"Rebuild by Design" in New York City: Introducing the Context of the Competition and Considering a Literature Review on Disaster Planning and Resilience Theory

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Abstract
"*Rebuild by Design*" è un concorso di progettazione interdisciplinare che ha avuto come obiettivo quello di supportare la resilienza della regione di New York a seguito del passaggio dell'uragano Sandy. Il concorso ha visto coinvolti dieci gruppi multidisciplinari, ognuno dei quali ha lavorato su un quartiere differente della città entro l'area colpita dall'uragano. Sei di questi gruppi sono stati premiati con la spropositata cifra pari ad 1 miliardo di dollari (*Community Development Block Grant, CDBG-Disaster Recovery funding*). Nonostante il concorso abbia ricevuto diversi elogi da parte della stampa, resta un tema relativamente inesplorato in ambito accademico. Questo contributo analizza il perché "*Rebuild by Design*" è emerso come opzione nel periodo seguente all'uragano Sandy e le ragioni per cui ha cercato di focalizzarsi sui temi della resilienza piuttosto che su quelli più convenzionali dei disastri naturali, attraverso una ricognizione della letteratura sulla teoria della pianificazione post-disastri naturali e della resilienza.

Parole chiave
Cambiamento climatico, concorso di progettazione, aree costiere, disastri naturali, resilienza.

Abstract
"Rebuild by Design" was a four-stage, interdisciplinary design competition aimed at bolstering the resilience of the New York region after Hurricane Sandy. The competition included ten multi-disciplinary teams, each of which worked within a distinct neighbourhood or city within the Sandy-affected region. Six of these teams were awarded a disproportionate share of $1 billion in Community Development Block Grant (CDBG)-Disaster Recovery funding. Though the competition received considerable praise from the popular press, it remains a relatively unexplored topic amongst planning and design scholars. This paper investigates why "Rebuild by Design" emerged as an option in the aftermath of Sandy and why the competition sought to focus on resilience-making in lieu of more conventional post-disaster concerns through a review of the literature on Disaster Planning and Resilience Theory

Keywords
Climate change, design competition, coastal areas, natural disasters, resilience.

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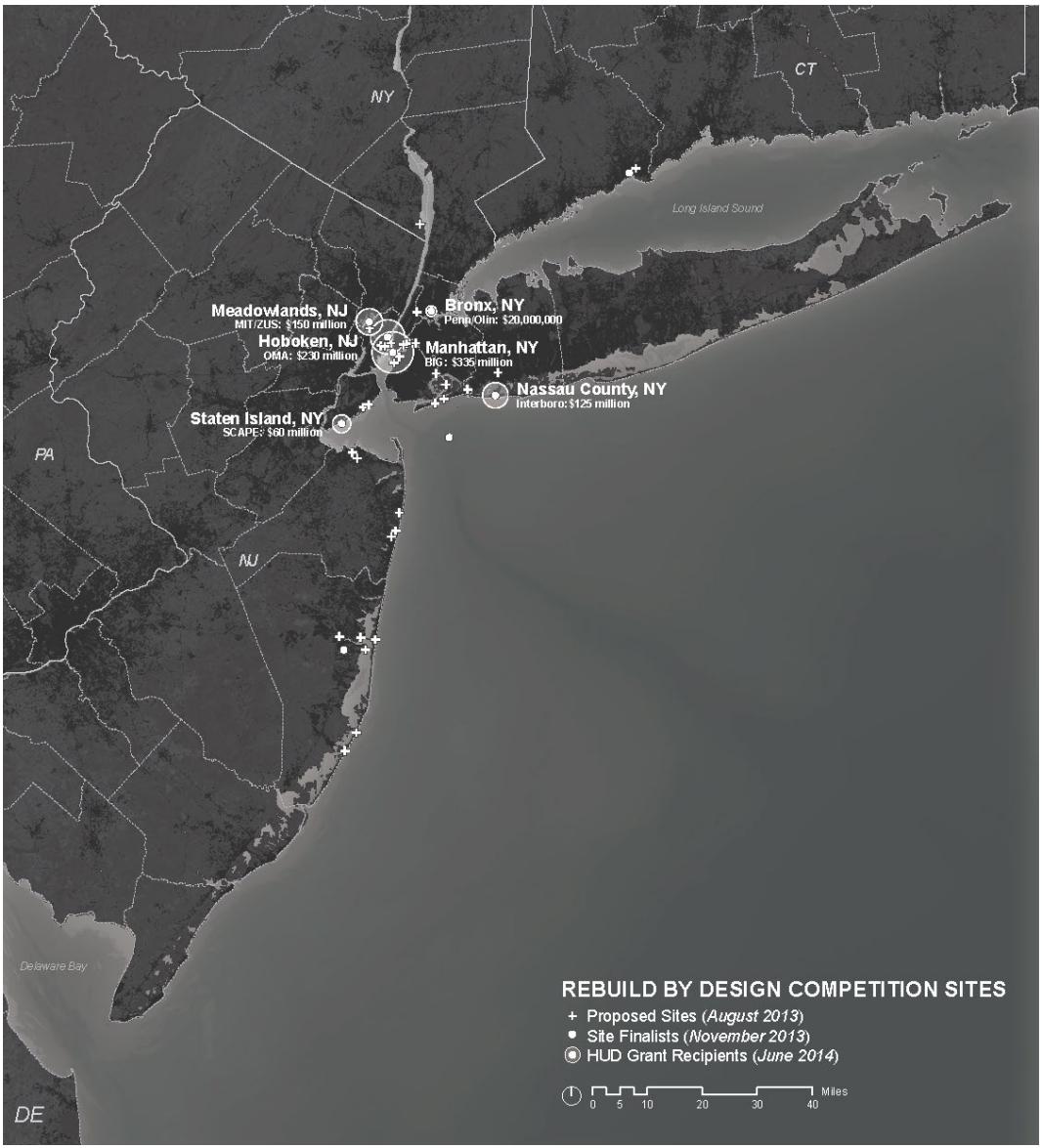
Introduction

In October 2012, Superstorm Sandy – a large, slow-moving extratropical storm system – made landfall in the New York region. With thirteen feet of storm surge, Sandy's immediate impacts included the suspension of subway and commuter rail service throughout the region, the disruption of commercial activity in the nation's most economically productive city, and the near erasure of coastal communities throughout the Northeast. Put another way, the nation's most densely-population region appeared wholly unprepared for a relatively mild storm. New York's recent history with tropical storm systems – replete with near-misses and false alarms – helps to explain why Sandy proved to be so destructive (City of New York, 2011).

Though the region's infrastructural systems proved ill-prepared for Sandy, the City of New York – led by then-Mayor Michael Bloomberg – showed considerable sophistication in its capacity to recover from the storm. First, the city's PlaNYC network came together under the auspices of the Special Initiative for Rebuilding and Resiliency (SIRR): a planning effort that resulted in two hundred-fifty recommendations for projects aimed at bolstering the city's resilience at a cost of 19.5 billion dollars (City of New York, 2012). But the city's recent mayoral succession cast doubt over the SIRR Report's future, which, even if fully-implemented, would struggle to alter the regional landscape of risk. This led the Obama Administration to create the Hurricane Sandy Task Force – a body tasked both with administering the relief efforts necessary after Sandy and with reimagining the federal government's role in disaster resilience planning (The White House, 2012). The Task Force ultimately recommended the creation of a design competition known as Rebuild by Design (Rebuild) to generate new ideas for adapting the region's coastline to the effects of climate change. The competition received considerable praise from the popular press (Fleming, 2015), which inspired HUD and the Rockefeller Foundation to launch the National Disaster Resilience Competition that is currently underway (The White House, 2014).

Rebuild launched in the summer of 2013 as a four-stage, interdisciplinary design competition to "promote innovation by developing regionally scalable but locally contextual solutions that increase resilience in the region." (U.S. Department of Housing and Urban Development, 2013) The first stage, an RFP, generated one hundred forty-eight submissions from which ten were chosen to proceed. The second stage provided each team with a unique site to research and the third stage challenged those teams to develop a design proposal for their respective sites. The competition concluded in June 2014



with the selection of six winning proposals by a national jury of design and planning experts. In the final stage of the competition, these six proposals received a share of approximately one billion dollars in federal recovery funding to further refine and, in some cases, construct an initial phase of the project. Three of the winning teams focused on sites in the City of New York: the Bjarke Ingels Group (BIG) in Lower Manhattan, PennDesign and Olin (Penn/Olin) in the Bronx neighborhood of Hunts' Point, and SCAPE along the Staten Island Shoreline. The three remaining teams focused on sites outside of the city: Interboro Partners in Long Island (NY), MIT in the Meadowlands (NJ), and OMA in Hoboken (NJ). But as HUD rushes to replicate Rebuild's model of disaster resilience, a critical question remains unan-

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Fig. 1 – The Landscape of Rebuild by Design (Credit: Nathaniel Wooten and Billy Fleming)

swered: to what extent can a design competition be considered a viable form of disaster recovery? That question is the motivating force behind this paper and one that, at this particular point in time, can only be answered through a qualitative, case-study research design. Though the Urban Institute (UI) published an evaluation of Rebuild in the summer of 2014, UI's report is unlikely to prove useful for urban policy-makers and planning practitioners (Martin, Oo, Pendall, Levy, and Baum, 2014). This is due to the a-critical nature of UI's evaluative report and the considerable emphasis within it on the leadership prowess of Henk Ovink and Shaun Donovan. Though strong leadership is certainly important – especially in the post-disaster period – it is an insufficient response to the question of a design competition's viability in the recovery process. To better respond to the issue of viability, this paper aims to present a more complex account of Rebuild and to begin building a fuller understanding of the role urban design can play in promoting disaster resilience. More specifically, this paper will assess both the concept of a competition-driven disaster recovery model and critique the design proposals promulgated through the post-Sandy Rebuild competition.

Reviewing the Literature on Disaster Planning and Resilience Theory

Two bodies of literature are crucial to understanding why Rebuild emerged as an option in the aftermath of Sandy and why the competition sought to focus on resilience-making in lieu of more conventional post-disaster concerns. The first is derived from the field of disaster planning. This field is concerned with the readiness, responsiveness, and revitalization of cities before, during, and after a crisis (Rodin, 2014). The second body of literature is concerned with the theory of resilience-making. This field is drawn from ideas in ecology, psychology, engineering, and design about how to make individuals, institutions, and broader systems more resilient to disruption (Author, 2016). Together, these fields outline the theories and actions that helped to create Rebuild.

Disaster Planning: The Theory and Practice of Building Back Better

To understand how Rebuild performed as an instrument of disaster recovery, it is first necessary to articulate why a design competition emerged as an alternative approach to the status quo. Put anoth-

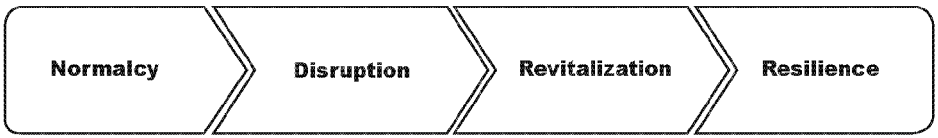


Fig. 2 – The Disaster Planning Cycle, In Theory (Credit: Nathaniel Wooten and Billy Fleming)

er way, it is necessary to understand both how the theory of disaster planning influences the recovery process and why the practical application of that theory rarely succeeds in making cities more resilient to crises.

The conventional approach to disaster planning can be envisioned in four simple phases: normalcy, disruption, recovery, and resilience. The normalcy phase contains the actions typically associated with disaster preparedness (list them) as well physical upgrades to a city's protective infrastructure (Kim and Olshansky, 2014; Olshansky and Johnson, 2014). During this phase, the conventional position of the disaster planning literature is that city planners only need to accomplish two seemingly simple feats. First, they must invest in pre-disaster planning through high-quality hazard mitigation plans (Berke, Cooper, Aminto, Grabich, and Horney, 2014; Lyles, Berke, and Smith, 2014). Then, city planners must fold those hazard mitigation plans into the comprehensive plan, providing both the legal justification for investing in risk reduction infrastructure and the means for raising the capital necessary to make such an investment (Masterson, Peacock, Van Zandt, Grover, Schwarz, and Cooper, 2015).

The disruption phase is the period in which significant proportions of the populations are evacuated and many essential services are lost. During this phase, the conventional position of the disaster planning literature is that expediting and coordinating the relief process is the most important consideration (Iuchi, 2014; Kim, 2012). FEMA and its state-level equivalents across the U.S. are generally considered strong providers of disaster relief efforts. However, scholars have argued this is a strength borne out of necessity – by consistently failing to invest in protective infrastructure, the nation's disaster relief industry is well-practiced in the evacuation and relief provision processes (Arora and Arora, 2013).

The revitalization phase contains all of the activities associated with rebuilding after disaster. It is a mix of simply reconstructing what was lost as well as re-imagining and reconfiguring a city in manner that responds to the recent disaster. During this phase, the conventional position of the disaster planning literature is that the recovery process should include a blend of new investments in protective infrastructure, land swap or buyout programs, and public memorialization (Vale and Campanella, 2005; Kim and Olshansky, 2014). The primary focus of this phase, however, is on delivering these elements of a revitalization strategy quickly. This is due to the need to provide a safe and tenable environment in which residents can return as well as the need to project an image of recovery to secure private investments

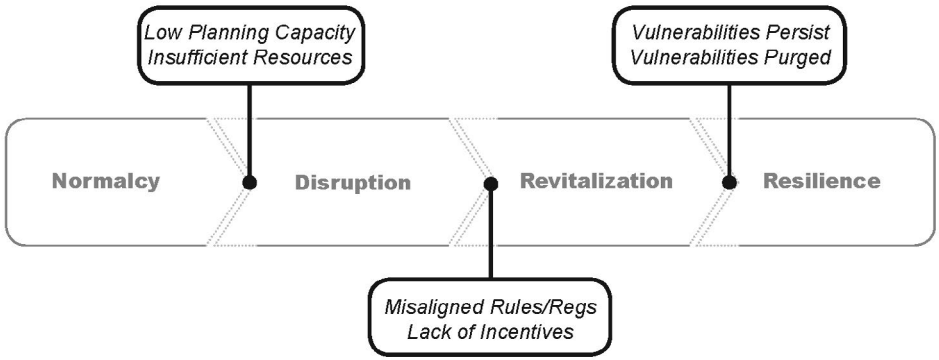


Fig. 3 – The Disaster Planning Cycle, In Reality (Credit: Nathaniel Wooten and Billy Fleming)

in business growth and tourism (Gotham and Greenberg, 2014).

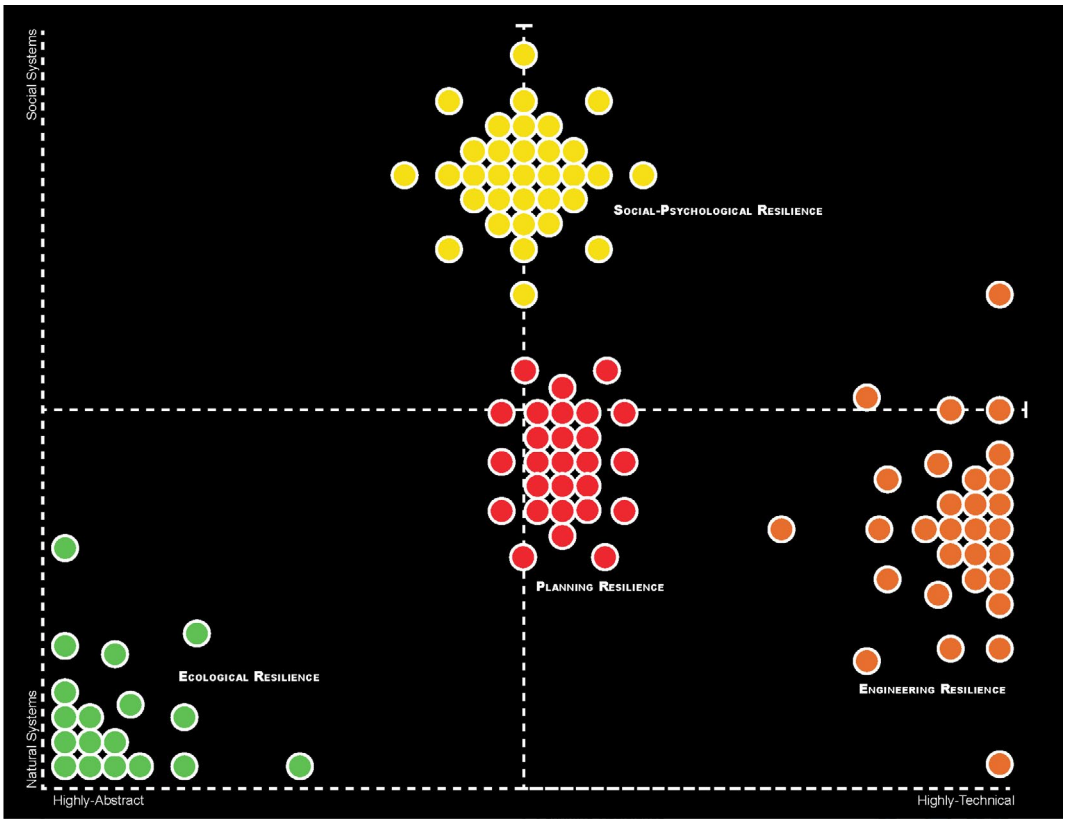
The final period – the resilience phase – is characterized by the conclusion of a city's rebuilding efforts and the return of normalcy. During this phase, the conventional position of the disaster planning literature is that technological investments are key to promoting a city's resilience. These technologies include physical infrastructure like the pumping stations and spillways rebuilt in post-Katrina New Orleans as well as cell phone push-notifications to organize and hasten mass evacuations (Olshansky and Johnson, 2010; Rodin, 2014).

If the disaster planning process were realized in this linear, idealized fashion, there would be little need for an alternative as radical as Rebuild. But for a variety of reasons, the theory espoused within the literature is rarely expressed in the practice of disaster planning (Gotham and Greenberg, 2014). During the initial phase of normalcy, low planning capacity and insufficient access to capital undermine the ability of cities to develop quality hazard mitigation plans that can be implemented through municipal bonds, special districts, and other infrastructure financing instruments (Tierney, 2014). The periods of disruption and revitalization are similarly complicated by issues related to misaligned federal rules and regulations that impede the flow of resources to disaster-stricken residents, insurance policies that create incentives for rebuilding in highly exposed areas, and contractor-led rebuilding programs that often ignore or exploit the communities most vulnerable to disaster (Gotham and Greenberg, 2014; Michel-Kerjan, Forges, and Kunreuther, 2012). The reproduction and exacerbation of inequality through the conventional disaster planning process is perhaps the greatest barrier to enhancing a city's resilience in the aftermath of a crisis. All of these forces contributed to the decision by HUD to incorporate a design competition within the New York region's recovery plan. Given that a central aim of that competition was to bolster the area's resilience, it is necessary to articulate how the theory of resilience applies to the practice of city planning and design.

Resilience and City Planning

Resilience theory can be interpreted through four key disciplines: ecology, engineering, social psychology, and city planning (Fleming, 2016).

Ecological resilience can be defined through the discipline's intellectual shift away from the stasis of sustainability and towards the dynamism of resilience during the late-20th century (Holling, 1973; Ahern, 2011). This shift became manifest in the practice of natural resource management, as the principles of sustainable yield management proved



incapable of sustaining the world's fisheries, forests, and other complex ecosystems (Walker and Salt, 2012). In their place, ecologists began to theorizing – and later practicing – the use of ecosystem-based management practices (EBMP) in place of sustainable yield management (Zolli and Healy, 2012). EBMPs adopt a portfolio-based approach to resource management that recognizes the many important interconnections within an ecosystem by monitoring a variety of factors and adaptively managing in response to new information (Walker and Salt, 2006). Ecologists came to view resilience as a more pragmatic proposition than sustainability, due largely to the issues of scale and regional governance that often undermine planning goals related to habitat preservation, sprawl, and greenhouse gas emissions (Collier et al., 2013).

Engineering resilience is focused on the application of technology and infrastructure in the process of managing urban risk. Within the context of coastal protection, this body of literature is best understood through engineering's adoption of green infrastructure as a water management instrument (Fisher, 2012; Jabareen, 2013). Green infrastructure is differentiated from conventional forms of infrastructure by its networked configuration, its incorporation of soft features, and its provision of ecosystem services (Eisenman, 2013). It is recognizable in coastal settings in what the USACE now refers to as nature-based strategies: a collection of landscape features that can be designed or restored for the purpose of attenuating wave action and reducing storm surge heights (Committee on U.S. Army Corps of Engineers, 2014).

Social resilience is derived from a blend of sociological and psychological literatures. Sociologists have

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Fig. 4 –The Landscape of Resilience Theory (Credit: Billy Fleming)

worked on the development of new theories to predict and explain the causal link between human actions and the disparate disaster impacts borne by vulnerable communities (Steinberg, 2000). The distribution of those impacts – both in terms of property damage and lives lost – is often linked to misguided land use regulation, induced development behind flood protective infrastructure, and inefficient flood insurance markets (Gotham and Greenberg, 2014). Building upon this idea, Naomi Klein developed a theory of "disaster capitalism" which describes the post-disaster recovery period as "an orchestrated raid on the public sphere…combined with the treatment of disasters as exciting marketing opportunities." (Klein, 2008) The ideas of Klein and Steinberg were eventually expanded upon and merged within the broader theory of crisis-driven urbanization. It describes the notion that a market-oriented (e.g. private sector-led) approach to disaster redevelopment would be justified by public officials under the imprimatur of crisis and that it would lead to and exacerbate the landscape of inequality and risk, yielding a greater future potential for catastrophe amongst a city's most vulnerable residents. Their theory of crisis-driven urbanization argues that without a fundamental reconfiguration of the post-disaster redevelopment process, there is little hope for producing resilience in our cities (Gotham and Greenberg, 2014).

The role of planning and design during the post-disaster recovery period is often expressed in ecological terms (Meerow et al., 2016). The pace of recovery – or the ability to "bounce back" – is the principle metric against which resilience is often measured in the planning literature (Vale and Campanella, 2005; Reed and Lister, 2014). The instruments that are often employed in the service of this metric include building technology upgrades, enhanced and multi-functional flood-control systems, and investments in community capacity-building organizations (Birch and Wachter, 2006; U.S. Army Corps of Engineers, 2014). Within the context of Rebuild, the focus turned primarily to deployment of coastal green infrastructure – a form of multi-functional flood-control.

Bibliographical References

Ahern J. 2011, From Fail-Safe to Safe-to-Fail: Sustainability and Resilience in the New Urban World, «Landscape and Urban Planning», 100, pp. 341-343.

Arora R., Arora, P, 2013, *Disaster Management: Medical Preparedness, Response, and Homeland Security*, CABI, Oxfordshire.

Berke P., Cooper J., Aminto M., Grabich S., and Horney J. 2014, *Adaptive Planning for Disaster Recovery and Resiliency: An Evaluation of 87 Local Recovery Plans in Eight States*, «Journal of the American Planning Association», 80(4), pp. 310-323.

Birch E., Wachter S. (eds.) 2006, *Rebuilding Urban Places after Disaster: Lessons from Hurricane Katrina*, University of Pennsylvania Press, Philadelphia.

City of New York 2011, *NYC Hazards: NYC Hurricane History*, Office of Emergency Management, accessed July 30 2014, available at: http://www.nyc.gov/html/oem/html/hazards/stroms_hurricanehistory.shtml.

City of New York 2012, *A Stronger, More Resilient New York*, Special Initiative for Rebuilding and Resilience, accessed July 30 2014, available at http://www.nyc.gov/html/sirr/downloads/pdf/final_report/Ch_13_CriticalNetwork_Final_singles.pdf.

Collier M., Nedovic-Budic Z., Aerts J., Connop S., Foley D., Foley K., Newport D., McQuaid S., Slaey A., Verburg P. 2013, *Transitioning to Resilience and Sustainability in Urban Communities*, «Cities», S21-S28.

Committee on U.S. Army Corps of Engineers Water Resources Science, Engineering, and Planning: Coastal Risk Reduction 2014, *Reducing Coastal Risk on the East and Gulf Coasts*, National Academies Press, Washington, DC.

Eisenman T. 2013, *Frederick Law Olmsted, Green Infrastructure, and the Evolving City*, «Journal of Planning History», 12(4), pp. 287-311.

Fisher T. 2012, *Designing to Avoid Disaster: The Nature of Fracture-Critical Design*, Routledge Press, London.

Fleming B. 2015, *Can We Rebuilding by Design?*, «LA+WILD», 1(1), pp. 104-11.

Fleming B. 2016, *Lost in Translation: The Authorship Structure and Argumentation of Resilience Theory*, «Landscape Journal», 35(1), pp. 23-36.

Gotham K., Greenberg M. 2014, *Crisis Cities: Disaster and Redevelopment in New York and New Orleans*, Oxford University Press, Oxford.

Holling C.S. 1973, *Resilience and Stability of Ecological Systems*, «Annual Review of Ecology and Systematics», 8(2), pp. 1-23.

Jabareen Y. 2013, *Planning the Resilient city: Concepts and Strategies for Coping with Climate Change and Environmental Risk*, «Cities», pp. 220-229.

Kim N. 2012, *How Much More Exposed are the Poor to Natural Disasters? Global and Regional Measurement*, «Disasters», 36(2), pp. 195-211.

Kim K., Olshansky R. 2014, *The Theory and Practice of Building Back Better*, «Journal of the American Planning Association», 80(4), pp. 289-292.

Klein N. 2008, *The Shock Doctrine: The Rise of Disaster Capitalism*, Picador, New York.

Lyles W., Berke P., Smith G. 2014, *A Comparison of Local Hazard Mitigation Plan Quality in Six States, USA*, «Landscape and Urban Planning», 122: 88-99.

Martin C., Oo E., Pendall R., Levy D., Baum A. 2014, *Evaluation: Rebuild by Design Phase I*, accessed October 22 2015, available at: http://www.urban.org/research/publication/evaluation-rebuild-by-design-phase-i.

Masterson J., Peacock W., Van Zandt S., Grover H., Schwarz L., Cooper J. 2015, *Planning for Community Resilience: A Handbook for Reducing Vulnerability to Disasters*, Island Press, Washington, D.C.

Meerow S., Newell J., Stults M. 2016, *Defining Urban Resilience: A Review*, «Landscape and Urban Planning», 147(1), pp. 38-49.

Michel-Kerjam E., Forges S., Kunreuther H. 2012, *Policy Tenure under the U.S. National Flood Insurance Program*, «Risk Analysis», 32(4), pp. 1-14.

Olshansky R., Johnson L. 2010, *Clear as Mud: Planning for the Rebuilding of New Orleans*, APA Planners Press, Chicago.

Olshansky R., Johnson L. 2014, *The Evolution of the Federal Role in Supporting Community Recovery after U.S. Disasters*, «*Journal of the American Planning Association*», 80(4), pp. 293-304.

Ravitch S., Rabin M. 2011, *Reason and Rigor: How Conceptual Frameworks Guide Research*, SAGE, Thousand Oaks.

Reed C., Lister N.M. 2014, *Projective Ecologies*, Actar and Harvard Graduate School of Design Press, Cambridge.

Rodin J. 2014, *The Resilience Dividend: Being Strong in a World Where Thing Go Wrong*, Public Affairs, New York.

Steinberg T. 2000, *Acts of God: The Unnatural History of Natural Disasters in America*, Oxford University Press, Oxford.

Stone D. 2001, *Policy Paradox: The Art of Political Decision-Making*, W.W. Norton & Company, New York.

Tierney K. 2014, *The Social Roots of Risk: Producing Disasters, Promoting Resilience*, Stanford Business Books, Stanford.

U.S. Department of Housing and Urban Development 2013, *Promoting Resilience Post-Sandy through Innovative Planning and Design*, Office of the Secretary, accessed July 10 2014, available at: http://portal.hud.gov/hudportal/documents/huddoc?id=REBUILDBYDESIGNBRIEF.pdf.

Vale L., Campanella T. 2005, *The Resilient City: How Modern Cities Recover from Disaster*, Oxford University Press, Oxford.

Walker B., Salt D. 2006, *Resilience Thinking: Sustaining People and Ecosystems in a Changing World*, Island Press, New York.

Walker B., Salt D. 2012, *Resilience Practice: Building Capacity to Absorb Disturbances and Maintain Function*, Island Press, New York.

The White House, 2012, *Executive Order – Establishing the Hurricane Sandy Rebuilding Task Force*, Office of the Press Secretary, accessed July 29 2014, available at: http://www.whitehouse.gov/the-press-office/2012/12/07/executive-order-establishing-hurricane-sandy-rebuilding-task-force.

The White House, 2014, *Fact Sheet: National Disaster Resilience Competition*, Office of the Press Secretary, accessed August 10 2014, available at: http:// www.whitehouse.gov/the-press-office/2014/06/14/fact-sheet-national-disaster-resilience-competition.

Zolli A., Healy A.M. 2012, *Resilience: Why Things Bounce Back*, Simon & Schuster, New York.