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Boundary spanning in design-led strategic spatial planning: lessons from post-Sandy rebuilding efforts

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ABSTRACT

In complex area transformations, strategic planning tends to include a collaborative approach that invites a wide range of stakeholders. But because the perspectives and interests are diverse, partly conflicting, and dynamic, a unifying plan of action will not emerge without good process design and proper facilitation for dialogue. Designers are increasingly considered as helpful for pursuing a shared vision of a complex challenge, as they are expected to unify across organizational and cultural boundaries. We interviewed 11 professionals who worked on the Rebuild by Design programme (restoring hurricane Sandy damage in and around New York) for more than five years. The interviews reveal how these designers supported reaching across boundaries as well as the conditions that are vital for designers to achieve their intended added value in a collaborative strategic planning process.

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Strategic planning; design practice; flood safety

1. Introduction

The key spatial challenges of our time require collective strategic action across disciplines and organizations at a regional scale. This is the case, for example, for climate resilience (Restemeyer, van den Brink, and Woltjer 2017), the energy transition (Stremke, Van Kann, and Koh 2012), urban mobility strategies, and housing provision (Shahab, Hartmann, and Jonkman 2021). To deal with these challenges adequately, new strategic collaborations need to be identified and materialized. However, there are many gaps between perceptions of what relevant problems are, how they should be dealt with, and what feasible solutions might be.

This paper focuses on the boundaries between problem perceptions, often founded in our different constructions of the world and the respective responsibilities of different types of actors therein. These boundaries are not easily overcome, and follow the lines of disciplines (engineers, politicians, ecologists, etc.), sectors, and organizations. Intense and continuing stages of communication, learning, and cooperation can help span these socially constructed boundaries and create overarching cultures of thought that open up pathways to constructive solutions for the key spatial challenges of our time.

Since the communicative turn in planning resulted in more inclusive and deliberative methods of plan-making, the understanding of what defines the processes that enable constructive collaboration and bridging boundaries becomes ever more pressing. This issue is particularly urgent for spatial situations that require structural changes, e.g. to become climate or flood resilient. However,

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bringing more actors to the table (as advocated in the communicative planning literature, for instance in Innes and Booher 2010) will not automatically lead to good outcomes (Van Dijk 2021). What can make actors feel the urgency and relevance of participating or committing to an often lengthy, time consuming, and open-ended planning process? Who is capable and eager to strive for a joint understanding in spite of the boundaries inherent to the polycentricity of the governance, institutional silos, voids, and differing perspectives?

Van den Brink et al. (2019) and Kempenaar et al. (2016) have found that spatial designers (such as urban designers and landscape architects) can play a pivotal role in spanning boundaries between problem perceptions, developing unifying designs and narratives, and forging collaborations in spatial planning and development. Furthermore, building on experiences from Dutch spatial planning practice, the theses by Balz (2019), Kempenaar (2017), De Zwart (2015), and De Jonge (2009) show a plethora of initiatives that used design to explore spatial problems and solutions that unite unexpected actor networks. Various initiatives and reports indicate that this particular approach to design is also employed in other planning cultures (see for example: Meijsmans 2010; Steinitz 2012; Von Seggern, Werner, and Grosse-Bächle 2015).

Across the globe, design-led searches for a uniting vision in spite of diffuse power are becoming more prominent. The multiple Dutch Dialogues programmes (e.g. Waggonner et al. 2014) throughout the United States (starting in New Orleans in 2008, the most recent application was Charleston in 2018–2019) were followed by Water as Leverage programmes across Asia (e.g. Kempenaar et al. 2022), and in North America the Rebuild by Design NYC programme (e.g. Šakić Trogrlić et al. 2018), Sea to City Vancouver and the Resilient by Design Bay Area process, to name a few.

An under-studied aspect of design-led planning processes is how to deal with the potentially paralyzing boundaries or differing problem perceptions between organizations, territories, scales, disciplines, phases, etc. This is highly relevant because the integrated solutions found often clash with a fragmented reality. The study by Van den Brink et al. (2019) uses a boundary spanning theoretical perspective, and focuses on the various boundary spanning roles that landscape architects can have or adopt in spatial planning projects focusing on improving flood safety and local spatial quality. And although evaluation of the actual performance of their boundary spanning efforts in terms of tracing the influence of the designers on the emergence of a joint narrative is an important line of research, this paper focusses on how spatial designers concretely operate, and what enables them to span boundaries to promote and enable the collaboration necessary for spatial solutions to regional challenges. These aspects determine the effectiveness of design-led planning approaches.

To study what spatial designers do to span boundaries and induce collaboration, we took the Rebuild by Design (RBD) programme as a case study. RBD was organized in the aftermath of hurricane Sandy hitting the New York/New Jersey coastline in 2012, and invited international multidisciplinary teams of architects, planners, designers, engineers, and academics to work with the Sandy region to develop innovative solutions to the challenges of post-disaster rebuilding. It intended to connect leading international designers and experts across disciplines to address community and policy-based redevelopment that would increase the region's resilience to future storms and hurricanes. In a regionally scalable but locally contextual fashion, the intention was ultimately to implement a set of innovative resilience projects through a combination of public and private funding.

The RBD resilience ambition and participatory search process were introduced in a region with a relatively weak regional spatial planning tradition, with highly politicized citizen participation, dynamic coastal management, and a perceived incompatibility among engineering, ecological management, spatial design, and politics. Moreover, international (particularly Dutch) expertise was mobilized to help explore problems and solution frames, which added an intercultural challenge to the already complex web of differing perspectives and boundaries.

We asked designers involved in the RBD programme (1) what activities they developed to span boundaries between different actors and groups of actors, and (2) what they deemed vital skills and conditions for designers to be successful in spanning boundaries. Their experiences reveal valuable insights into how and under what conditions spatial designers can have a unifying or boundary

spanning function in spatial planning processes. Evaluation of the actual performance of their boundary spanning efforts in the RBD programme, in terms of tracing the influence of the designers on the emergence of a joint narrative, fell outside the scope of this paper and will need further investigation.

We explore in Section 2 why strategic planning, spatial design, and boundary spanning are a necessary combination of activities for solving complex spatial problems. We explain what methods were used to understand designers' boundary spanning activities in Section 3. Section 4 presents our findings as a grouped set of quotes from the interviews. The theoretical significance of our findings is discussed in Section 5.

2. Spanning boundaries by design in strategic spatial planning

The increasing complexity that spatial planners confront in dealing with the many and interlinked challenges of today, such as the energy transition, climate change adaptation, rapid urbanization, and structural demographic changes, has given rise to strategic spatial planning initiatives (Healey et al. 1999). These challenges cannot be dealt with through *statutory* planning processes, and call for innovative solutions and new approaches instead. These are identified in *strategic* spatial planning processes. Such initiatives generally find their place outside, but connected to, formal planning institutions (Mastop and Faludi 1997; Mäntysalo et al. 2015; Purkarthofer 2016).

By breaking away from the traditional institutions and hierarchy of the planning system (Faludi 2010; Walsh et al. 2012), space merges as complex challenges and new cross-sectoral, multi-level and polycentric governance approaches are reconceived. This comes with the challenge of power being divided in a non-hierarchical polycentric way over a wide range of actors, who are interdependent in achieving a joint outcome, while technically autonomous from each other and pursuing partly conflicting aims. Situations like these call for collaboration that is often analyzed from a game-theoretical perspective (see Lubell, Mewhirter, and Berardo 2020; Morrison et al. 2023 on ecosystem management) drawing on Ostrom, Tiebout, and Warren (1961). When actors can easily join the strategic planning initiative (also referred to as 'forums': Angst et al. 2022) they infuse the debate with relevant new perspectives (Hopkins and Knaap 2018). Connection to the existing formal planning anticipates being integrated into and infused with these systems that are critical for the implementation and realization of spatial interventions.

Our study presents such a case of strategic spatial planning, in which design was employed to take the lead in organizing and fueling the development of innovations and new approaches.

Strategic spatial planning typically takes place in a multi-level and polycentric system of policy-making, and intrinsically involves multiple boundaries and boundary spanning challenges. Its focus on complex interrelated challenges implies the need to incorporate a range of relevant disciplines, sectors and stakeholders, which are not all familiar with each other and do not automatically agree with each other on critical issues. Healey's (2006) book on urban complexity elaborates on the fragmentation of problem perceptions, power, and responsibility, which paralyzes strategic action. The fact that strategic spatial planning tends to focus on the regional scale and takes a long-term perspective means that ideas that emerge from these processes are still rather abstract in nature. They need to be elaborated and further developed before they can be implemented (Figure 1).

The major challenge in strategic spatial planning is to overcome fragmentation and span multiple boundaries, whether they concern different disciplines, actors, stakeholders, sectors, time or geographical scales, or the transition to an upcoming planning stage. In our study, we have focused on what spatial designers can do and do to contribute to overcoming these various boundaries, and to induce coordination and collaboration. This need to unite despite fragmentation has created a scientific interest in the treatment of boundary spanning (e.g. Van Meerkerk and Edelenbos 2018; Webb 1991; Williams 2002).

How this works concretely has been described in several ways by organization scientists. Boundary spanning is widely considered to be a process of *selecting* information and *translating* this

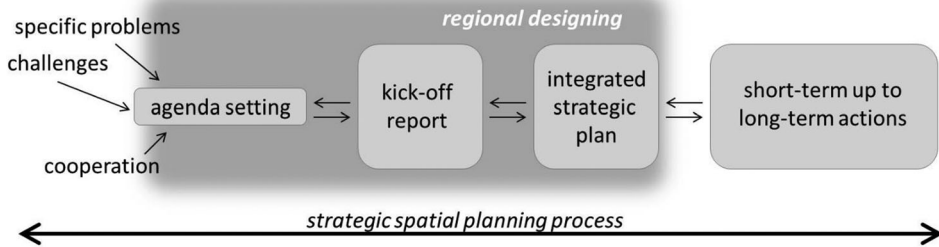


Figure 1. Schematic representation of how a regional design approach translates a complex set of challenges into coherent frames for action (Source; Kempenaar 2017).

information in such a way that it will *connect* actors effectively across boundaries (Leifer and Delbecq 1978; Tushman and Scanlan 1981; Van Meerkerk and Edelenbos 2014). Carlile (2002, 2004) too sees the flow of information and knowledge as the main challenge for collaboration between departments. However, he emphasizes that although knowledge might be merely exchanged in situations where a joint lexicon of key concepts is present, when an innovation (e.g. the development of a new product) is required, new knowledge needs to be jointly created. He shows that boundary spanning will involve an act of either *transferral*, *translation*, or *transformation*, depending on the novelty of the situation.

In the context of this paper, the concepts of *connect* by means of *transform* would apply most, given the complexity and shifting discourses on what is, what can, and what should be (Van Dijk 2021 citing Couclelis 2005). Reaching consensus and collaborative governance in strategic planning is much more complex than collaboration within a single firm, where the culture clashes that may occur between the entities constituting a firm are resolved as entities will ultimately strive for the success of the company. Quite the opposite, strategic planning faces a deep institutional fragmentation of radically different interests and legal mandates, and little to no incentives to resolve differences.

We can therefore assume the boundary spanner, in a strategic spatial planning context, to be a transformer of knowledge. Ancona and Caldwell (1992) distinguish four roles characterizing how boundary spanners could work: ambassador, scout, task coordinator, and guard. These would fit the more neutral acts of *transferral* and *translation*. Williams (2002) adds the roles of interpreter and entrepreneur to this list, more fitting to the politically charged act of 'negotiating interests and making trade-offs between actors' (Carlile 2004, 559) that is typical to novel circumstances. When problem definitions are multi-scalar and contested, straight paths from problem to solution-finding (see Forester 1989, Ch. 8) are evidently impossible, and solutions remain unconvincing when attempted nonetheless. Framing and reframing and definition and redefinition of the problem situation in a explorative and preferably interactive design process is needed to open up a wider array of possible, sensible, and feasible solutions (see also De Zwart 2015; Meijsmans 2010).

It comes as no surprise that Van den Brink et al. (2019) found that based on their knowledge and expertise, landscape architects are increasingly invited to connect actors. But they also conclude: 'It turned out to be a challenging task to play a more process-oriented boundary spanning role and to imaginatively bring together diverse opinions, values, and interests in new alternative landscape designs' (22).

Various conditional factors determine the options and opportunities for spatial designers to take up a more extensive boundary spanning role, including environmental characteristics, role definition and stressors, and organizational support (Van Meerkerk and Edelenbos 2018). Also individual attributes such as cognitive, social and emotional competencies are crucial for performing boundary spanning roles (e.g. Jesiek et al. 2018; Van Meerkerk and Edelenbos 2020). Our study

sought to inductively reveal what boundary spanning practices designers apply and what skills and conditions determine their influence.

3. Method

Finding out more about how boundaries are spanned in complex regional spatial strategy development, we selected the case of the post-Sandy rebuilding programme. As shown by Ovink and Boeijenga (2018), RBD was a unique soft planning response to the 2012 hurricane damage. It acknowledged the impossibility of defining effective preventive measures in a highly complex situation. Outside the formal decision-making structures, a soft space was created to analyze problems and ideate solutions. The RBD programme bureau was established and called upon the consultancy industry (mainly architectural and engineering firms) to advise on strategies to rebuild smarter. Ten teams were selected from 150 applicants to engage with the various local stakeholders and to provide problem analysis and draft strategies (called ‘design opportunities’ in the programme) for action.

Hundreds of meetings and events were organized in late 2013 and early 2014. Each team made and pitched multiple design opportunities, and a jury selected one of each for each team to be further developed into a project proposal. After selection in June 2014, seven out of the 10 submitted projects received funding for implementation: BIG U (NYC), Hunts Point Liveliness (New Jersey), Hudson River Project: Resist, Delay, Store, Discharge (New Jersey), New Meadowland (New Jersey), Resilient Bridgeport (Connecticut), Living Breakwaters (New York), and Living with the Bay (New York). These projects managed to present a convincing storyline in the Rebuild by Design contest organized in 2013 that was accompanied by an intense series of discussions with stakeholders in the respective areas.

For our case study, we held preparatory interviews with two RBD programme officials in order to check expectations. Based on their input we chose to concentrate on two of the funded projects that appeared to have made the most dynamic progress in the years leading up to our research.

- (1) BIG U (Manhattan): Bjarke Ingels Group (Team Lead), One Architecture, Starr Whitehouse, James Lima Planning + Development, Green Shield Ecology, AEA Consulting, Level Agency for Infrastructure, ARCADIS, and Buro Happold. The BIG U team designed landscape interventions to protect Lower Manhattan areas from flood and storm water. The team collaborated with the city of New York and other local stakeholders (BIG Group 2018, 35–37) to protect three ‘compartments’ of flood protection zones with multiple functions for social and recreational activities – enhancement of the waterfront rather than constructing flood barriers. There are three specifically designed compartments: East River Park, Two Bridges and Chinatown, and Brooklyn Bridge to The Battery.
- (2) New Meadowland (to the North of New York City, in New Jersey): Led by MIT CAU, ZUS, URBANISTEN with the members from Deltares, 75B, and Volker Infra Design. The intervention is explained as ‘The Meadowpark connects existing and new marshes and freshwater basins with an intricate system of higher and lower berms, providing flood protection from ocean surges and rainwater’ (Bisker et al., 2015, p. 121). The details of this vision were sought during the New Meadowland project.

Interviewees were selected on the basis of the various consultancy reports and websites that were produced during the project activities. We determined what persons with design expertise had been involved in drafting these reports – sometimes they were explicitly mentioned in the colophon, sometimes we had to ask around in the firms that were mentioned. The interviewee statements are combined into one dataset because these two projects operated under the same institutional and political regime.

We approached these designers with the request to engage in a reflective interview about how they operated in the process. A total of 11 of these American and Dutch professionals who had acted as designers responded positively. We spoke to them individually for 90 min in November and December 2020, effectively six years after their respective projects had started. All the interviews were conducted online because of the COVID-19 restrictions at the time. The interviews were recorded, transcribed, coded, and analyzed by the research team in early 2021.

Our approach relied on the interviewees' recollections of events in the past. Such recollections are known to be selective and modified *stated* versions of the events that occurred at the time. Longitudinal observation and direct sampling during the actual process would have yielded more factual data on *revealed* actions and the performance of these actions. That was not possible for the RBD case anymore.

Our interview guide was semi-structured. Open questions were prompted about (a) the role they played in the RBD programme, (b) their concrete activities, and (c) vital aspects of the conditions in which they operated. The questions were sent by email one week prior to the interview.

The interview transcripts were analyzed in a combined deductive and inductive way. The first round of rough coding used a basic code structure derived from boundary spanning theory, including types of boundaries, boundary spanning activities, and conditions for boundary spanning. Instead of predetermining a detailed coding template from the theory into which to fit all the quotes extracted from the interviews, we took a more inductive coding approach in the consecutive round of coding and combined similar statements together.

4. Findings

The analysis of the interviews led to an organization of interviewee statements into five themes on inducing collaboration by design: (1) the types of boundaries spanned by designers, (2) how these boundaries were spanned, (3) the relevance of stories and images, (4) sensitivity to people and politics, and (5) crucial environmental, institutional, and organizational conditions. These 5 themes were deducted from the statements of the interviewees, rather than chosen a priori.

4.1. The types of boundaries spanned by designers

Four types of boundaries spanned in the RBD process stood out from the interviews: (1) between politics and people; (2) between various technical and other forms of expertise; (3) between different institutional and cultural contexts; and (4) between planning and implementation.

A common divide mentioned by the majority of the interviewees was the traditional planning and decision-making process on investments for flood safety.

The government proposes and the people fight it. (RBD Program Manager)

The interviewees considered it a striking characteristic of the design-led approach in the Rebuild by Design process that there was dialogue *before* any proposal was made. The initial intention was 'just' to talk about the situation. That way, a wide variety of issues could be brought to the table, including issues that were not directly related to flood safety. By involving a broader variety of concerns, the designs for the waterfront could be made to satisfy multiple agendas simultaneously.

I think that the whole idea [was to start] looking at this problem from a multi-benefit perspective. (Architecture firm working on The Big U)

This was new and united politicians and residents. The people might not always have understood its value:

I think in the end, they're appreciative. They also feel that we were, maybe, naïve and that we did not ground the project enough in the realities of the city. (Architecture firm working on The Big U)

The need to span the boundary between the engineering and designing disciplines in the Rebuild by Design process was also mentioned often. It was necessary to keep communication open – a situation that would prompt reflection on a person’s own disciplinary cultures. Engineers, for example, had to reconsider their normal way of dealing with problems and clients (Figure 2).

We’ve learned a lot. In essence, and I can speak being the engineer, the consultant here. It [all rests] on what it means to develop a strategy, [...] that is holistic, that is 360 degrees. It has all components, rather than just the engineering component [...] I think what was quite convincing in RBD is that the engineer and the architects were trying to speak the same language to [stakeholders]: that was unheard of. (Consultancy firm, working on The Big U)

[It] was an eye opener for us in that period that we learned that connecting our understanding of the process, the system, connecting the design was a fairly powerful connection, powerful synergy product [...] We and other firms start to connect better to the designers, the holistic architects, the holistic way architects are thinking, designers are thinking with our process mindset, the way we sell our thinking. (Water expertise institute, working on New Meadowland)

Teams and meetings were formed not only by combining cultures within the area but also from outside:

[The] creativity was in figuring out what all the different types of knowledge that they wanted to bring to the table were. So we had scientists, and we had academics, and we had university experts, and we had artists, and we had graphic designers. All these people that wouldn’t necessarily normally be on a ferry together day after day after day, learning from each other, having conversations, having drinks every single night together. You start building these networks of networks. (RBD Program Manager)

It required bridging uniquely different cultures of thinking, speaking and acting:

The folks that there are, for instance, in the city are policy folks, so they cannot make that link to the engineering and to what happens on the ground. The engineering companies are not organized to think very strategically. They have their own ways of dealing with workflow, etc., so I feel that it’s often up to us to be that conduit. (Architecture firm, working on The Big U)

4.2. How to span boundaries

A clear finding from the interviews is that spanning a boundary was, in hindsight, not a deliberate or separate activity and was added onto the normal tasks of professional. Many view the



Figure 2. Designers and community members conversing over ideas for Manhattan (Source: BIG team and Rebuild by Design).

interorganizational search for an effective solution, which was the essence of the programme, to have been inherently boundary spanning.

Design was an integrator between multidisciplinary teams. (Architecture firm, working on The Big U)

[Design] can bring communities and local government together without actually putting them in the same room. You're picking up their ideas and bringing them together without doing it. You're creating some things that are implementable. You understand that from the first moment you start creating [...] Design has the possibility to bring together and address in designs all kinds of different issues and vulnerabilities for multiple things at the same time. (RBD Program Manager)

The design activity naturally led to outreach, the interviewees say, in which designers in particular were very active.

[Communication with the communities] was something the design people did a lot of [...] I experienced that they were much stronger in the communication part than we from the engineering side. That is because they were able to very quickly produce visual storylines with the help of visualizations that were very handy and very convincing to stakeholders to get an idea of what we were aiming at. (Water expertise institute, working on New Meadowland)

Interviewees acknowledge that designing is a specifically powerful mode of interaction for situations like the one in the NYC region after Sandy.

[Y]ou can almost draw your design during the meetings, while interacting, you are standing around a table with a map or whatever and then you can – The process is also of importance [...] making [visuals] is super-important to be able to collect and store what has been said and what – The things that people think into images. Almost on the fly, on the table during the meetings. I think that was very, very interesting. (Water expertise institute, working on New Meadowland)

The designers' way of communication creates a vital component for collaboration: trust.

The local citizens really got something, got the idea that they were involved in the project on their own area where they lived. That was important. Of course, it always started with some visualization that we had already more-or-less prepared that made a very good impression, showing that we understood the problem at hand. That we really understood. (Consultancy firm, working on New Meadowland)

4.3. Relevance of stories and images

In many different formulations, independent from each other, interviewees framed themselves as the makers and tellers of unifying stories. In response to an open question on how the designers tried to span boundaries, our interviewees said:

What we did is establish a common language in this group of stakeholders and there's a certain narrative that they can all accept. From the environmentalists to the industrialists, they could all agree that there is a problem and agree that there is an opportunity and, from that, you create a willingness to advance. (University working on New Meadowland)

What you need to do is – and in the beginning I was very irritating for them because I kept on asking, 'I don't understand this, I don't understand that. I don't understand. You have to explain again and again and again and again and again' [...] You also have to get them back on to reality [...] there's lots to explain to people, and you have to do work together to make a plan. (Design firm, working on New Meadowland)

The act of connecting and visualizing parts of storylines is often seen as revolving around synchronization and language:

We were able to translate the engineering work into those specific environments in a way that was nuanced, so that really helped I think with the quality of the overall design of the project. [...] the ability to translate that material so that it could be communicated in this complex process. (Architecture firm, working on The Big U)

[I]f you explain it properly, if you're like drawing along and explaining it properly, I think [people] may come along with what you tell them. I think if you pop a rendering into a newspaper, they might only see it as a tall

building. They might not really get it [...] Don't forget it's a tool for teaching government. Government understands rendering, right? You have many audiences. (RBD Program Manager)

But as the language was tested and synchronized, the content of the stories about the 'is', 'could', and 'should' was also inevitably evolved. Designing and translating brought new questions to the table, the types of questions that the participating organizations were not used to when working in isolation:

Who's talking about innovative design and flood protection and doing right by the community and really thinking about how this unfolds over time and what it is doing for building the city in a new way? Those questions weren't even really so much on the table, as that as designers, we kept trying to put them on the table, but it was always like, schedule, budget. (Design firm, working on The Big U)

This translation of a variety of perspectives into a common narrative should not reduce completeness or nuance.

[...] you want to make sure that the complex projects remain rich and are not simplified because otherwise all the different interests are not met. You need designers to translate this engineering thinking which is still based on functional solutions into this environment and to visualize that and visualize the opportunity. I think we're pretty – That was really powerful. (Architecture firm, working on The Big U)

At the same time, engineers said they were eager to have their engineering realities represented in the narrative.

[Our engineering firm] made sure that the designers who are, of course, thinking in a visual sense, they are also thinking in terms of volumes of water, waves, heat, or whatever engineering stuff. (Water expertise institute, working on New Meadowland)

Visuals were considered to be key in effectively communicating a storyline that combines the values of multiple stakeholders. Figures 3–5 serve as an illustration. They are taken from the publicly accessible archive of programme reports on the nyc.gov-website. They show how public involvement was more than talking, rather it was drawing together what could work and evaluate the various options. Participatory or action research is needed to empirically test these statements. This fell outside the reach of our study.

the value of the designer who's speaking our own language through images. At the end of the day, it's not us, and it's not even the city. It's the community. (Consultancy firm, working on The Big U)

In terms of skills, you need to know enough about a lot of things and visualization is also really important, and I think in the end, what we did is visualizing and narrating the solution to a larger audience. That was really what we were doing, basically presenting our understanding of a problem and presenting our understanding of a positive future. (University, working on New Meadowland)

4.4. Sensitivity to people and politics

When we asked interviewees what typical traits or skills a designer should have to make a difference in contexts similar to Rebuild by Design, the statements emphasized designers being able to combine understanding a place (how concrete spaces work and are experienced at various scales) with understanding the process (how actors move strategically toward the actual investment). Designers need to be visionary on the first and pragmatic on the second.

In the early phases, I think the [visioning] components and the ability to engage a lot of people is really important [...] you need a designer who understands institutional [context] funding pathways like all these [...] as you go on, you need to strike this balance between pushing and driving the ambition of a project but also understanding and engaging with the complexity that comes with implementation, and deal with the unpredictable elements that also come with it. (Architecture firm, working on The Big U)

You need to see what's behind the site. Why are these communities in the wetlands? Why don't they move out by themselves or why don't they protect themselves? (University, working on New Meadowland)

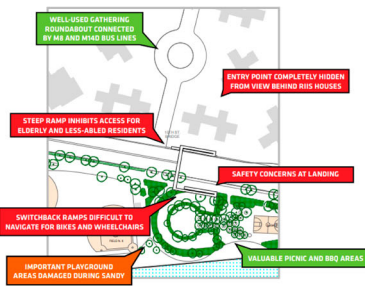
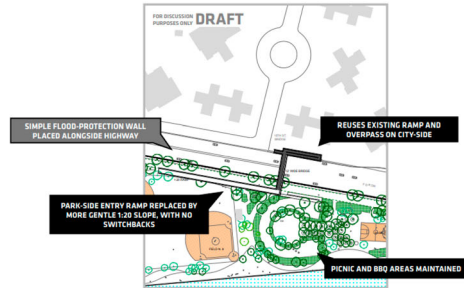
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COMMUNITY FEEDBACK**EXAMPLE - 10TH STREET - ALTERNATIVE 1**
BASELINE FLOOD PROTECTION

Figure 3. Example of how feedback from residents was used to provide proposals for improvements in a visual way. Source: #OneNYC: our resilient city. Report of the September 2015 East Side workshop. https://www.nyc.gov/assets/escr/downloads/pdf/escr_150910_pa1_nycha_residents_and_neighbors_workshop_final.pdf.

Or in short:

You have to be able to design with the politics. (Design firm, working on The Big U)

The sensitivity to the process side of the programme requires excellent social skills:

[O]ne of the things that we also did, something for a designer to do – is not to act like you're the first person ever to think of something in the community. There are so many plans that exist, government and non-government plans, part of what you have to do is research everything that already existed, and then enable others to pick out the good ideas. (RBD Program Manager)

[You only need] active listening. Then also listening with your eyes, [like not only with your ears], but that's why we go to places, so as to understand what others are seeing, and how they understanding that, by listen to their understanding. If you do that, you can start putting together ideas about what it's like to live in a place, an idea of what people are facing, and put yourself in there. (RBD Program Manager)

Sensitivity to the process and the social dynamics was understood to mean that designers should be able to accept the relativity inherent in the role.

The designer needs to come with a certain curiosity towards reality and he needs to allow himself to engage with the world. Not in an abstract sense, in a very complete sense, and to research to a degree where this becomes the basis for the design. It needs to emerge from a curiosity and willingness to engage with the world. (University, working on New Meadowland)

I see my role as the neutral broker, let's call it. I don't come with a prejudice and I come from outside. I study the problem and then I work with a team and the community to find a solution. (University, working on New Meadowland)

4.5. Crucial conditions

An important environmental condition for designers to be able to be boundary spanners was said to be urgency. The sense of urgency provided by massive disruption caused by hurricane Sandy opened up the opportunity for a radically new approach across boundaries. A disaster clearly creates an environment where new things can happen, interviewees said:

That was one of [the program initiator's] first statements, and you could feel it like a shockwave [quite] rules off the table. Look, you tell the Americans, 'Oh, man,' and they're already feeling so anxious about the [offset costs] [...] It had very much the feel of a window of opportunity. The window was open [...] It was breaking down silos, that was unheard of. (Consultancy firm, The Big U)

There was a degree of humility, I guess, because it was [after hurricane Sandy] and nobody was an expert in that. There were no experts. There were no New York City residents who had been through something like that

EAST SIDE COASTAL RESILIENCY PROJECT
COMMUNITY ENGAGEMENT SESSIONS: DESIGN ALTERNATIVES

JULY 28, 29, 630 + SEPT. 10, 2015

ALTERNATIVE A
STUYVESANT COVE PARK

- While a majority of workshop participants appreciated the separation between the pedestrian walkway along the waterfront and the bikeway on the western edge of Stuyvesant Cove Park, several groups pointed out that bikers would be hidden behind the berm, unable to benefit from waterfront views.
- Many participants voiced concerns about the limited amount of usable park space at the top of the berm.
- Participants were pleased to see that the event space near Solar Two would be maintained and several groups inquired about whether the building would flood in this configuration. If built at grade, Solar Two's first floor would be designated a floodable space, while all occupied spaces would be located on the second floor, above the design flood elevation.
- Participants embraced the idea of a wide opening that would retain view corridors from further up E20th St. and facilitate circulation flows from and to the future ferry terminal. Several individuals inquired about the look and feel of the berm, particularly as it transitions into the flood gate at E20th St.

PRELIMINARY CROSS-SECTION
SPLIT BIKEWAY AND FOOTPATH

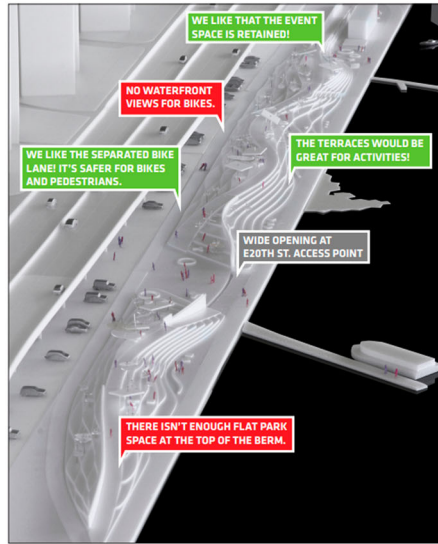
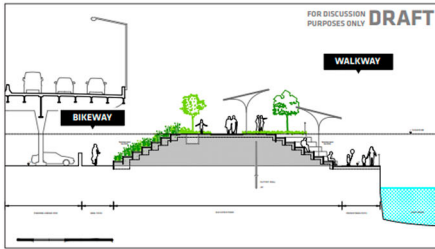


Figure 4. Example of the visualization and assessment of one of many proposals for the East Side waterfront, resulting from, and used in interactive sessions with the community. https://www.nyc.gov/assets/escr/downloads/pdf/ESCR_July_Sept_CE_Meetings_Summary_PA2.pdf.

before. The closest was Katrina, and it was a very different context in a very different geographical place. (RBD Program Manager)

Because of the scale of Sandy's devastation, there was a window of opportunity to do things differently. Some normal rules were relaxed or outright ignored.

ZONE 3
COMMUNITY FEEDBACK

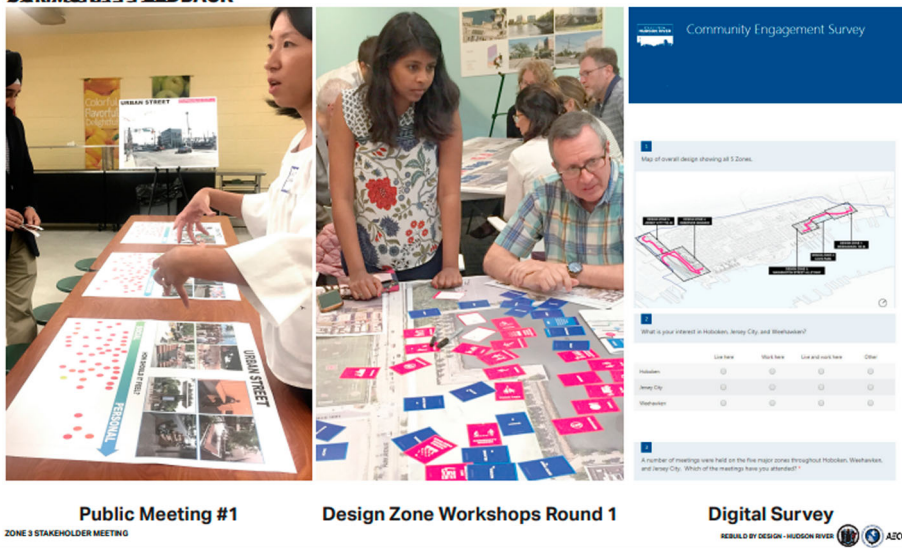


Figure 5. Example of citizens and designers using maps and reference pictures to imagine ways to make the coast line both safer and more appealing. <https://dep.nj.gov/wp-content/uploads/floodresilience/rbdh-zone-3-stakeholder-20191121-pres.pdf>.

We could propose whatever we wanted. For [the Big U] we were discussing flip-down gates underneath FDR. When we brought that to New York State [and MIT], they fell from their chairs when we proposed it. (Consultancy firm, The Big U)

But once such fluidity is achieved, designers still need the mandate, position, and pay to perform their role. These are the organizational conditions. RBD was a unique experiment in this sense. Designers were explicitly hired to unleash a process of community dialogues and explore possible responses to flood risks.

Rebuild by Design was a unique process that was led by non-profits. It was really the communities and the design teams working together, of course engaging the city. (Architecture firm, working on The Big U)

[T]he city and the government agencies were in the background. They weren't the client. (Design firm, working on The Big U)

The consultancy and designing was partly done in the hope that these companies would be part of consortia after the procurement, but that was not always the case. The procurement rules even shut out foreign parties.

[...] everyone participated and volunteered pro bono in the process, but then they couldn't participate, which was a big disappointment for many [...] I think some certain firms almost went bankrupt as a result of that. (Consultancy firm, working on The Big U)

Continuity is also a challenge because people move in and out of organizations and teams. This makes it hard to learn as a team about how a city works and how processes develop.

There is a lot of discontinuity [in the teams working on this project]. That's just the way things are. (Architecture firm, working on The Big U)

Interviewees lamented the disconnect between the visioning phase and the implementation phase. It was a boundary that was particularly harmful to the process and impossible for designers to span, because they were not part of the second phase:

[T]he reality is that you had a nine-month period where the project was in the designers' and planners' hands and then we gave it to the politicians or, let's call it the government bureaucrats, for a while, and then it changed completely. (University, working on New Meadowland)

You have to ensure that the party coming after you has the same idea – that you can convince them of the best idea you had and not to change it. (Water expertise institute, working on New Meadowland)

The magic of the dialogue and the collaboration is said to have stopped as soon as procurement began. Then all the organizations reverted to their default procedural modes. The interactions that had synchronized the actors' thinking, expectations, and intentions to that point stopped. This evaporation of design power was visible in the composition of the teams:

None of the teams that were required to – that were asked to make a proposal had designers on board. If they had designers on board, they were very different designers, it was a different type of designer [...] The real scramble for us was to even get on these engineering teams [...] It became clear that design didn't have a role. (Architecture firm, working on The Big U)

The responsibility that designers have for a project like this should also be on the other side. I didn't see it [in the case of RBD]. I saw it as, 'Oh, nice plans, and oh, beautiful and what a nice ...' It's very difficult to really make an impact with a concept like this. (Design firm, working on New Meadowland)

The budgeting procedures in particular got in the way of ambitions formulated in the design process.

New Jersey from the beginning were saying that you cannot invest in public infrastructure and benefit certain stakeholders specifically, you have to disconnect the infrastructure from the benefits, which is frankly a very – I don't know how to say this politely, but it's a terrible idea to disconnect the benefits from the actual project. It's very difficult to work with this so once those are disconnected you're very limited because you're financing

clauses are also a lot more constrained. You can only invest in pure defense. (University, working on New Meadowland)

5. Discussion

5.1. Boundary spanning through design: building a shared overall story

In the Rebuild by Design programme, the boundary spanning activities and processes were intended essentially to be continuously in contact with a wide variety of actors across disciplines (ecologists, politicians, engineers, residents, etc.) and, through those contacts, both forge and provide a shared overall story. The evolving and slowly solidifying joint shared story about what is there now, and what could be done to create a safe coastline, is what united various groups of actors across boundaries. The cyclic forging of the narrative is a design process in essence. Most interviewees referred to this and mentioned and described their effort to build and spread this narrative.

This outcome confirms the notion that strategies identified in soft planning processes are ‘fleeting records of agreement’ (Mastop and Faludi 1997, 819), that subsequent formal structures may or may not adopt. Where does the influence of such ‘records of agreement’ then come from? Multiple studies identify the collective narrative, or ‘story’, as the coordinating source of power. The work on storytelling by Throgmorton (1996), Hoch (2007), Van Hulst (2012), Hajer (2003, 2017), van Dijk and Cook (2020) and Van Dijk (2011) shows a joint narrative about problems and solutions that can resonate across a field of actors who are formally quite autonomous. Throgmorton (2003) and Hoch (2007) drew attention to the notion that spatial planning is essentially a practice of discovering and mobilizing stories about a place’s ‘what is’, ‘what could be’, and ‘what should be’. Stories express the challenges, the mechanisms, and the effectiveness of responses. And by their nature, they exert power.

Stories give logic to action and legitimize them in the eyes of the story’s audience. In a seemingly unnoticed way, a story that travels between institutions raises expectations, it frames observations, and it induces coherence in the actions of actors despite the absence of the formal force of law. Raaphorst (2019, 140–147) elegantly explains the discursive power and normativity (selective ‘claims to truth’) that stories and accompanying visualizations have. A story may even become a paradigm or doctrine (Van der Valk and Faludi 1997) when it becomes the basis for formal actions. In boundary theory literature this would make it a ‘boundary object’ (Leigh Star 2010) that serves to be a shared artefact evoking cooperation across boundaries. Further research is needed to study how the developed stories performed visually as tools for boundary spanning, e.g. by conducting a narrative analysis (focusing on what is the plot, which actors are given key roles, what are key metaphors and spatial imaginaries, etc.). Dühr (2007), van Dijk and Cook (2020) and Raaphorst (2019) provide frameworks to understand how the uniting effect of visuals works exactly.

5.2. The importance of an enabling environment and a soft planning process

For an integral, ‘persuasive story’ (term popularized by the 1996 book by Throgmorton) to be found, the interviewees stated that it is vital that there should be an enabling environment and overall programme (and context). Only then can the storytelling and the story’s materialization occur. Disciplines need to be able to relate and connect to that joint storyline. This requires suitable political processes, urgencies, disturbances, and changes in the programme. The political leadership, official and local mandates, and funding (including the prospect of funding) are important factors for enabling or activating boundary spanning activities. The funding from the national (federal) government, for instance, stimulated and enabled the New York City government to take on the RBD design process and implement solutions.

These political processes and contexts (i.e. allowing the physical materialization of a joint storyline) were considered by our interviewees to be as important as the design process (i.e. the

emergence of the mental storyline) itself. Because the right environment is not provided through the default formal procedures, it has to be created by policy entrepreneurs in a context of urgency and disruption. This is crucial because the boundaries that need to be spanned are never evident – the relevant combination of actors will be defined by the story agreed upon, and until agreement is reached, the relevant set of actors thus constantly changes under the influence of the boundary spanning activities. The joint understanding is both a consequence and a determinant of which actors should become or remain involved in the search process. The story's content is determined by those whose world views are in play and will merge and, at the same time, there is an essential need, as without a budding joint idea there is no urgency to connect. Collaborations and core beliefs 'co-constitute' (Van Dijk 2011) each other. This requires a soft planning process to avoid confirmation of existing partial narratives (convergence) and instead to stimulate new angles and perspectives to be infused by seemingly peripheral actors (divergence).

The interviews in our explorative study confirm a particular impact of a designer's take on process (dialogues, spanning scales), content (integral, interdisciplinary) and results (visualizations of possible futures for a place). More *in situ* research is needed to provide evidence-based analyses of boundary spanning through design. Direct sampling and analysis of both communication and evolving belief systems in a design-led project is needed to confirm the observations made by our interviewees that are, as said, at least partially selective and modified recollections.

5.3. Working and thinking in a designerly way

Our outcomes also show that navigating this process of story-finding requires the designers themselves to combine in an interdisciplinary sense both the necessary expertise in the material subject (soil, water, traffic, erosion, ecology, etc.) and to master process skills (political sensitivity, communication skills, and process innovation). To put it differently, both domain expertise and organizational expertise are required for boundary spanning by design (Curnin and Owen 2014; Van den Brink et al. 2019). A process has to emerge in which knowledge about the material subject evolves and matures in conjunction with the development of trust (also see Ansell and Gash, [2008] on trust as indispensable to boundary spanning), respect, belief in complementarity among actors, and ultimately, coordinated action. A designed strategy must not only make sense in a technical, social, or even cultural sense, but the decision-making process needs to be managed as well. The boundary between matter and process also needs spanning.

In deviation from the emphasis on clear role definition and expectations for boundary spanners found in the literature (e.g. Van den Brink et al. 2019; Van Meerkerk and Edelenbos 2018), our interviewees' accounts show that most boundary spanning work occurs implicitly by persons on a variety of positions in the process. It seems so natural to the professionals involved to contribute to developing a shared narrative that spanning boundaries is not part of their brief explicitly. This means that the label 'designer' should not be considered exclusive and bound to their training, job description or project role definition. RBD shows that consultants and policymakers from various backgrounds can be found to *work and think in a designerly way*. Design is an integral spatial-analytical and strategy-advisory activity that can be practiced by a variety of actors in the process. Landscape architects are known to be proficient in this, but many engineers and policy advisors are just as good at it. In this vein, the educational programmes for various disciplines should train design thinking skills.

Future challenge: bridging the boundary between design and implementation Notwithstanding the wide acclaim for Rebuild by Design developing innovative and integrative resilience strategies for the New York/New Jersey coast, spanning the boundary between the design and implementation stages turned out to be a refractory process. There, the soft planning (designerly, outside the formal decision-making process) outcomes had to be adopted by the formal processes of legal responsibilities, long-term budgeting, and representative democracy cycles. A critical challenge to the success of the RBD programme was to safeguard the continued guidance and direction of the holistic

integrated vision during the implementation of the proposed measures and interventions. This was reported to be challenging because in the implementation phase, the separate actors tended to revert into their own ‘silos’, resulting in disconnected languages, procedures, and formal roles. The long-term integrated vision then tended to be overruled by short-term sector-specific logics. The funding for project development and implementation is usually allocated to the city government, not the team. The design teams could find themselves phased out during this stage. Unlike the Big U team, which is still partly involved in the construction phase, the Meadowland team discontinued their roles in the implementation phase.

Connecting the content (the development direction that engineers, ecologists, etc. envision) with the process (being aware of how decisions are prepared and taken) is a crucial skill to have in teams that want to have influence. Understanding and engagement with the city and local government is an important issue for realizing holistic and integrated solutions.

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