"Rebuild by Design" in New York City: Investigating the Competition Process and Discussing Its Outcomes

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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. Questo contributo esplora l'effettiva possibilità per un concorso di progettazione come "*Rebuild by Design*" di rappresentare una risposta plausibile ed efficace per obiettivi di recupero post-disastri naturali e lo fa leggendo criticamente 23 interviste condotte con i principali attori coinvolti nel concorso. I risultati delle interviste sono utilizzati sia per comprendere quali aspetti del concorso hanno funzionato e quali no, sia per fornire una prima analisi critica dei sei progetti vincitori. L'articolo discute in conclusione gli elementi del concorso che paiono più promettenti e quali dovrebbero invece essere rivisti nel caso il concetto di "*recovery-through-competition*" trovi riscontro anche al di fuori della regione di New York.

Parole chiave
Cambiamento climatico, concorso di progettazione, aree costiere, coinvolgimento della comunità, pianificazione adattiva.

Abstract
Rebuild by Design was a four-stage, interdisciplinary design competition aimed at bolstering the resilience of the New York region after Hurricane Sandy. This paper explores the extent to which a design competition like Rebuild by Design can be considered a viable form of disaster recovery. This includes the use of twenty-three key informant interviews conducted with the principal actors involved in the competition are analysed. Their results are then used to both understand what features of the competition worked well – and which did not – and to provide the first critical analysis of the six winning proposals. This paper concludes by discussing the programmatic elements of Rebuild by Design that hold promise for future application and by identifying those which must be reformed if the notion of recovery-through-competition is to find success outside of the New York region.

Keywords
Climate change, design competition, coastal areas, community engagement, adaptation planning.

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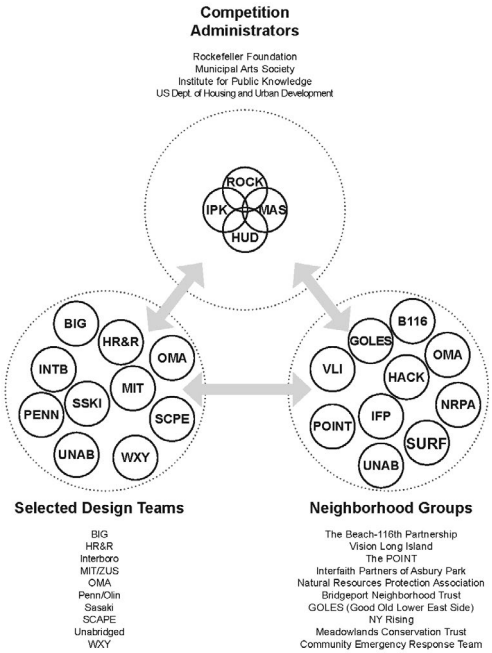
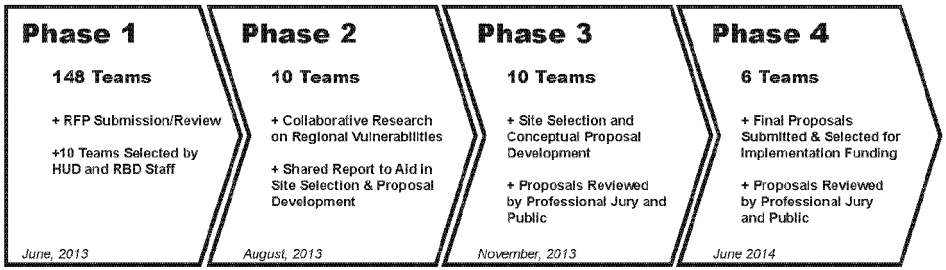


Fig. 1 – The Organizational Ecology of Rebuild by Design (Credit: Nathaniel Wooten and Billy Fleming)

Research Objectives and Methods

"Rebuild by Design", was a four-stage, interdisciplinary design competition aimed at bolstering the resilience of the New York region after Hurricane Sandy (2012), represents a unique opportunity for understanding the extent to which a design competition can be considered a viable form of post-disaster recovery policy. At this stage in the competition's development, that understanding is best built through qualitative, case study research (Francis, 2001). This is due to the fact that none of Rebuild's proposals have yet been constructed and many have yet to progress beyond the conceptual phase of development. The paucity of built and highly refined project plans means that more quantitative modes of understanding – whether it be from performance-based evaluations of new infrastructure or from simulation models of newly proposed systems – are not yet appropriate. Rebuild's viability as an element of the post-disaster recovery process, then, is what this paper aims to qualitatively assess (Creswell, 2012; Yin, 2013).

Implicit in this approach is the need to understand how the recovery-through-competition model differs from that of the status quo, as well as which elements of the model worked well and which did not for Rebuild's stakeholders. Semi-structured interviews were conducted with twenty-three key informants from three distinct stakeholder groups: the ten design teams working within the competition, the key neighborhood groups engaged by each team, and the institutional staff tasked with administering Rebuild. The primary goal of these interviews was to provide a fuller understanding of the factors that contributed to the successes and failures of the competition from the perspective of those most-affected by it. These interviews ranged in duration from thirty-eight to ninety-three minutes and took place in Philadelphia, New York, Boston, and New Orleans between September and December 2014. The interviews were then transcribed and assessed in order to identify key themes regarding Rebuild's successes and challenges. Once a codebook for the interview transcripts was developed, the coding protocol was shared with and used by eight masters-level students to assist in coding transcripts and performing validity checks on the final results (Ravitch and Rabin, 2011; Maxwell, 2012).



Results: The Major Themes Within the Key Informant Interviews

The interview analysis produced nine themes related to the question of a design competition's viability in the post-disaster recovery process, four of which relate to the drivers of Rebuild's success and five of which pertain to its key failures.

The Drivers of Rebuild's Success

The interview participants identified four themes considered critical to Rebuild's success: the emphasis on "coalition-building" throughout the competition, the focus on "applied research" during the early stages of the competition, the "political cover" provided by that permitted teams to bring long-held ideas and aspirations for coastal resilience to the fore, and the "strong leadership" exhibited by Henk Ovink and Shaun Donovan throughout the competition.

First, the theme of coalition-building encapsulates the variety of mechanisms through which the ten design teams collaborated with neighborhood organizations and individual residents during the research, conceptual development, and design proposal development phases of the competition. Interview participants often emphasized this theme's significance by underscoring the importance of creating durable community coalitions for the projects produced by Rebuild – a factor that became more important within this context when it became clear that the winning design teams would not necessarily be involved in refining and eventually delivering the projects they proposed. One designer described this theme by saying that

> I think the biggest things are that [the proposal] is driven by what – in that neighborhood – was an unprecedented consensus about a plan for the future that brought together businesses, the community, and the unions…and this [became] the best place to demonstrate what you could through community-based action with significant public and private investments [through a design competition].

Second, the theme of focusing on applied research speaks to the considerable emphasis with Rebuild's programmatic structure on interdisciplinary research. Though using applied research methods to construct of knowledge base for decision-making purposes is commonplace in most planning processes, it is a relatively novel addition to the structure of a design competition. Interview participants often discussed the importance of Rebuild's research phase by discussing the ways in which the freedom it offered – namely the ability to pursue a variety of problems and topics that interested each of the teams – differed from the conventional model of practice in which client-driven work is structured through an RFP. Under the conventional model,

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Fig. 2 – The Timeline for Rebuild by Design (Credit: Nathaniel Wooten and Billy Fleming)

many of potential research questions have either already been answered or have been deemed unnecessary to the project, leaving firms in a reactionary posture rather than a proactive, inquisitive one. Another designer described this theme by saying that

> It was great because it gave us a chance to just do research and explore many of the topics that we were already interested in, rather than someone saying 'we just want to do the High Line but in D.C.' That's like 90% of the competitions that you get and that's just not interesting or important to me. What is interesting are these questions and the open-endedness [of the research phase] in Rebuild – that really suited us in the end because it was a chance to just explore.

Third, the theme of political cover arose throughout the interview process and proved particularly important for the design teams engaged in Rebuild. This is due to the competition's ability to mainstream a set of ideas – namely, coastal green infrastructure – that comprise set long-held design aspirations for the region. Interview participants often spoke about the ways in which Rebuild represented a policy window through which these ideas could finally be realized (Stone, 2001). A designer described the importance of this theme by saying that

> What's interesting is that you could have – and I think the Rising Current exhibition (at MoMA) is an example – big ideas that are potentially useful, but if you don't have a clear framework for creating a project, they don't mean much. So here you had the money, the people, the stakeholders, and the kind of policy framework to allow those ideas to happen…What was particularly exciting about Rebuild was this idea that not only are we developing these big ideas, but that there are real dollars attached to them.

Finally, the theme of strong leadership also emerged during the interview process – though at a rate and intensity far less than the findings of the Urban Institute's Rebuild evaluation suggest (Martin, Oo, Pendall, Levy, and Baum, 2014). A neighborhood organization leader described this theme by saying that

> I loved the charisma that Henk brought to this process and the attempt to open our bureaucracy up… and he formed a really effective alliance with Shaun Donovan that got a lot of people fired up.

The Major Barriers to Rebuild's Success

The interview participants identified five themes that dramatically reduced the effectiveness of Rebuild as a disaster recovery instrument: the *unrealistic expectations* of the competition's administrators, the *lack of resources* available to teams and participants in the competition, the *ineffective management* style of the competition's administrators, the *politicized nature* of the competition's funding awards, and the *highly compressed timeline* of the recovery process.

First, the theme of *unrealistic expectations* describes the myriad of ways in which the competition's administrators over-promised results. For design teams, this often meant that financial resources that were promised failed to materialize and, more importantly, that the scope of work agreed to before the competition tended to expand exponentially as time went on. The issue came to head at the conclusion of the project, when design teams were notified hours before the winning proposals were selected that they would not necessarily be procured to continue working on their projects. For neighborhood groups, this theme often arose when discussing the competition's engagement process – one which required design teams to meet with many more communities than could ever be funded. In those instances, the asymmetry of information – namely, the administrators and design teams knowing that most communities involved in the planning process would never receive funding when the neighborhood groups did not – became highly problematic. One designer described this theme by saying that

> The second element of the competition which made it relatively unique is that not only must you design a project, but you had to build a coalition and basically make a business case all on your own. You could argue that is has been almost offensive from RBD to ask us to do that. Especially then after sort of granting the money [to the city] and creating a situation in which we don't know if we'll be procured [to continue working on our own project].

The unrealistic expectations of the competition's administrators also contributed to significant levels of distrust from the other groups engaged in Rebuild. Another designer described this simmering distrust by saying that

> The thing I would change if I had to do this all over again is that I would not trust HUD to broker the deal with the city…we were all under the impression that HUD was going to do more to shape the agenda with the grantees…but based on our experience and my conversations with colleagues in other jurisdictions, they have been very weak.

Second, the theme regarding a *lack of resources* identified the challenges for design teams and neighborhood groups that were often asked – and sometimes forced – to work on their proposals without remuneration. Design teams were each granted 200,000 dollars to complete work on the competition, though all ten teams spent significantly more over the course of Rebuild due to two factors: the funding granted to each team was insufficient to cover initial estimated costs and the continuous scope creep mandated by the competition's administrators forced teams to produce work and attend meetings that were never contractually agreed upon. The requirement to spend significant

amounts of a firm or university's money in order to participate in the competition likely precluded many smaller firms and public universities from participating in Rebuild. One designer described this barrier by noting that

> The other thing [I would do differently] is that we would definitely change our budget, because they told us that there was a lot more money than they ever wound up disbursing. We geared our budget towards what they said they would have…and if we had known, we would have scaled our operations way back.

Third, the theme of *ineffective management* encapsulates the many issues that arose due to the poor communication and haphazard organizations of the events, community meetings, and other required activities developed by the competition's administrators. Several of the design teams and the neighborhood groups described these activities as inefficient uses of their time – either because a lack of communication meant the meetings were poorly attended or because the haphazard organization of the events meant that little was actually accomplished. One designer described this theme by saying that

> I was not a big fan of all the intermediary involvement in the competition…Some of them could have contributed their thoughts for free just like all of the community members did. Instead, they were 'managing stuff' – very badly – and for all of us, if you ask people, one of the big taxes of this process was…in addition to us working way beyond the stipend on a really tight schedule and then changing the deliverables and the due dates all the time…was they were setting up these master classes for us to attend that were not master classes at all…then Shaun moves to OMB, the [Rockefeller] Foundation moves on to a national competition…and now you can't get them to answer an email.

Fourth, the theme of highly *politicized results* describes the perception from several design teams and neighborhood groups that the projects winning proposals were selected, at least in part, for political reasons. This is not a particularly surprising finding – the distribution of post-disaster recovery funding is often a highly politicized act. But the presence of this theme is disconcerting here because it cuts against the very spirit of a competition. One neighborhood group leader described this theme by saying that

> I read the other day that the two projects that are going to be funded in New Jersey are in the Hudson River Valley and in the Meadowlands – North Jersey. Frankly, my reaction to those selections is that they have far more to do with politics than with anything related to storm impact of vulnerability.

Finally, the theme of *timeline compression* describes the chaotic nature of organizing and participating in a design competition during a period of profound disruption. This is a theme common to most

post-disaster recovery processes (Kim and Olshansky, 2014), though it was likely exacerbated in the case of Rebuild by the other themes previously described. One neighborhood group leader described this theme by saying that

> One of the biggest challenges was that we were just trying to do too much in too little time…I wonder if, in the end, that had an impact on our application…I think the time crunch – people just got so wrapped up in the planning process that when it came down to actually writing [our funding application] and building a case [for our city], it just wasn't as tight as it should have been.

Discussion: Can We Rebuild by Design?

However, flawed the recovery-through-competition model of disaster recovery appears, the findings from this paper demonstrate that, at least in the case of Rebuild, such an approach merits further development—particularly when one considers the spectacular failure of more conventional models to build resilience in US cities.

The Conditions Necessary to Rebuild by Design

There are at least two conditions that contributed to Rebuild's success in the New York region and pertain to its replicability elsewhere. The first is socio-political: New York and many of the surrounding municipalities are very high-resource, high-capacity planning cities. Rebuild's strong institutional partnerships with the Municipal Arts Society, the Van Allen Institute, and the NYU Institute for Public Knowledge – all with highly-skilled staff that are experienced in community engagement and city planning – helped to create a powerful network of support that greatly benefitted teams during the competition. The competition's institutional partners also provided the social infrastructure necessary to carry the projects forward after Rebuild's conclusion. Though these conditions are not unique to New York, they are far from ubiquitous. It would be difficult to imagine a similar process unfolding in New Orleans after Katrina, given the city's low level of philanthropic activity and planning capacity (Dewar and Manning-Thomas, 2012; Ford, 2011). The Rockefeller Foundation already appears to recognize this necessity – a critical component of the Foundation's NDRC program is a series of "Resilience Workshops" aimed at building technical expertise within disaster stricken cities across the country.

The second condition is a symmetrical flow of information between the organizers, participants, and communities engaged in the recovery process. For the organizer-designer relationship, the rules of the game must be well understood by both parties. This means that the financial constraints of both the competition and the firms involved are

well-known, that the agreed-upon scope of work is a fixed component of the process, and that the post-competition procurement and intellectual property agreements are explicit before a decision is made to engage in the program. Put another way, the hectic nature of any post-disaster recovery process cannot be exacerbated by shifting standards, rules, and regulations on the part of a design competition's administrators. For the organizer-community relationship, the intentions and values of each party must be made explicit at the onset of the competition. This means that organizers must be clear about two things: whether their engagement with the neighborhood is intended to solicit feedback on a proposal or to invite residents to truly engage in the design process; and whether or not there are tangible guarantees for planning-fatigued communities – like eligibility for federal funding – to participate in yet another engagement process.

The Programmatic Reforms Necessary to Rebuild by Design

At least two programmatic reforms are necessary for the recovery-through-competition model to be considered viable in other disaster-stricken contexts. The first is that the financial structure of design competitions must be amended to permit entry by smaller firms, public universities, and non-profit organizations. The exorbitant cost of Rebuild proved difficult to manage for nearly all of the teams involved – all of which had at least one large firm or private university attached to them. These teams were able to make-up for the heavy losses imposed by Rebuild by cross-subsidizing their involvement through other projects and profit centers. Smaller firms, public universities, and non-profit organizations could never operate in this fashion. This is problematic because limiting the size and type of organizations able to participate in a competition like Rebuild also limits the universe of ideas about disaster recovery, climate change adaptation, and community engagement that a more diverse organizational pool could provide. Future competitions must provide more resources for participating firms. The second is that investments like Rebuild must shift from a reactionary posture to a proactive one. The NDRC, though different from Rebuild in important ways, is similarly focused on communities in which disaster recovery, rather than disaster preparedness, is the primary concern. As HUD, the Rockefeller Foundation, and other organizations engaged in these competitions look forward, their investments should be targeted towards cities with high levels of exposure to natural hazards and climate change, but little in the way of recent experience dealing with their effects. The post-di-

saster recovery period is hectic and often involves the mass displacement of residents and technical experts – all of which complicate efforts to rebuild cities that are more resilient to future crises. By focusing on cities of high risk instead, future competitions can help initiative a proactive process of climate change adaptation planning that is more deliberate, more efficient, and more inclusive than the Rebuild and NDRC models suggest.

The Promise and Peril of Rebuild's Design Proposals

Rebuild produced in 2014 six winning proposals: the BIG U, or Dryline, for Southern Manhattan by the Bjarke Ingels Group and One Architecture; the Living Breakwaters for Staten Island by SCAPE/Landscape Architecture; the Lifelines for Hunt's Point (the Bronx) by PennDesign and Olin; the Resist/Delay/Store/Discharge project for the Hudson River by OMA; the New Meadowlands by MIT's Center for Advanced Urbanism and ZUS + Urbanisten; and the Resilient Bridgeport Plan for Connecticut by WB unabridged and Waggonner and Ball Architects. The latter three—comprehensive plans, now under the management of local and state governments—are impossible to evaluate at this point. The former three, however, are not.

The Dryline proposal is a surge barrier system comprised of three key elements: (1) the Battery Berm, (2) the Bridging Berm, and (3) a retractable floodwall running parallel to portions of FDR Drive. If completed, the project would span some ten miles of waterfront, wrapping around the southern tip of Manhattan from East 40th street, across the Lower East Side, the Village, and up to West 54th Street. Each berm would anchor a sweeping system of green, coastal infrastructure aimed at integrating recreation and risk reduction around one of the most densely populated and wealthy enclaves in the United States. The retractable barriers would serve as a connection between those earthen berms. Together, the three core elements of the U-shaped system aim to completely reshape Manhattan's waterfront by creating a dry line of defense against future surge events. It also clearly builds upon and draws from the "New Urban Ground" proposal developed by dlandstudio during the "Rising Currents" exhibition. Susannah Drake, author of that project, noted that New Urban Ground "is more than a response to the need to control the input and outflow of water; it also provides an opportunity to transform the urban experience" (Bergdoll, 2011). In many ways, Drake's soft-U for Manhattan laid the intellectual groundwork for BIG to develop the Dryline. BIG's proposal received 335 million dollars in RBD funding, the highest amount of any project funded through the competition (Beck, 2014).

But the project's transformation of Southern Manhattan's waterfront raises some important concerns about the proposal – and, more generally, the RBD competition. The first phase of the Dryline – a 2.5 mile segment running from Montgomery Street to East 23rd Street – is projected to cost more than one billion dollars. Implementing that one, small section of the Dryline will take years – building all or most of the proposal is likely to take decades. This is problematic for at least three reasons. One is that RBD failed to identify a long-term funding or management strategy for its winning proposals. The more time that passes, the less likely the City of New York or its federal partners are to prioritize funding for the Dryline. Construction costs become more expensive, environmental regulations become more stringent, and political support becomes less intense as more time passes.

For this project in particular, a partially built Dryline would be devastating for residents of Southern Manhattan. One of the project's designers remarked that "the compartments [of the Dryline]…while something in and of themselves, are connected to each other and create a system of flood protection that is greater than the sum of all its part". The system of flood-protection cannot function until a full buildout is achieved—a dwindling prospect given the rise of austerity politics in the United States.

The Dryline proposal is comprised of a several one-to-three-mile-long compartments that, unless connected, cannot provide any real degree of flood protection. That's because the project is designed using a resistance-based approach to resilience, pushing water away from the neighborhoods protected by the Dryline. All of that displaced water must go elsewhere and, until the entire U is completed, that elsewhere will be the neighborhoods of Southern Manhattan that are adjacent to its completed segments. At its best, the Dryline will be of great benefit to the residents of Southern Manhattan and incredible cost to their neighbors. At its worst, it will protect a few wealthy pockets of people in and around the Financial District and leave the rest of Manhattan to fend for itself.

Of course, some areas must receive the first round of protection over others. But who receives it – and who does not – is a political choice, a product of the resilience politics of coastal design. Giving that first round of protection to the wealthiest enclave in Manhattan means that other, lower capacity neighborhoods will remain exposed to storm surge and climate change longer – and bear the considerable risk of being among the neighborhoods included in the Dryline plan, but excluded from whatever portions of it are actually built. This is not the fault of the designers, per se. City officials are the ones who will ul-

timately make that decision. But the Dryline proposal – and its compartmentalized nature – lends itself to this kind of political exploitation and, in that regard, presents a cautionary tale for other designers.

The second issue is a product of the programmatic structure of the RBD competition. Because only one team worked on the Southern Manhattan site, New Yorkers have mostly been denied an opportunity to debate competing proposals for how best to protect the borough. Though this became a competition-wide issue, it is acutely troublesome for the Dryline given its high cost – no other funded project is expected to approach its massive price tag. It is also disappointing, given that, in all likelihood, whatever was proposed for Manhattan during the RBD competition would have been awarded substantial public funding. There are simply too many people and too many commercial assets there to leave unprotected. A designer from a competing RBD team noted that

> they were always going to build something there… that's why so many teams wanted the Southern Manhattan site. They knew they could propose almost anything and it would get built…because that's the locus of financial and political power in this city and that's who we all knew would get protection first.

The final challenge presented by the Dryline is both philosophical and functional: it treats nature as an ornamental quality instead of an instrumental process. By that I mean that the project is emblematic of the shift in design culture to portray resilience and climate change adaptation as problems easily solved through green-washing. Projects can certainly do both – project an image that romanticizes nature and delivers on its promise of resilience. But that is a fine line to walk.

Though verdant and socially vibrant renderings might appeal to clients and portions of the public, they often elide past the more serious technical and functional issues that must be addressed in coastal resilience projects. A public official in New York City noted that

> Developers love [the Dryline] because it's a plan to completely redevelop the Lower East Side – that's not the LES any of us in New York know. They're going to erase life as we know it and replace it with architectural objects. It will beget a huge number of new higher-end residential buildings, and yet the Governor and Mayor and the designers will all come to the Alfred Smith houses to hold a press conference about the project…It's not going to work out well for their community partners…but they weren't really interested in them anyway. This is a tool for redevelopment, not resilience.

The greatest risk facing the Dryline, then, is that its core elements will be built – in part of whole – while its other, more compelling components are stripped away. It is easy to imagine the city or its federal

partners cost-engineering away the parks, gardens, and architectural interventions in the proposal and building a fairly simply – and droll – berm and wall system along the coast. Because the proposal's most compelling parts are layered on top of those core, protective elements – rather than integrated into them – they risk being discarded if and when the project's costs become a political liability.

The SCAPE proposal for Staten Island is organized around a series of oyster reefs and other designed ecologies along the shore. The reefs – first proposed as a part of Kate Orff's "Oyster-tecture" project in the "Rising Currents" exhibition – are relatively simple propositions (Bergdoll, 2011). The Living Breakwaters act to reduce wave energy and to improve local water quality by using human-built reef structures to attract oysters and shellfish that can both filter pollutants and revitalize a long-lost fishing and eco-tourism-based recreation industry. The near-shore interventions are then coupled with architectural and programmatic elements along the beach in an attempt to "stitch the culture and ecology of Staten Island's waterfront together." Those "water hubs" – or community and recreational facilities along the shore – would act as social anchors, providing waterborne recreation opportunities, new public space, and marine education programming to the neighborhoods of Staten Island. One of the project's designers described it by saying that

> the hope is that these core elements – the breakwaters and the water hubs – could become like a toolkit…that the City of New York could then take and distribute all along the outer boroughs…so that this one small pilot in Staten Island becomes a blueprint for recovering a marine ecology that used to thrive here.

SCAPE's project is an exercise in prototyping that is intended to spread, over time, across the coastal edge of the Northeast. The Living Breakwaters proposal received $60 million in funding through RBD. It is certainly true that the modularity of SCAPE's proposal hews closely to one of the central tenets of resilience theory – that robust systems are comprised of redundant, overlapping elements that each provide a multitude of functions. Its creative use of shellfish as an organizing device also clearly fulfills the RBD competition's desire for design innovation. But the project's reliance upon oysters and other bivalves creates a troubling vulnerability in its logic. Ocean acidification – a chemical process in which atmospheric CO2 is rapidly dissolved into the ocean, raising its pH level – is one of the first global climate change effects to materialize. It is also one of the most difficult to address. It is already wreaking havoc on the oyster and mussel fisheries of the Pacific Northwest and the North At-

lantic. There, increasing oceanic acidity is dissolving the shells of bivalves, making it harder for them to live long enough to breed and to provide the kinds of water quality benefits that are part and parcel to the Living Breakwaters proposal (Bednarsek et al, 2012). These effects are projected to escalate over the next century, potentially collapsing the oyster and mussel fisheries of North America (Freely et al, 2014). Though there is merit in investing in solutions that buy communities 20 or 50-years of protection – and Living Breakwaters may do that – this proposal is being framed as a solution to flood risk, not an instrument for forestalling the inevitable.

Living Breakwaters also faces some vexing technical questions. The marine science literature is nearly unanimous in its assessment of near-shore reefs like these: they could provide some shoreline stabilization benefits, but would not do much to reduce surge risk. This is mostly due to the hydrodynamic characteristics of coastal storm events. Their maximum surge – the maximum flood height delivered by the storm – is always preceded by a forerunner. A forerunner is the pre-surge – a dramatic increase in wave heights that can reach as high as 75% of the maximum surge height. A marine scientist in New York noted that

> One of the reasons near shore reefs don't do much for surge heights is that, by the time the big surge arrives, they've been completely overwhelmed by the forerunner…If the peak surge is fifteen feet, it'll have a forerunner of at least seven or eight…and as soon as you put that on top of a breakwater, it loses all of its frictional qualities.

Another marine scientist noted that

> [breakwaters] can do a lot for you in terms of reducing the everyday wave action…that's driven by wind and tidal action…That reduces coastal erosion, so you can certainly make an argument in their favor that way…But they aren't going to do you any good during a major storm event. When you run the SLOSH models, it's like they're not even there.

A designer working in New York, but unaffiliated with the proposal, also said that

> I don't think that oysters and mussels are going to save us. They don't live past the spat stage around Staten Island, so they don't form those crusty reefs that are shown in all of their drawings…and you'd need so much width or horizontal area just to get a one or two foot reduction in surge heights…Besides, the final proposal didn't even place the reefs where ARCADIS told them would be most optimal – about ¾ of a mile offshore – because it wouldn't be as sexy.

The risk in this project, then, is less about whether enough of it can be built to fulfill its mission than in whether it can actually perform as it has been advertised.

Finally, The Penn/Olin proposal for Hunts Point is comprised of four overlapping elements: (1) The

Flood Protection Levee Lab, a commercialization incubator for testing new materials and methods of risk reduction; (2) the Livelihoods Initiative, a local job-training program aimed at coupling new neighborhood development with a local, underemployed workforce; (3) the Maritime Emergency Supply Line Hub, a ship-based logistics hub for coordinating relief efforts during future storm events; and (4) the Cleanways tri-generation facility, a local and CO2 neutral power generating plant. It also includes a series of modest levees aimed at protecting the neighborhood's food distribution center – a critical node in the region's food supply. Nearly twenty million people in and around New York receive a portion of their daily food supply from Hunts Point – and it came within about eighteen inches of being inundated during Sandy. The Lifelines proposal received 20 million dollars through RBD – the least amount amongst the six winning projects.

The Penn/Olin project's blend of physical infrastructure, social and economic policy, and energy production clearly delivers on the principal aim of RBD: to create innovative design solutions to the problem of climate change in New York's most vulnerable neighborhoods. But it also suffers from three unique issues that threaten to derail the proposal.

One is that the Levee Lab creates organizational tensions between the community members, the city, and the academic institutions that might administer it. This is because the proposal never resolved the management or operational questions that such a facility engenders, such as who might manage the conventional flood-control systems protecting Hunts Point, who might direct the Lab's research agenda, and how those two disparate systems might intersect.

A second is that the proposal's workforce development recommendations will be difficult to square, both financially and contractually with local labor unions. As one of the project's designers remarked,

> tying the success of new development in a community to the wealth and health of its residents is the only way to ensure that whatever physical improvements are made [in the Bronx] actually benefit its inhabitants…and aren't just another instrument of displacement.

The third and final concern is a product of the competition's insistence on producing ideas that are regionally scalable yet contextually appropriate. No other proposal generated during RBD was as attuned to its community as Lifelines. An administrator of the competition remarked that

> no one did it better than in Hunts Point…there are plenty of things we'd probably change about it now, but they were as engaged with their community… and as responsive to their needs as any of us could have hoped.

But Lifelines exposed the paradoxical nature of RBD's aim – its local focus meant that few of the proposal's ideas could be transferrable to other neighborhoods.

Conclusions

This paper assessed the viability of the design competition – Rebuild by Design – as a method of disaster recovery in the post-Sandy Northeast, and it critiques the design proposals promulgated through Rebuild. Their viability is likely to depend on the ability of future competitions to better provide more resources to the design teams and neighborhood groups tasked with leading such an effort.

The projects themselves offer some insight for designers, too – particularly as recovery efforts in Houston, TX and along the Florida coast begin in the aftermath of Hurricanes Harvey and Irma. The BIG U's resistance based approach to resilience is likely to find favor in small, densely developed communities where its high-cost can be justified by the assets being protected. It's unlikely that such an approach would fit well into the urban landscape of Houston, where sprawling, low-density development pervades and any surge barrier system would have to be massive in scale and expense. Tampa and Miami may be better test beds for such an approach, though additional, complimentary resilience projects will be necessary alongside whatever is built there.

The idea of coupling ecosystem design with flood risk reduction in Living Breakwaters is perhaps the most scalable idea in all of Rebuild. Well-protected inlets and bays should be the ideal places for such an approach. More exposed coastal cities—including the site of the Rebuild proposal itself—should avoid them. As the marine science and engineering literatures makes clear, these types of interventions cannot have a meaningful impact on storm surge.

The Lifelines proposal's focus on policy is, at the very least, instructive in its recognition that there are some problems that landscape design cannot solve—and that attempting to stretch the profession beyond its abilities would both place communities at unnecessary risk of disaster and undercut the credibility of landscape architects. Expertise is as much about knowing what you cannot do as it is what you can do.

As the notion of resilience continues to permeate and capture the public discourse around cities, planning and design scholars should look to the communities engaged in that effort to develop additional case study analyses of the recovery-through-competition model.

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