior Associate Director, Rockefeller Foundation Asia, Bangkok, Thailand, July 3, 2014

Chester, Amy, Manager, Rebuild By Design, New York, NY, June 19, 2014

Davis, Scott, Senior Advisor in the Office of the Secretary, US Department of Housing and Urban Development, Washington, DC, October 31, 2014

De Vries, Christopher, Rademacher de Vries Architects, Amsterdam, the Netherlands, June 25, 2014 (informal interview)

Doepel, Duzan, Principal, Doepel Strijkers, Rotterdam, the Netherlands, September 29, 2014

Eisenhard, Jill, Executive Director, Red Hook Initiative, Brooklyn, NY, September 13, 2014

Eng, Fook Chuan, Senior Water and Sanitation Specialist, The World Bank, Jakarta, Indonesia, July 17, 2014

Gunawan, Iwan, Senior Disaster Risk Management Specialist, The World Bank, Jakarta, Indonesia, July 18, 2013

Gurusamy, Senthil, Research Fellow, Singapore ETH Centre, Singapore, July 10, 2013

Handhayani, Sarwo, Deputy Governor for Spatial Planning and Environment, previously chief of BAPPEDA (Dept. of City Planning), Jakarta DKI, Jakarta, Indonesia, July 18, 2013

Irawaty, Dian Tri, Housing Activist, Rujak Center for Urban Studies, Jakarta, Indonesia, July 16, 2013, July 10, 2014

Jacobs, John, Strategic Advisor Water, City of Rotterdam, Rotterdam, the Netherlands, October 1, 2014

Kete, Nancy, Managing Director, Rockefeller Foundation, New York, NY, June 16, 2014

Kusumawijaya, Marco, Founder and Director, Rujak Center for Urban Studies, Jakarta, Indonesia, July 2013, July 2014 (informal interview)

Lee, Ivana, Activist, Ciliwung Merdeka, Jakarta, Indonesia, July 17, 2014
Maas, Winy, Director, MVRDV, Rotterdam, the Netherlands, June 26, 2014

Marrella, Michael, Director of Waterfront and Open Space Planning, New York City Department of City Planning, New York, NY, May 11, 2015

McFadden, Marion, Deputy Assistant Secretary for Grant Programs, US Department of Housing and Urban Development, Washington, DC, October 31, 2014

Meier, Marit, Policy Advisor Water Systems, Schieland en de Krimpenerwaard Regional Water Authority, Rotterdam, the Netherlands, September 2014 (informal conversation)

Metz, Tracy, writer and researcher, Rotterdam, the Netherlands, September 30, 2014

Molenaar, Arnaud, Manager, Rotterdam Climate Proof, Rotterdam, the Netherlands, October 1, 2014

Nandan, Gita, Co-Chair, Red Hook NY Rising Community Reconstruction Plan, Brooklyn, NY, August 22, 2014

Oudkerk Pool, Chantal, Senior Advisor, Rotterdam Climate Proof, August 7, 2014

Ovink, Henk, Principal, Rebuild By Design, November 24, 2014

Padawangi, Rita, Senior Research Fellow, National University of Singapore, Singapore, July 21, 2014

Rahman, Arlan, Infrastructure Specialist, The World Bank, Jakarta, Indonesia, July 17, 2014

Reyes, Damaris, Executive Director, Good Old Lower East Side, New York, NY, December 18, 2014

Saidi, Edi, Coordinator, Urban Poor Coalition (UPC), Jakarta, Indonesia, July 15, 2014

Sannen, Ad, Senior Consultant Water Governance, Royal Haskoning, Rotterdam, the Netherlands, September 2014 (informal interview)

Shepherd, Ariel, previously fellow at Asian Coalition for Housing Rights (ACHR), Jakarta, Indonesia, July 17, 2014

Simone, Abdoumaliq, Scholar/researcher, Jakarta, Indonesia, July 21, 2013 (informal interview)

Soehodho, Sutanto, Deputy Governor for Industry, Trade and Transportation, Jakarta DKI, Rotterdam, the Netherlands, September 2014 (informal interview)

Sumardi, Sandyawan, Activist, Ciliwung Merdeka, Jakarta, Indonesia, July 18, 2014

Taylor, John, Founder, Yayasan Kota Kita, Jakarta, Indonesia, July 2013 (informal interview)
Tijook, Wiwi, landscape architect, City of Rotterdam, Rotterdam, Netherlands, June 30, 2014

Tobing, Aisa, Chairman, Climate Change Task Force, Jakarta DKI, Jakarta, Indonesia, July 16, 2014

Turpin, Etienne, Scholar/researcher, PetaJakarta, Jakarta, Indonesia, July 2014 (informal interview)

Uennatornwaranggoon, Praerung, Senior Program Associate, Rockefeller Foundation Asia, Bangkok, Thailand, July 3, 2014

Van den Boomen, Gijs, Director, Kuiper Compagnons, Rotterdam, the Netherlands, October 1, 2014

Van der Linden, Ivo, Netherlands Water Partnership, The Hague, the Netherlands, September 30, 2014

Van Woerden, Arend, Advisor, Regional and Urban Development, Grontmij, Houten, the Netherlands, September 29, 2014

Winayanti, Lana, Senior Expert, Ministry of Public Works and Housing, Indonesia, Jakarta, Indonesia, July 23, 2013
Appendix 2: List of Planning and Design Documents Analyzed

New York


New York – Rebuild By Design proposals


Interboro Team. 2014. “Living with the Bay: A Comprehensive Regional Resiliency Plan for Nassau County’s South Shore.” Rebuild By Design.
http://www.rebuildbydesign.org/project/interboro-team-final-proposal/.


http://www.rebuildbydesign.org/project/penndesignolin-final-proposal/.

Sasaki/Rutgers/Arup Team. 2014. “RESILIENCE + THE BEACH.” Rebuild By Design.
http://www.rebuildbydesign.org/project/sasakirutgersarup-final-proposal/.


http://www.rebuildbydesign.org/project/wb-unabridged-w-yale-arcadis-final-proposal/.

Jakarta


Rotterdam/Netherlands


Appendix 3: Sample Interview Instrument

Kian Goh
Adapting Design – Designing Urban Climate Change Responses

Semi-Structured Interview Instrument
(Generic instrument – Resilience Plan Manager)
The role of design in urban climate change adaptation

1. Please tell me your name, and your title or responsibility at [organization] – how long?

2. Describe your role in the planning and development of [organization’s] resilient cities work, [examples].

3. Describe why this is important to [organization] – resilient cities and core values?

4. [Resilience plan] was conceptualized as comprehensive. Difference between a resilient city (facing contemporary challenges like climate change and urbanization) and simply a “good city”?

Specific questions about the [resilience plan]

5. Scale: Why is [organization’s] strategic interest in cities when that is not necessarily the best scale for resilience? Administrative? Economic?

6. Data / governance: One [resilience plan framework], many cities – complexity and interconnectedness of systems – is there an expectation of capacity?

7. Inequality / inclusion: [Author] has stated that globalization/free trade – in other words global capitalism – could increase vulnerabilities. [Resiliency plan] touches on poor and marginalized, but doesn’t engage much with structural issues and power relationships. Can there be transformative change without systemic change on socioeconomic level?

Specific questions about design

8. Design: [Organization] has prioritized resiliency for years. But [resilience plan] seems different in that it highlights design as a primary focus. What is the role of design?
   a. “Classic” literature on climate change adaptation neglects physical/spatial, let alone design.
   b. Does design rely on more funding, or more cohesive governance / modes of implementation?
   c. Is this the difference between physical design/planning (for cities that can afford it / Global North) and coping/adaptation (for those that cannot / Global South)

9. [Organization’s] focus on resilience has transformed priorities and framing of agencies like [examples…] What is the relationship between [organization] and these other agencies/organizations in a project like [resilience plan]?

10. Funding of design / funding of resiliency: Think tanks like Brookings have dismissed government. Rockefeller Foundation president J. Rodin also noted “work around” federal government. In Rebuild By Design, competition could not be federally funded… How should resiliency be funded?

11. Sociopolitical issues in design of resilience. Is the intangibility of social cohesion adequately captured in [resilience plan strategy]?

12. In some of the literature, claims that resiliency has replaced sustainability. What is the relationship between the Resilient City and the Smart City?
References Cited


Arditya, Andreas D. 2013. “South Korea to Help in Restoring Ciliwung River.” Jakarta Post, January 5.


Dewi, Sita W. 2013. “Jokowi to Launch Pluit Dam City Park.” The Jakarta Post, August 16.


Soja, Edward, and Miguel Kanai. 2007. “The Urbanization of the World.” In The Endless City: The Urban Age Project by the London School of Economics and Deutsche Bank's


