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Resilience by design: can innovative processes deliver more?

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Abstract

In the wake of Hurricane Sandy, with more frequent extreme weather events and rising sea level in progress, addressing the vulnerability of US coastal cities and towns has become a matter of urgency. But out of disasters can come opportunities for innovation. Post-Sandy, a range of new initiatives, tools, policies, governance frameworks and incentives are being tested, including competition processes like *Rebuild by Design*. Design is seen as a key tool for dealing with complex problems by creating integrated strategies to build resilience, sustainability and livability. Using the *Rebuild by Design* process as a case study, this article considers the potential of such a process to drive innovation and deliver resiliency projects and strategies that can be implemented and leveraged to have a catalytic impact on a broader scale.

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1. Introduction

Some of the most pressing challenges of our time are seemingly wicked problems [1]. Climate change and extreme weather events are clear examples. Wicked problems are often atypical rather than expected. They are not readily understood nor do they have a clear solution; they are unprecedented in scale and complexity, pushing us beyond our normal capacities to respond; and with complicated interdependencies, they pose an unpredictable combination of issues and events to grapple with.

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These intractable problems challenge our normal capacities, processes and routines and demand more innovative ways of problem solving. What may work in an everyday, business-as-usual situation may not work when multiple factors come into play.

In the wake of Hurricane Sandy, the unprecedented damage hammered home to all those affected the vulnerability of US coastal cities and towns and the real threat of more frequent extreme weather events. Given the financial costs, over $65 billion, and the excessive human toll, with 117 people dead and more than 200,000 displaced from their homes, it was clear from the outset of the recovery process that rebuilding what existed before was not a viable option. The good news is that out of disasters come opportunities and an impetus for innovation.

All levels of government—federal, state, and city—clearly articulated the imperative to build greater resilience in the Sandy-affected areas of New York, New Jersey, and Connecticut. To ensure the region fared better next time around, it was acknowledged that everyone had to build differently. Acknowledging that every $1 spent on mitigation and preparation can save $4 downstream on post-disaster rebuilding, government agencies tried a range of new initiatives, including competitions such as *Rebuild by Design* [2] to promote resilience through innovative planning and design.

To tackle such a wicked problem, design was seen as a key tool. Design thinking [3] can provide opportunities to reframe problems and develop new paradigms to challenge the status quo. Designers are recognized as collaborators, visualizers and synthesizers who can unpack issues and put together scenarios in new and different ways. As such *Rebuild by Design* was envisaged as an opportunity to innovate and develop more creative solutions and integrated strategies that could build resilience, sustainability and livability into solutions.

Rebuild by Design came out of the Hurricane Sandy Rebuilding Task Force [4] and the US Department of Housing and Urban Development (HUD) [5]. It aimed to address structural and environmental vulnerabilities that Hurricane Sandy exposed across the region and to develop solutions that could give better protection from future climate events. The competition also aimed to strengthen understanding of regional interdependencies, fostering coordination and resilience both at the local level and across the United States [6].

Acknowledging the need to think outside the box and because of the scale and open-endedness of this challenge, the *Rebuild by Design* competition was a different kind of competition process.

2. Rebuild by Design (RBD)

2.1. How is RBD different?

The competition design was innovative in a number of ways. The standard model for most design competitions is to define an existing problem, develop a brief and solicit solutions from the best in the field. But a problem of such unprecedented scale and complexity as Hurricane Sandy could not easily be defined until it was understood in all its dimensions. Such unchartered territory suggested an open-ended question and an interdisciplinary, cross-jurisdictional approach:

- First, a diverse pool of talent was engaged. Rather than limiting the field, teams of interdisciplinary collaborative thinkers were sought. The selection of teams, with a broad range of disciplines and integrated team structure, was devised to facilitate a multiplicity of ideas and approaches as well as more holistic strategies.
- Second, the process was different. It was fast paced. 10 months in total. Short, sharp and focused. The process involved research and design to interrogate the issues and maximize the breadth and range of ideas through open innovation paradigms. The process was research led; open source and collaborative, to better refine the nature and scope of the complex regional challenges and so develop comprehensive design solutions.
- Third, there was funding and commitment to implementation. RBD represented a policy innovation by having set aside HUD Community Development Block Grants (CDBG-DR) funding ($920 million) specifically to help implement winning projects and proposals. Typically, grantees (governments) are required to develop action plans only after receiving these funds. RBD informally changed this procedure by fostering innovative proposals before funds were awarded to execute them. Federal dollars thus became a catalyst for innovation as well as a mechanism to facilitate implementation. Teams were also encouraged to secure their own funding for additional design development as well, fueling the extension of their outreach and the project's scope.

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