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Visualization, participation and rhetoric: The discursive power of landscape design representations in participatory processes

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Abstract
Visual landscape design representations facilitate communication and knowledge exchange during participatory planning and design processes. The production of representations is considered to be a discursive act: actors and institutions construct knowledge with a certain authority and credibility through the use of visual expression. We aim to study the context in which the production of representations is embedded and how this context manifests itself in the communicative qualities of design representations. We present a visual discourse analysis of landscape design representations, employing empirical examples from the transdisciplinary design competition Rebuild by Design. The analysis uncovers interdependencies among three components of the visual discourse: the arrangement of participatory processes, media interactivity and the visual rhetoric embedded in the composition and style of the image. A conscious use of these discursive components could help prevent miscommunication, manage participant expectations and increase the validity of participatory design process outcomes.

Introduction
As intermediaries in participatory design processes, landscape architects ‘provoke situations of exchange and dialogue between a place and a public’. Landscape architects and planners facilitate such exchanges of knowledge among scientific experts, stakeholders and local inhabitants through visualization, by either letting participants draw or by mediation of the designer. The act of drawing is seen by Catherine Dee ‘less as a technique, and more forcefully as an experimental method’. By extension, the ability of participants to draw and their level of access to the production of visualizations shape the influence of those participants on the outcomes of planning and design projects. Besides drawings, landscape architects and planners use various kinds of visual representations to facilitate the communication of design ideas among project participants. These design representations are not considered as neutral communication devices. Especially the conscious and unconscious use of increasingly accessible digital visualization technologies by spatial designers has become an important topic of scholarly debate. For example, it is argued that digital technologies enable designers to think at higher levels of complexity and to achieve different solutions in terms of systems, form and materiality. However, Karl Kullmann also notes the limits of some digital media for designing and representing landscape designs. Digital media, and the skills required to use them, may contribute to increase the distance between the producers and viewers of the image. Instead, ‘loose-realism’ techniques such as digital freeform collages and montages should aim to retain control over the medium while enjoying the benefits of its modern visual styles.

The nature of participatory processes not only consists of consensus-driven facilitation, but also of conflict and negotiation. This entails that representations—as ‘communication tools’—play different roles within...
participatory processes: the design image is not only a means to arrive at consensus, but also a way to explicate differences. Against this background it seems legitimate to conclude that the use of landscape design representations in planning and design processes revolves around questions of interactivity and power. Although many studies discuss the power of specific types of spatial representations, such as maps and digital cartography, decision-making tools, interactive media, and visual impact, few studies locate that power within processes of landscape visualization production. This means that few studies discuss how and when planners and designers attribute what kind of power to what aspects of design representations. By taking such a perspective we consider the creation of visual design representations to be a powerful discursive act, that is, the construction of specific knowledge with a certain authority and credibility. In this paper we understand landscape design representations as discursive materializations of power and knowledge. We aim to study the context in which the production of representations occurs and how this context manifests in the communicative qualities of design representations as utterances in a visual discourse. We assume that this visual discourse reflects whose knowledge is being represented with what kind of truth claim. Our research question is: What constitutes the discursive power of visual landscape design representations and how is that power used by planners and designers to facilitate communication during participatory design processes?

To answer this question, we present an approach for a visual discourse analysis of landscape design representations. This approach focuses on the perspective of the image producer, rather than on the visual complexity of images or their interpretation by project stakeholders. We demonstrate our approach to visual discourse analysis using empirical examples from the field of (re)designing flood defence landscapes. In such landscapes planners and designers are increasingly required to arrive at multifunctional landscape solutions. This multifunctionality entails combining existing and new spatial functions with the participation of a wide range of experts and stakeholders. Facilitating communication between stakeholders while planning and designing multifunctional flood defence (MFFD) landscapes involves, among many things, the use of sketches, maps, cross sections, photomontages, artist impressions and 3D models of diverging visual complexity.

The empirical examples we use in our analysis are taken from the participatory planning and design processes that were part of Rebuild by Design, the multidisciplinary and participatory design competition organized in the wake of Hurricane Sandy that struck the greater metropolitan area of New York in 2012. Since then, Rebuild by Design has become an international movement aimed at organizing innovative processes for designing implementable solutions for more resilient regions.

The structure of this paper is as follows. First, we introduce a conceptual framework for visual landscape design communication. Second, we present an analytical framework for the study of visual discourse of landscape design representations. This results in a classification of different discursive components of design representations. In the subsequent section we analyze these discursive components by means of design representations that were produced during three Rebuild by Design processes. Finally, we address the issue of planning and design as a situated practice, that is, the kinds of discursive power that function through different types of representations at different phases of the design process.

**Visual landscape design communication**

Visual landscape design representations play an obvious part in the process of visual communication: design content is expressed visually and interpreted by an audience. During this process, different knowledge types are formulated, such as, for example, a design analysis, a spatial vision or a design solution, expressed using various visual modes presented through a particular medium. As such, a visual design representation has three main communicative elements: its medium possesses a level of interactivity, its visual mode provides a degree of readability, and its content is arranged in such a way that it provides a certain validity [Fig. 1]. Design representations are interpreted by different audiences in different ways because every interpreter has a particular ‘interpretive habit’. These habits consist of discursive networks, or strings of connotations, that are triggered by a design representation or particular aspects of that representation.

![Figure 1: Conceptual framework for landscape design communication](Raaphorst et al. 2018)
In a design process, actors and institutions use different means of visual expression, and thus operate at different levels of validity, readability and interactivity in order to make a ‘claim to truth’ and solidify their knowledge, interests and preferences.²⁹ Such truth claims are made by attempting to influence the ‘habits’ or discursive networks through which audiences interpret design representations. Truth claims made through visual expression are defined as utterances of ‘visual discourse’.²⁸ Gillian Rose, drawing heavily on the work of philosopher and social theorist Michel Foucault, argues that visual discourse is inscribed upon an image via three key aspects during its creation: the institutional apparatus, the institutional technology and the rhetorical organization.²⁷ Although Foucault’s work does not deal with landscape representations directly, his ideas resonate strongly in neighbouring disciplines such as political science, spatial planning and governance.²⁸ Elements of Foucault’s definition of the apparatus are, for example, ‘institutions, architectural forms, regulatory decisions, laws, administrative measures, scientific statements, philosophical, moral and philanthropic propositions’.²⁹ These elements serve as strategies or a system of relations that support and are supported by specific types of knowledge. For Foucault, institutional technologies consist of the ‘practical techniques used to practice that power/knowledge’.³⁰ In the case of landscape architecture these practical techniques consist of tangible artefacts, such as the media techniques through which representations are communicated. Finally, the rhetorical organization of discourse can be uncovered by studying key themes, complexity, contradictions, the invisible as well as the visible, and their claims to truth.³¹ For this study, Rose’s three aspects of visual discourse and Foucault’s definitions of those aspects are conceptualized as three components of a visual discourse analysis: the arrangement of the participatory process (apparatus), the interactivity provided by the medium on which the image is presented (technology), and the visual rhetoric of the image determined by the validity and readability of the design representation (rhetorical organization) (Fig. 2).

In a typical communicative setting of a participatory planning and design process (Fig. 3), these components always occur simultaneously. As will be explained in the following section, the three components of visual discourse are used to structure the analytical framework of the visual discourse analysis conducted in this study.

**Components of visual discourse**

**Arrangement of the participatory process**

In the context of visual discourse, the level of participatory arrangement ‘sets the stage’ for visual design representations to function. In the course of participatory processes, certain forms of knowledge become more dominant at the cost of others.³² Landscape planners and designers, as facilitators, have the ability and opportunity to govern the extent to which these knowledge hierarchies are reproduced and made productive. For example, planners and designers are often able to choose who to invite, in what capacity, at specific moments in the design process. Such practices can be called ‘truth regimes’, which are made possible by the ‘invention and assemblage of particular apparatuses and devices for exercising power and intervening upon certain problems’.³³ For landscape planners and designers these apparatuses could consist of the physical and social surroundings of design sessions they can choose, such as a community centre, design office or municipal hall. As Foucault states, an apparatus can also consist of regulative powers.³⁴ In our case, such powers consist of specific principles set by a commissioner, bill of law or a design competition brief that govern the degree of participation. Planners and designers attribute a certain role, level of influence and authority to the participants they invite. The role of ‘expert’ or ‘layman’ can then be internalized by the participant depending on how he or she is involved, addressed and valued.³⁵ A certain control over the level of participation is thus exercised through many different tactics and strategies that ensure a legitimate mandate for the process organizers to eventually act upon the outcomes of the processes they set in motion.

**Interactivity of the medium**

All design representations that are produced during participatory processes can be powerful tools that enable and disable certain knowledge, forms of power and visions of the future.³⁶ Landscape planners and designers are able to make this intersection of power and knowledge happen through the interactivity of the media they use and control. Different forms of power need to be enabled to come into play because some discourses are more dominant than others, and the medium that planners and designers use has consequences for the forms of power it enables. For example, a paper sketch offers a type of adaptability of design content that a projector screen cannot. At the same time, accessibility, or the lack thereof, might allow for the reproduction of local conflicts or other inequalities in local communities.³⁷ For example, although a paper sketch could invite people to draw, this does not necessarily mean people are able to draw, be it in terms of drawing ability or level of confidence.
The ability to share and construct knowledge is a form of power. According to Foucault, power consists of any type of ‘force’—expertise, technical skill, political influence or charisma, for example—that shapes our knowledge of the world. Different forms of power enable different participants to share their knowledge and expertise during planning and design processes. As power shapes the knowledge that is embedded in landscape designs, it also depends on that knowledge to function. This means that the visual discourse expressed through the interactivity of media can exercise control over the message of the image, and therefore the extent in which knowledge can be shared and by whom, how that knowledge is materialized, and what kind of authority that knowledge has.

Visual rhetoric
For the analysis of visual rhetoric, we draw on the work of French philosopher and semiotician Roland Barthes. According to Barthes, images contain a visual rhetoric that represents their content with a distinct normativity that is again obscured by the presumed objectivity of their appearance. A photograph, for example, seems to represent reality in an objective way even though it often consists of a subjective composition of light, objects, framing, focal length, etcetera. Applied to our conceptualization of visual discourse, this implies, for example, that the way planners and designers visualize design ideas—through the use of style, composition, colour scheme, text, etcetera—expresses a certain subjectivity in an ‘objective’ way. Barthes identifies three messages or layers in a visual rhetoric: linguistic, denotative, and connotative. The linguistic layer consists of textual elements that serve as anchorage and relay. The anchorage of design representations describes the content of the design by means of a title, subscript and captions. It directs the audience to specific elements of the image at the ‘correct’ level of perception. Textual relay points towards a direction or order of succession in which images or parts of images are perceived, such as the arrangement of text and images on a poster presentation.

The denotative layer is defined by the visual elements that make up an image and by the real-life objects that these elements signify or represent. Those objects are ‘coded’ in a certain way because an image cannot be a life-size depiction of a current or future reality. Planners and designers use representational codes, such as colour, perspective and scale to depict that reality to a certain extent. The use of representational codes implies a simplification and therefore a selection and highlighting of certain aspects of a design. Each type of image represents, simplifies and selects its content in its own way. For example, the cross section of a dike shows very specific technical aspects of a flood defence structure through a visual abstraction coupled with mathematical information, while a photomontage only shows the visual impression of a dike in its surrounding landscape without going much into technical details. The more ‘realistic’ an image looks, the fewer representational codes of simplification, selection and technique are observed, and the more direct its relation is to that which it seeks to represent. Moreover, visualization techniques such as drawing by hand or on a computer bind the denotative meaning of a technique to an image. For example, if a dike is depicted by both a photomontage and a GIS map, the technique of representation ensures that the denotative meaning of those images differs. While a photograph (or in our case: a photomontage) could denote a ‘natural being-there of objects’, a sophisticated GIS map could grant the depicted information a geographical and even mathematical credibility. In these cases, the denotative codes of the visualization techniques naturalize their symbolic meanings by depicting a designed future dike structure photorealistically (photomontage) or by presenting information about that structure with authoritarian accuracy (GIS map).

The connotative layer of an image consists of the possible interpretations of ambiguous denotative codes. It could be seen as a kind of association provoked by the denotative codes. In this sense, visual rhetoric consists of the specific composition or interplay of visual elements that evokes additional meanings that do not necessarily align with the described denotative meaning. For example, the use of specific styles or techniques and the depiction of weather conditions influences the connotations attached to a design representation. This connotative ‘surplus’ can create a discontinuity between the written descriptions and explanations of a design’s qual-

![Arrangement of participatory process](image adapted from MIT-CAU et al., 2014)
ities and the visual elements that make up the design image. A study of visual rhetoric, then, is achieved by interpreting the connotative layer of an image by means of its anchorage and by relating the acts of representation, simplification, selection and the authority of its visualization technique back to its denotative layer.

**Analytical framework and method**

The three components of visual discourse—the arrangement of the participatory process, the interactivity of the medium and the visual rhetoric of the images—are operationalized into the analytical categories depicted in Table 1. These categories constitute the analytical framework used to study examples of different participatory settings that occurred during the planning and design processes of the Rebuild by Design competition and several examples of the visual materials produced during these processes.

Rebuild by Design

In its mission statement, the Rebuild by Design organization advocated a holistic and inclusive perspective on the planning and design of resilient flood defence solutions. This ensured that the design processes that took place in New York in the context of this competition were explicitly participatory and involved a diverse range of experts and participants. The project submissions resulted in a wealth of written and visual materials that described the organization and outcomes of the design processes. The different project consortia consisted of planners, designers, engineers, hydrologists and geologists, who were required to establish productive relationships with local citizens, businesses, NGOs, politicians and legislators through participatory approaches to attain strong public and political support for the implementation of the process outcomes.

For this paper, three of the winning proposals of the Rebuild by Design competition (Table 2) serve as case studies. The selection of projects is based on the availability of image materials and the availability of interview respondents. The MIT-CAU and Interboro projects were selected on the basis of the comparable scale of their project area (regional), difference in flood risk type (tidal and river, respectively), and accessibility of participants (Dutch design firms and water experts). Together, these two projects conducted over 90 meetings, including community meetings, workshops, presentations and other outreach events. During a three-week fieldwork period in New York, the OMA project was added to the selection. This project was added because several respondents mentioned it as an example of a project representing intensive stakeholder collaboration with, during the fieldwork period, ongoing meetings and other efforts of public outreach. Being situated in the city of Hoboken, NJ, this project also provided complementary design material with an urban focus.

Each project team provided a detailed report of their design process as part of the submission for the competition. Each report contains a detailed analysis of the project area, an actor analysis of important stakeholders, an overview of the workshops and sessions that were organized, design concepts of proposed design solutions as well as more concrete plans for phasing and implementation. Besides having access to these documents, we conducted sixteen interviews between 2015 and 2016, with landscape architects and urban designers, a city planner, an organizer of public outreach processes, a real-estate developer, a leader of an environmental protection agency, academic experts and other stakeholders of the project teams of the three embedded cases. These interviews were transcribed, coded and analyzed using Atlas.TI software.

<table>
<thead>
<tr>
<th>Visual discourse component</th>
<th>Analytical categories</th>
<th>Examples (…)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arrangement of participatory process</td>
<td>Physical setting</td>
<td>Indoors/Outdoors</td>
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<tr>
<td></td>
<td></td>
<td>Design office</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Municipal hall</td>
</tr>
<tr>
<td>Social setting</td>
<td>Design workshop</td>
<td></td>
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<tr>
<td></td>
<td>Public presentation</td>
<td></td>
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<tr>
<td>Regulative powers</td>
<td>Design brief</td>
<td></td>
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<tr>
<td></td>
<td>Bill of law</td>
<td></td>
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<tr>
<td>Interactivity of medium</td>
<td>Accessibility of design content</td>
<td>Visual literacy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Technical skills</td>
</tr>
<tr>
<td>Adaptability of design content</td>
<td>Projceter screen (passive)</td>
<td>Paper sketch (active)</td>
</tr>
<tr>
<td>Visual rhetoric of image</td>
<td>Anchorage and relay</td>
<td>Title</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Subscript</td>
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<tr>
<td></td>
<td></td>
<td>Legend</td>
</tr>
<tr>
<td>Denotation</td>
<td>Colour scheme</td>
<td></td>
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<tr>
<td></td>
<td>Perspective</td>
<td></td>
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<tr>
<td></td>
<td>Visual technique</td>
<td></td>
</tr>
<tr>
<td>Connotation</td>
<td>Weather conditions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Skimming light</td>
<td></td>
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<tr>
<td></td>
<td>Ethereal effects</td>
<td></td>
</tr>
</tbody>
</table>

**Table 1** Visual discourse analytical framework

<table>
<thead>
<tr>
<th>Project team</th>
<th>Project title</th>
<th>Project location</th>
</tr>
</thead>
<tbody>
<tr>
<td>OMA</td>
<td>Resist, Delay, Store, Discharge</td>
<td>Hoboken, NJ</td>
</tr>
<tr>
<td>MIT-CAU+ZUS+URBANISTEN</td>
<td>The New Meadowlands</td>
<td>Meadowlands, NJ</td>
</tr>
<tr>
<td>Interboro</td>
<td>Living with the Bay</td>
<td>Long Island, NY</td>
</tr>
</tbody>
</table>

**Table 2** Overview of Rebuild by Design proposals used for visual discourse analysis
Participation, interactivity and rhetoric

This section presents examples from the selected projects. We presuppose that the designers of each project have purposefully modulated the arrangement of participation, the interactivity of the medium or the visual rhetoric of the image, in order to facilitate the planning and design process in a certain way. Three distinct phases or moments in the design competition process are distinguished: the analytical stage, the codesign stage, and the final presentation stage. Each project went through the same phases, but a selection has been made of particular phases during specific projects. This selection is based on the availability of the interviewees that were involved during the particular phases. This means that the following examples are illustrative of specific phases, but are not meant to be a representative account of the complete design process.

The data inventory techniques that were used by the Hoboken project team illustrate the analytical stage of the design competition. The participatory drawing techniques used by the Long Island project team describe the codesigning stage. Finally, the visual rhetoric of the Hoboken project and the poster strategy used by the Meadowlands project team exemplify the final presentation stage of the design proposals.

Inventory analysis: Hoboken, NJ

In the analysis and inventory stage of the planning and design processes, the design teams aimed to gather information on their project area, make an inventory of local knowledge and explore potential design solutions. In its initial phase, the participatory process of the Hoboken project focused on education:

**Member of the Community Advisory Group:**

Consider an ‘awareness, education, and engagement’ spectrum . . . at this whole end of the spectrum of awareness, people don’t understand the problem, therefore they cannot even envision a solution, along that spectrum, once you get people aware, you need to try and engage them in something and that’s where participatory design comes in.

In service of that educational process, the project team came up with several techniques to facilitate participation. For instance, the team developed a pamphlet (Fig. 4) containing real-life examples of statistically relevant events, in service of raising flood risk awareness:

**Lead architect:**

People were making assumptions that Sandy is a 1 in 100 years event, so they don’t have to worry for another 100 years . . . but a 100 year flood is about five times more likely as getting a flush in poker. . . . Tying it to a mortgage, in terms of buying a house, which is an event that most people go through and it has a time scale within a kind of single life time . . . what is the frequency of the said event during that kind of time period? . . . We felt it helpful, both in our work with stakeholders but also internally . . . being able to quantify risk and being able to monetize it to a degree people could understand.

A pamphlet is a passive medium, it presents information as facts to be perceived and remembered by its audience. In this case, it was used to establish a baseline knowledge level to increase people’s awareness of flood risk. Once the relevant stakeholders had been made aware of the severity of the risks they were dealing with, it was time to start thinking in terms of possible solutions. An educational game was introduced to help people understand the possibilities for combining different flood defence options, as the designer from OMA further explains: ‘A game where people had 10 kinds of tokens to invest in resist, delay, store, and discharge measures so they can understand the trade-offs between the different components.’

This kind of game uses an active medium with no preferred goal, there is no ‘one best way’ of distributing tokens. Rather, the goal was to make people understand the complexities and interdependencies of the different strategies that were proposed. Once a shared understanding of the risks, problems, and the feasibility of potential solutions was established, the team attempted to engage with a larger public group to explore the attainment of public support for the different design options:
Rebuild by Design assistant organizer:
During the public comment period you had comment cards that were already stamped and addressed, so you just have to write what you want, tape them closed, and send them, you just put them in the mail.

Such a ‘take home’ approach establishes a form of interactivity and participation that is different from regular voting procedures. People are able to think, discuss and evaluate design ideas at home and at their own leisure, without the necessity of providing immediate feedback, which is sometimes resisting and conservative.

Codesigning on paper: Long Island, NY
In the codesigning stage of the participatory process, local stakeholders and designers were meant to collaborate in order to iteratively calibrate design concepts to the preferences of project participants. Workshops in which designers presented their initial ideas were followed by breakout sessions to adjust and improve those ideas. The medium used, and the interactive technology related to that medium, influences the ‘truth status’ of the content that is created during such participatory workshops. For instance, one of the lead designers of the Long Island project team explains how drawing on paper is preferred to GIS:

Lead designer:
You should start by drawing. That way the whole situation is not so threatening and more related to the origin of the ideas. If you use a digital Maptable to draw a line, that line is immediately made part of a GIS; it becomes exact. But if I cover up that Maptable with transparent paper, use a big marker, and draw a line across 20 houses, it doesn’t matter because it’s just a sketch.

Not only the perceived legitimacy of the representation was a factor for them to opt for an analogue medium, the mobility of digital technologies played an important role as well:

Using GIS, that line becomes part of a model. You can make a handout and take it home with you. In the case of a sketch you can remove the underlying map and all that remains is an arrow and a stream, and people will agree: ‘Yeah that seems about right.’ It’s not threatening.

A paper sketch allows the meaning of its content to be defined within a particular participatory setting. In this case the content entailed preliminary ideas that were part of an ongoing design process and that were not meant to leave the room. This aspect of contextualized meaning intertwines with the visual rhetoric of a paper sketch. For instance, the textual anchorage of a paper sketch, which should denote the sketch’s meaning, is highly situational; often there is no title or legend added to the sketch. Instead, the meaning of a sketch is shared between the participants that were present when it was created: ‘If you’re part of the creation process and the act of drawing, you remember that the next time you’re there.’

During a participatory drawing session, the ‘connotative surplus’ is kept to a minimum since each point, line or shape denotes that which is agreed upon at the moment it’s being drawn. The rhetoric of a sketch thus functions by virtue of its interactivity and participatory setting. A different audience would be left with no clear instructions to decode the image if such a sketch were to be transported outside its original context without the necessary anchorage to denote its meaning. The example of Figure 5 illustrates how a sketch without anchorage is ‘transported’ into the project report by adding a caption, a base map for orientation, and a colour and texture scheme. The caption is necessary to provide anchorage for the elements that represent sediment management processes.

Presentation: Hoboken rhetoric
The design ideas that are part of the Hoboken project consist of a diverse collection of proposed flood adaptation initiatives located throughout the city. The team came up with a strategy to ‘resist, delay, store, discharge’ in need of a rhetoric with which to align a variety of design interventions. The lead architect of the Hoboken project explains:

The most important thing was creating a strategy that was well communicated and that served as a kind of umbrella or framework for the city to not only push forward with our [the design office’s] recommendations, but [also with] a host of other initiatives that they [the city] were doing under resiliency.

This strategy constitutes the main anchorage with which the different design concepts are categorized, either as barrier [resist], as increased permeability of the street surface [delay], or as catchment [store] and transportation devices [discharge]. This anchorage is used throughout the reports and presentations of the design team and connects a variety of images of different visual styles and techniques (Fig. 6). Such a comprehensive strategy appropriates the denotative elements in the images in terms of their flood defence functionality. The top image (a) denotes the locations where this functionality is needed, the middle image (b) shows how such functionality can be visually embedded in the urban landscape, while the bottom image (c) denotes the relative contribution of each principle to the attainment of a desired level of flood safety.

A consistent anchorage creates consistency at a conceptual level, for instance ‘Resist, Delay, Store, Discharge’ in Figure 6. This figure, however, is composed of several images that differ in visual form, creating a ‘connotative surplus’ of many non-comparable visual elements. In the absence of proper additional anchorage, this inadvertently leads to an increased variability of connotative messages. For example, the middle image (b) provides impressions of four types of interventions, yet not all of the proposed interventions at the locations that are depicted on the map will share those specific spatial characteristics. The design proposal, for instance, explains that the interventions of the ‘store’ category consist primarily of underground pipes and valves that retain and transport excess water towards its ‘discharge’ locations. However, based on the impression in the middle image of Figure 6, a connotative assumption could be that these wide,
green infrastructural elements will be placed throughout the city. Another connotative surplus could be created by the visual dominance of the ‘store’ measures in the top image (a). This visual dominance could connote a relatively high importance of ‘store’ measurements. However, looking at the bottom schematic drawing (c), this visual dominance is not reflected in the relative importance of the ‘store’ measures for reducing the chances of a flood in Hoboken.

Presentation: Meadowlands poster strategy
An ‘open market’ was organized on the eve of the design competition’s finale. At this stage, the design concepts were finalized, the materials were printed and the presentations for the jury were prepared. The participatory arrangement of this event was meant to offer the general public, the other design teams and the Rebuild by Design organizers a first impression of the various projects. Simultaneously, it enabled the design teams to gauge the first reactions of a potentially wider audience. One of the designers of the Meadowlands team describes the physical and social setting as follows:

The day before the [final] presentation we had an open market. We could present our ideas, or ask questions . . . The ten proposal boards were in a big room, with a lot of people coming in, with some drinks, a nice environment. We had to ‘catch attention’.

The participatory arrangement at this particular moment materialized in the form of an exhibition wherein the goal of the teams’ presentations was to catch people’s attention and to promote and explain the design proposals. The poster boards (for example Fig. 7) themselves provided a low level of interactivity; the content depicted by the images was not adaptable by the audience, and the accessibility of the posters was fixed in the setting of an exhibition. This means that the poster boards were not interactive in the sense that the public could add or adjust their contents.

The Meadowlands team attuned their medium and visual rhetoric to the type of interaction that the ‘open market’ setting had to offer. Besides a poster board, the team also used an abstract scale model and a comprehensive ‘coffee table book’ that contained a detailed report of the whole planning and design process. This combination of media provided a dynamic between the designers and their audience that exceeded the static setting of the exhibition, as one of the designers explained:
We made a poster board, containing a cross section, with the three concepts of protect, connect and grow. The idea behind it being that it was more or less the complete idea of the plan but simplified. . . . Many people were looking at the boards, the book, and the model, and they said: ‘Do you have something in between? Not as abstract as this [model], but not as dense as this [book]?’ And I said: ‘I am the one to talk to.’

The Meadowlands proposals attracted a considerable crowd compared with the other design teams because of this combination of media. According to one of the designers, the interactivity that was achieved—the fact that the audience was triggered to engage in conversation with the designers—enabled the project team to explain their ideas face to face:

Our presentation drew a large crowd. People saw this beautiful rendering, and wanted to know what’s happening. They came up to us with questions, and it was very nice to explain to people what the plan was about. And that was really easy to do: taking them through the whole story using the scale model for reference.

The visual rhetoric used for the poster board served a specific purpose, especially in relation to that particular medium. As the designer from the Meadowlands project further explains:

We didn’t have to explain what there is to see on these tiny images or graphs, like it is the case with these other posters [See Figure 8 for reference]. And the thing that also worked was that this style combined the technical story with the attractive story. We actually tried to turn it into a ‘happy’ landscape, where people could envision themselves jogging, etcetera. And it worked.

The textual anchorage encompasses the design strategy and consists of three words and a text box in the middle of the poster that summarizes the main ideas. A relay is established through font size: the strategy is readable from a distance while the text box requires a closer look. However, most of the anchorage is provided verbally by the designers while they engage in conversation with their audience. This dialogue model allows the denotative meaning of the image to become fluid: the designers can add or adjust the ‘verbal’ anchorage to the conversation they are having. In this way, the designers consciously manipulated the social setting of the presentation event by increasing the interactivity of their representation.

However, if a verbal dimension does not exist to anchor a project, the connection between the denotation of the image and the medium on which it is presented is crucial. For instance, when the poster boards and the project reports are distributed through other communication channels such as the Internet, the project report becomes the sole anchorage that explains the ‘verbal’ anchorage to the conversation they are having. This dialogue model allows the designers that were interviewed were able to recognize the effect and use of their visual representations, a triangulation of those effects as they were perceived by their audiences could therefore provide more valuable insights into the reasons why certain strategies work better than others.

Additionally, it is important to note that communication occurs through a combination of different modes, such as speech, gesture and written text. The creation of a visual representation with the intent of using that image in different contexts entails a transposition of multimodal content into a single self-explanatory image. For example, a codesign workshop results in design sketches whose meanings are at least partly agreed upon by different participants. Proper anchorage and relay, such as a title, a legend and a date, are necessary for ‘grounding’ the meaning of the content of the sketch. However, that anchorage and relay can never fully cover the intricacies of a participatory design session. Since design representations always function in a multimodal context, the cause of a possible discursive effect can never be traced back to just one [visual] representation. So even though the discursive functions of design images are important tools of
Long Island’s system of “home rule” creates a barrier to the kind of regional collaboration required for addressing environmental challenges. NGOs, Non-Profits, and Community Groups have come together with Academic partners and supporters, as exemplified by the For Living with the Bay project led by The Interboro Team. Nassau County is one of two counties in Long Island, and it is in this context that the South Shore’s bays are being considered. The bays are great in the first place, but how do we ensure that the next big storm won’t be as destructive as Sandy was? Urbanization has led to a smaller bay with less space for sedimentation and hence, fewer marshes. This not only affects the biodiversity of species. But the marshes are threatened by pollution, which directly threatens the quality of the water and the ecological health of the area.

On the bayside people live ‘first class’, but further away from the water, the conditions are vastly different. Sandy hit, a problem that was brought into sharp focus immediately. Sandy-affected regions in Nassau County were flooded or destroyed by Sandy. Storm Surge flooding and creates temporary housing. But before this storm, the Sandy-affected region had a high rental vacancy rate, and one of the challenges was to ensure that these communities were not left vulnerable to future storms. Sandy-affected regions face challenges of flooding, sedimentation, and pollution, which directly threaten the ecological quality of the bay. Urbanization and pollution, which are exacerbated by flood events, are major sources of pollution, which directly threaten the quality of the water and the ecological health of the area.

We think there is a better way to live with the bay! How can we work together to create sustainable solutions? We propose a multi-faceted approach to addressing these issues, working with regional partners and stakeholders. Creating a resilient coastline that can adapt to future climate changes is key, in addition to maintaining and restoring natural ecosystems. This approach involves developing smarter strategies for housing, green infrastructure, and water management.

**PROJECT ELEMENTS:**
- **PROTECT:** A PROTECTIVE SYSTEM FOR THE ENTIRE BARRIER ISLAND
- **CONNECT:** GREENER, SAFER DOWNTOWNS
- **GROW!** SUSTAINABLE DEVELOPMENT AND INFRASTRUCTURE

**DEVELOP SMART TOWNS, GREEN INFRASTRUCTURE:**
- **PRODUCT:** Integrated Dike, Compartmentalization, STRATEGY
- **PRODUCT:** Development to more urban typologies. New residential development will meet here to enjoy parks and recreation.
- **PRODUCT:** maximizing the riverbed.
- **PRODUCT:** The bioswale as an amenity for the street, improving its safety regimes and create spectacle from up close.

**Guiding Principles**
- **A PROTECTIVE SYSTEM FOR THE ENTIRE BARRIER ISLAND**
- **PROTECTION FOR THE BAY:** A PROTECTIVE SYSTEM FOR THE ENTIRE BARRIER ISLAND
- **CLOSED BAY**
- **PROJECT ELEMENTS:**
  - **PROTECT:** A PROTECTIVE SYSTEM FOR THE ENTIRE BARRIER ISLAND
  - **CONNECT:** GREENER, SAFER DOWNTOWNS
  - **GROW!** SUSTAINABLE DEVELOPMENT AND INFRASTRUCTURE

**Figure 7** Poster boards of the Meadowlands project team

**Figure 8** Poster boards of the Long Island project proposal
power, a broader multimodal study of how these images are created and subsequently used could be useful for arriving at a more complete understanding of the communication processes that occur during participatory planning and design projects.

Conclusion
This paper illustrates that planners and designers are able to use the three components of visual discourse—the arrangement of the participatory process, the interactivity of the medium and the visual rhetoric of the image—in at least two ways. A first strategy entails the alignment of the participatory setting, media interactivity and rhetoric of images with the expectations of participants, to assure specific forms of knowledge construction, evaluations of the process and validity of the designs that are produced. An example of this strategy is the use of analogue drawing techniques during codesign sessions by the Long Island project team. The second strategy entails changing the expectations of participants through the use of specific participatory settings, media interactivity and visual rhetoric, to unite participants’ preferences with the anticipated vision or result of the process facilitators. Examples of this strategy are the flood risk pamphlet and interactive game of the Hoboken team that aimed to increase the awareness and understanding of flood issues by local participants, but also the unifying rhetoric of ‘resist, delay, store, discharge’ to integrate existing municipal initiatives into new design ideas.

Visual discourse is consciously and unconsciously applied whenever design visualizations are created for a specific purpose with a specific audience in mind. Future research could be focused on purposefully creating design representations and subsequently monitoring their use and reception over time. Doing so could increase our understanding of the influence of specific components of visual discourse on specific audiences. Locating discursive power within the production of visual landscape design representations during participatory planning and design processes can therefore enhance awareness among landscape planners and designers of discursive power in their work. In turn, the discursive qualities of design representations can be used more productively in service of participation by minimizing miscommunication and consequently ensuring a broader inventory of local and expert knowledge and a more widely supported codesign process.

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