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Knowing your audience: the contingency of landscape design interpretations

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ABSTRACT
To address visual communication issues in landscape planning and design processes, an analytical framework that enables the study and possible anticipation of the interpretation of visual design representations is presented here. This framework consists of a hybrid theory of Peircean social semiotics and Laclaudian post-foundational discourse analysis (PDA). The semiotics of Peirce, through the concept of the interpretant, enable the conceptualization of the discourses that make up the socio-political contexts of design projects as so-called ‘interpretive habits’. This framework is demonstrated by partly reconstructing the socio-political context of Rebuild by Design, a design competition organized in the wake of hurricane Sandy in New York. It is suggested through this demonstration that the sign systems and discursive networks that influence the interpretations of design images by different stakeholders can be partially uncovered during the design process itself. By recognizing these interpretive habits during specific phases of the design process, planners and designers could potentially better anticipate the productive and counter-productive interpretations of their design representations.

Introduction
Landscapes and urban landscapes are the result of collective processes where multiple perspectives and perceptions engage in conflict and negotiation (Gailing and Leibenath 2015; van der Stoep, Aarts, and van den Brink 2016; Duineveld, Van Assche, and Beunen 2017). The analysis of these discursive struggles is imperative to understanding how urban landscapes are constructed through participatory planning and design processes. The increasing interdisciplinarity of participatory planning and design projects (Thering and Chanse 2011; van den Brink and Bruns 2014) makes the socio-political context within which planning and design professionals operate more complex (de Jonge 2009). Consequentially, the outcomes of such participatory processes are not always interpreted and evaluated in the way planners and designers expect (Tobias, Buser, and Buchecker 2015; Fleming 2016).

In an attempt to improve understanding and reduce the unpredictability of interpretation, the agency of plans and designs in landscape planning and design processes is becoming
an increasingly important object of critical study (van Dijk 2011; Kallus 2016; Raaphorst et al. 2017). Furthermore, planning and design visualizations are ‘being produced with new techniques and by new actors, within increasingly complex scopic regimes’ (Swords and Liu 2015, 1235). As a result, ‘with images you do not know which fraction of the impression each viewer chooses or is coerced into seeing’ (Dorling and Hennig 2015, 1346). Several urban design scholars have engaged with (social) semiotic theory to study the role of such images in processes of place-making (Biddulph 2014), historical significance (Van Assche et al. 2012), the power of planning imagery and cartography to influence planning decisions (Pojani and Stead 2016), and even the creation of iconic projects in the building industry (Sternberg 1996).

However, it is still unclear how the divergent interpretations of planning and design representations by different stakeholders can be studied from a semiotic perspective and to what extent these interpretations can be anticipated. The research question central to this paper is therefore as follows: how are the interpretations of landscape design representations constructed by different stakeholders and to what extent can this be anticipated? To answer this question, two important ‘research objects’ are defined: the process of interpreting visual design representations, and the socio-political contexts of participatory planning and design projects wherein these interpretations are constructed.

The process of interpretation, in Peircean semiotic theory, is conceptualized as the ‘actualization of contextualized rules’ (Gaspard 2016, 358). The Peircean concept of the ‘interpretant’ will be used to understand how these contextualized rules form ‘interpretive habits’ that guide interpretation (Peirce 1958). The socio-political context of planning and design processes is defined as a discursive sign system or network that ensures the ‘control of both the production and interpretation of discursive acts’ (Gaspard 2015, 554). Discursive networks are formed through semiotic relationships between signs that hold a particular significance for someone (Laclau and Mouffe 2014; Marttila 2016).

The following section describes how Peircean semiotics and Laclaudian discourse theory can be combined to perform a ‘social semiotic post-foundational discourse analysis’ (SSPDA). To demonstrate the applicability and value of this method the SSPDA is applied to a participatory planning and design process. This process took place in the greater metropolitan area of New York as part of the regional design competition Rebuild by Design (RbD). This analysis demonstrates how the interpretation of design representations is influenced by discursive networks that constitute the socio-political context of participatory planning and design processes. The question of whether the interpretations of landscape design representations can be anticipated through such an analysis is discussed in the concluding section.

**Semiosis, the interpretant and relational ontologies**

Design representations can be defined as complex sign-systems that contain a large number of signs within themselves (Raaphorst et al. forthcoming). Different sign components, i.e., the visual characteristics and content of landscape design representations, but also the socio-political context in which they are used strongly influence the creation and interpretation of landscape designs (Van Assche et al. 2012). The communication of design ideas through this creation and interpretation of landscape design representations can be defined as a triadic process of semiosis (Raaphorst et al. 2017). Eco (1976), following Peirce, defines
triadic semiosis as an action or influence that involves three sign components: a representamen, its object and its interpretant. Together, these components enable a sign-function that facilitates the process of ‘meaning making’ through the interpretation of a representation of an object by someone. The cross-section of a dike, for example, represents the elevation profile of a proposed flood intervention, and can be interpreted by an engineer in terms of structural integrity.

As argued by Gaspard (2015, 2016), triadic Peircean semiotics show great potential for analyzing discourse if ‘discourse analysis’ is defined as an inquiry into the production and interpretation mechanisms of meaning in contemporary society. This potential lies in the ‘theory of Interpretants and the recognition of the role of interpretative habits regulating their adequate selection’ (Gaspard 2015, 554). To clarify, the interpretant is not a person or interpreter. Rather, it is a sign ‘within the mind’ that associates the object of one sign with the object of another sign (Eco 1976). The interpretant is a concept that enables us to think of meaning as something that is not fixed, but rather as an ‘effect of signs dependent on a context’ (Gaspard 2015, 553) and as a ‘collateral experience’ or ‘previous acquaintance with what the sign denotes’ (Peirce, as cited in Gaspard 2015, 557). Interpreting a sign in context means that one magnifies and neglects specific possible interpretants depending on the situation (Eco 1976). For example, the interpretation of a cross-section by an engineer could lead from ‘structural integrity’ to flood safety norms, construction materials and building costs. A hydrologist might interpret that same image in terms of water flow capacity, sedimentation patterns and erosion problems. This selection of possible interpretants, tailored to specific contexts, is also called an interpretive habit. A sign is never interpreted without the habit necessary for its understanding, and it is the discursive context of the sign that determines how these habits are formed (Gaspard 2015).

In giving such a prominent role to the concept of the interpretant, the appropriate type of discourse analysis must be ontologically compatible with the Peircean definition of the sign and its context-driven interpretative logic. Furthermore, to render visible the unknown discursive context at work it is necessary to study local planning and design contexts in an open, exploratory way. The relational ontology of post-foundational discourse analysis (PDA) (Marttila 2016) enables such an exploratory study from a Peircean perspective. Post-foundational discourse theory underlines it is impossible to close any context along pre-defined structures. In post-foundational terms, ‘discourse’ can refer to ‘any particular relational configuration of meaning-conveying objects ... in which objects appear and are related to each other, and which constitutes the meaning ... of these objects’ (Marttila 2016, 155). This relational ontology makes clear that discourse can never be grounded on a stable foundation and does not signify a higher objectivity (Cederström and Spicer 2013). Instead, the ‘foundation’ of discourse remains permanently contingent (Glynos and Howard 2007). This contingency means that discourses revolve around affective forces that sustain or suppress them. A social semiotic perspective conceptualizes these affective forces in terms of the interpretant, i.e., a process of infinite semiosis by specific actors and institutions that forms the interpretive habits of those actors. The study of habits, as structures that depend on evolving sign-systems, allows one to anticipate the likelihood of particular interpretations to occur. Contingency thus embodies the realm of interpretations that could potentially occur rather than those that will occur with absolute certainty.

Besides their relational ontologies, Peircean social semiotics and post-foundational discourse theory are also compatible in their topology of semiotic relations and their explorative
research perspectives. In post-foundational discourse theory the relations between semiotic objects are based on shared commonalities, or relations of equivalence and representation (Laclau and Mouffe 2014). Recognizing the importance of this type of relations connects post-foundational discourse theory to Peircean triadic semiotics. Peirce distinguished specific functions of signification, i.e., relationships between signs and sign-components, based on different types of equivalence and representation (Eco 1976; Jappy 2013). The relation of representation enables the articulation of the ‘logic of commonality that binds discursive elements into a discourse’ (Marttila 2016, 127). This relation is semiotic in nature, and, following Peirce’s interpretant, can have an indexical, iconic and symbolic sign-function (Jappy 2013): indexical, if the sign-function is determined by causality; iconic, if the sign-function is determined by similarity; symbolic, if the sign-function is determined by conventional, cultural and emotional connotations. The contingency of interpretive habits entails the symbolic accumulation of indices (a non-linear sequence of events) and icons (qualities related to those events). Habits are formed when events, histories and experiences connect symbolically within a sign system or discursive network. From this perspective a reciprocal relationship is established: discourses determine the context for semiotic interactions, yet semiotic interactions and their typology also constitute the formation of discourses.

The explorative nature of PDA and Peircean social semiotics ensures that ‘the prescriptive character of the ontological and epistemological omniscience of the expert’ (Vannini 2007, 127) is rejected by embracing the interpretations of social actors in all their contradictions and complexity. Such an analytical strategy is necessary to do justice to the uniqueness of interpretations and to prevent mistaking a particular interpretation as the ‘truth’. As such, researchers can never just encounter objective facts for them to be described. One can only arrive at a discursively constructed reality based on theoretically and culturally shaped descriptions (Torfing 2005). Therefore, the objects of research are entities that the researcher actively constructs, rather than entities that are ‘ready to be identified and mapped’ (Jørgensen and Phillips 2002, 144). In short, ‘doing’ discourse analysis is not about describing a discourse, but about conceptualizing a discourse based on specified ontological premises. The analysis presented in this paper follows the relational ontology of post-foundational discourse analysis from a social semiotic perspective. The analytical framework for this social semiotic post-foundational discourse analysis (SSPDA) is presented in the following section.

**Analytical framework**

This section explains how four important concepts of post-foundational discourse theory, i.e., discursive identities, discursive relations, nodal points and discursive regimes (Marttila 2016), are operationalized for empirical analysis from a social semiotic perspective, and how these concepts can be studied using the technique of situational mapping.

Considered from the perspective of a relational ontology, signs or discursive elements, i.e., human and non-human meaning conveying objects, cannot possess inherent identities. The discursive identity, or the meaning of signs in relation to the discourse they are part of, varies according to the relations between elements. A map, a legislative document, a natural disaster, a mayor or a design firm are all discursive elements that can be attributed identities of value, agency and function within a discourse depending on the perspective of the inquiry. To conceptualize discursive identities in this way means to identify their ‘semiotic potential’
(van Leeuwen 2005) by constantly contextualizing all elements in relation to the perspectives relevant to the problem at hand. In doing so one does not describe what certain discursive elements mean, but what they could mean in relation to other elements.

If the discursive identities of discursive elements depend on their relations to other elements, these discursive relations between elements embody the typologies with which one element can be distinguished from another. These relational typologies of representation, i.e., icon, index, symbol and difference also lead to the identification of the elements that belong to the same discourse. Nodal points are formed through these relations of representation. Martilla, following the work of Laclau (Laclau and Mouffe 2014), defines a nodal point as a sign that ‘presents its particular features as the expression of something transcending its own particularity’ (Marttila 2016, 49). A nodal point constitutes a sign that is ‘bigger than itself’ and thus signifies a larger concept or sub-configuration of signs. From a social semiotic perspective, nodal points are signs that represent the shared identity of different discursive elements, e.g., a design intervention that encompasses knowledges from various disciplines, and that function as a conceptual instrument to regard these elements as one entity.

Discourses are rationalized by social actors that reason from the perspective of specific social roles, e.g., the ‘facilitator’ or the ‘project developer’. At the same time, social roles are ‘discursive positionalities’ rationalized by these discourses. For example, the discourse of a specific stakeholder configuration in a participatory planning and design workshop influences the social roles of participants. Institutions such as the ‘design firm’ or ‘state government’ are mediated and rationalized by certain social roles and ‘validate discourses by retaining their function as the epistemic foundation for institutional operations’ (Marttila 2016, 137). For this concept PDA draws on Foucaultian analysis and considers this three-way reciprocal relationship between discourses, social roles and institutions to constitute a discursive regime. Such a regime can thus be defined as the situated enactment, validation and perpetuation of a discourse, or set of discourses, by specific institutions through actors that are assigned specific social roles.

Situational mapping of discursive networks

Figure 1 illustrates where the concepts described in the section above are situated in a discursive network and how they relate to each other. The first step in analyzing such a discursive network is the problematization of the social status of the research object. This entails defining particular problems in a specific socio-political context with the intention of deconstructing the ‘taken-for-grantedness of the research object’ and the ‘presupposed self-evidential social meaningfulness’ of previous attempts to define the problem (Marttila 2016, 140). This enables the open coding of discursive elements that, seemingly irrelevant to the research object, might form important nodal points and discourses underlying the problem at hand. The outcome of this analysis is a deconstruction of a socio-political context whereby these dominant discourses can be made explicit in the second step of a post-foundational discourse analysis. This second step involves the reconstruction of the research object by rendering visible the discourse(s) that was responsible for the historical formations and modifications of our research project in the focused spatiotemporal context’ (Marttila 2016, 140). The emphasis on historical formation, i.e., the indexical sign-function of discursive elements and its linkages to other sign systems, provides insight into the formation of interpretive habits with which to analyze the contingency of interpretations.
Deconstructing and reconstructing discursive networks is done using the technique of situational mapping (Clarke 2003, 2005; Marttila 2016). Situational mapping is an analytical coding process that uses an incremental bottom-up strategy to identify the semiotic interactions in which the group of studied stakeholders partake. In the first step of deconstruction, the relevant discursive elements, or signs, are laid out descriptively in a rough situational map. In the second step of deconstruction the relations between these elements are identified in a relational map according to how they are described by the social actors who are part of the situation under study (first order hermeneutics).

In the first step of reconstruction the discourse analyst then reconstructs the relational map following a social semiotic relational ontology (second order hermeneutics). This distinction between first and second order hermeneutics is a key principle within post-foundational discourse analysis. Different elements are not necessarily part of the same discourse because social subjects think they have a similar meaning (first order); instead, they belong to the same discourse because they produce ‘mutually consistent sets of relations’ (Marttila 2016, 171) within networks of similarities (second order). Because it is the researcher that actively constructs these relations, a constant critical reflection on methodological and analytical choices is needed to remain coherent within the theoretical foundations of discourse analysis (Torfing 2005).

In the second step of reconstruction nodal points are identified by looking at relations of equivalence and representation between elements, i.e., iconic, indexical and symbolic relations. These relations are then conceptualized: relations of representation group a number of nodal points into a discourse while relations of difference and contrariety between grouped nodal points distinguish one discourse from another. The final step of reconstruction consists of determining which discursive regimes are at work by identifying the institutions and social roles that produce and sustain the discourses previously identified. Social roles and institutions are identified by looking at which discursive identities are assigned to them by social actors.

Figure 1. Example of a discursive network and its components. Source: author’s own figure, adapted from Marttila (2016) and Clarke (2005).
Rebuild by Design

Problematization

The analytical framework of a social semiotic post-foundational discourse analysis (SSPDA), as it is described in the previous paragraphs of this paper, is applied to the socio-political context of the interdisciplinary participatory planning and design processes that were part of the Rebuild by Design competition. Rebuild by Design (RbD) started as a regional design competition in response to hurricane Sandy that struck the greater metropolitan area of New York, USA, in 2012. Since then, RbD has developed into a regionally focused design approach for developing climate resilient areas all over the world (Ovink 2017). When the design competition started in 2013, one of its main premises was the recognition that a transdisciplinary participatory approach is needed to arrive at regionally applicable solutions that enjoy broad public and political support. Out of 10 finalists, six design proposals were awarded funding for implementation. The project teams were assembled from design and engineering companies from across the globe with a substantial presence from the Netherlands. The RbD competition has therefore been characterized as a means to bring the process and expertise of the holistic ‘Dutch’ way of designing multifunctional flood defence solutions on a regional scale to the United States (Rebuild by Design 2015).

In 2016, two years after competition funds had been awarded, some of the design proposals were met with unforeseen public and/or political resistance (Fleming 2016) whilst others were making great strides towards implementation. Despite a carefully documented public outreach process, the lack of progress in the implementation of several projects suggests there are socio-political discourses unknown to the design teams that influenced the interpretation of the design proposals and that prevented design ideas from being implemented.

Data

Interviews were conducted with team members, stakeholders and advisors of several RbD proposals to study whether counter-productive interpretations of the design proposals could be traced back to the socio-political contexts of those projects. The body of knowledge used for the analysis represents the ‘immediate social context’, i.e., 15 transcribed interviews with designers, policy makers, engineers, hydrologists, academic advisors and local stakeholders involved in four RbD project teams: the ‘New Meadowlands’, ‘Living with the Bay’, ‘Resist, Delay, Store, Discharge’ and the ‘Big U’ proposals. ‘General discourses’ i.e., written reports of both the design processes and the stakeholder meetings that took place during those processes, were used to contextualize the interviews. To demonstrate the SSPDA method the data consist of excerpts from interviews with a member of the environmental community, a project developer, an ecologist, an organizing member of a Citizens Advisory Group (CAG), an urban designer and two landscape architects. Other interviews, observations and literature have been used to contextualize the demonstrated example in the wider perspective of RbD as a design competition.

Interviewing technique

While collecting data for a social semiotic analysis the context of the research object is mapped in an explorative way to trace the formation of interpretive habits. This was done
by using an open-ended semi-structured interview strategy and by refraining from asking any closed questions. During these interviews, a ‘probing’ strategy has been used to attain socio-semiotic responses, i.e., detailed descriptions of how the respondents experienced the use of visual semiotic resources (Vannini 2007). These probes consisted of design visualizations as stimulus objects (Törrönen 2002). Törrönen (2002) distinguishes three ways in which stimulus objects might function semiotically during an interview: as a clue, as a micro-cosm and as a provoker. These three functions relate to the Peircean distinction of index, icon and symbol, respectively. As an index, the stimulus object is relational: what role did a certain design visualization play during the design process; was it an important product that helped to advance the process or did it cause a stagnation? As an icon, the stimulus object stands for a larger whole. It is representational: to what extent does this image reflect your expertise, do you recognize your input in these designs, in what way is this expressed visually? Finally, as a symbol, the stimulus object can be used to elicit strong personal reactions. What does this image mean to you personally? Are you content with the design or displeased by it? If so, why?

Co-constructing Rebuild by Design

In a step of first order hermeneutics, the section below describes the historical context of the Meadowlands area and its conservation laws as it is recalled by some of the project participants of the ‘New Meadowlands’ project proposal (MIT-CAU, ZUS, and Urbanisten 2014). In the successive section the identification of discursive elements and nodal points that constitute the most dominant discourses that are relevant to the interpretation of the design representations is described in a step of second order hermeneutics. This demonstrates how significant discourses that surround the RbD competition can be (re)constructed.

In describing the process of discourse analysis the same incremental bottom-up strategy is applied as during the analysis to illustrate that participants’ descriptions (first order hermeneutics) contain signs or discursive elements. These elements, depicted in italic, form sign systems and, through a typology of semiotic relations, are used to identify nodal points that represent the components that make up a larger discourse (second order hermeneutics).

The New Jersey Meadowlands is a 30.4 square-mile (79 km²) area that encompasses two counties, 14 municipalities and a large preserved wetland area. An historical precedent regarding large-scale development in the Meadowlands area has played a formative role in the attitude of the environmental community towards spatial development projects. This history has been described by an ecologist who is an assistant professor at a local university in the State of New Jersey and advisor to the project team. She recalls the story as follows:

Ecologist local university:

About 20 years ago, there was a big proposal for development, for a shopping mall, ... and it was an international developer ... They wanted to fill, about 300 acres of wetlands, ... It would have been the largest wetland fill east of the Mississippi River since the United States passed the Clean Water Act. ... And the environmental community just stood up and said: no more. And they were fighting against the New Jersey Meadowlands Commission, they (the Meadowlands Commission — KR) were a regional planning agency ... both those entities supported the project. The developer ... had strong connections in Washington. So there were a lot of very powerful people who wanted this to go forward, and after many years of fighting this through the courts ... they (the environmental community — KR) actually won the fight. And that land is preserved now in perpetuity.
It took the environmental community a lot of effort to fight against the project. Their efforts resulted in the solidification of the Clean Water Act, which permanently preserves the wetlands for their natural functions and is considered to be their crown achievement. The legislative power of the Clean Water Act and other environmental laws is recognized by the environmental community and developers alike. A local project developer, key stakeholder in the New Meadowlands design project team, explains:

Project developer:

Our environmental regulations preclude flood control today, pretty much. ... Petition wildlife, Clean Water Act, national resources ... let’s assume you have a blank cheque ... you can’t get these permits.

**Semiotic relations, nodal points and discursive regimes**

The first nodal point that can be identified is the ‘Clean Water Act’ (Figure 2). This sign symbolizes the history of resistance against urban development in the wetland areas by the environmental community and against the shopping mall development proposal in particular. It is also iconic of the other environmental laws at work, such as petition wildlife, that prevent any development in the wetlands. At the same time it serves as an index for the courts that ruled in favour of the law. However, that legislative power alone is not considered to be enough to preserve the wetlands. The chairman of a local environmental protection agency and key stakeholder in the New Meadowlands project emphasizes the need for the environmental community to safeguard the implementation of environmental laws:

![Figure 2. Formation of the 'Clean Water Act' nodal point. Source: author’s own figure.](image-url)
Environmental protectionist:

In the US we have laws that govern these kinds of things, that are not well enforced, unfortunately. If they were well enforced there would be no need for me. ... The Clean Water Act ... said all our waterways will be fishable and swimmable by 1985. Has not happened. And every time you turn around there is a new threat to the quality of the water, the availability of the water.

The political power-play surrounding the wetland fill project, i.e., the development being supported by the government and the improper enforcement of environmental laws since then, connects the Clean Water Act to another nodal point: ‘failing government’. For example, according to the interviewee, this nodal point is an index for the type of politicians involved in State governance and their career interests:

Environmental protectionist:

Politicians are the last that need to be making these decisions, ... their attention span is as long as their term of office. They want to make sure that nothing bad goes down on their watch.

This nodal point is also iconic for the recent changes in State administration and the merging of conflicting interests:

Environmental protectionist:

The New Jersey DEP (Department of Environmental Protection — KR) has an assisting commissioner for economic development embedded in the department, and that’s wrong. ... the Environmental Protection Department is supposed to be the ones that stand there and hold the line ... but now they are not allowed to deny permits if the assistant commissioner says that New Jersey needs this economic boost, so all bets are off. ... I knew right away when they announced that the grant (design competition funding — KR) would go to the DEP that we’re in trouble.

This resistance of the environmental community to any policy coming from the state government is an index for a number of recent activities undertaken by the current governor’s administration that have strong symbolic connotations of hostility for that environmental community:

Ecologist local university:

There was a claim, a 9 billion dollar claim that had gone through the courts for years, that the state of New Jersey was suing (anonymized international oil and gas company — KR), and the judge was ready to roll on a claim ... because they have been found guilty ... and the state settled for 215 million, against a 9 billion dollar claim, ... and this was in the middle of (current governor’s – KR) presidential run, so that just added fuel to the fire. They commissioned a study that they want to privatize a significant portion of Liberty State Park, where they have private concessions, so that’s very controversial, they disbanded their regional planning entity, the Meadowlands Commission.

The ‘failing government’ nodal point refers to that perceived hostility towards the environmental community in a broader sense, and connects to the nodal point ‘Clean Water Act’ indexically as an interpretive habit due to the lack of implementation of that law in practice. Together, the historical formation of these nodal points form the discourse of ‘environmental preservation’, depicted in Figure 3. This discourse and its habits constitute the contingency of how the designs presented during the planning and design process of the ‘New Meadowlands’ Rebuild by Design project can be interpreted. For example, a map (Figure 4) depicting a flood barrier in the preserved wetland triggered the following interpretation from the perspective of the environmental protectionist:

Environmental protectionist:

They showed us a map of where they wanted to place these 30 foot high barriers, where they were looking to go right through conservation land. ... we worked really hard to protect what’s left, one of the reasons being that that’s (conservation land – KR) our first line of defence against these kind of activities, these kind of disasters.
The discursive regime of ‘environmental preservation’ (Figure 3), linked to the map in Figure 4, is perpetuated by the environmental community in which one person identifies his own social role and institution, as well as the agency of actors attached to his organization:

Environmental protectionist:

Besides being the river keeper, I'm the chairman of the (anonymized) Conservation Trust, which owns several very large wetlands areas for conservation purposes. Nothing can ever be built there, it can only be managed as a natural area. They had the line for the dike drawn right through the property, without ever consulting me, or my board, or my attorney. ... I said: if you try I will tie you up in court, and it will be just long enough for them to forget that they wanted to do it.

The link with the judicial system and the resulting power to legally slow down development projects is iconic for the key measures the environmental community can take. Moreover, the social role of the environmental protectionist is not only an icon for being the chairman of an organization, it is also a symbol of the reason why this organization exists and how it is funded:

Environmental protectionist:

We have our foundational grants, philanthropic foundations, that fund us ... And then we have our donor base ... People have made donations, some of them in the thousands of dollars, some of them is in the 10 to 15 dollars. You know, it's public support. The public believes in what we do.

The analysis presented above illustrates how the discursive regime of environmental preservation, its social roles and institutions, nodal points and sign systems can be reconstructed using a social semiotic post-foundational discourse analysis. Environmental preservation, along with other significant discourses, forms a discursive network that surround(ed) the Rebuild by Design participation processes of which the following section provides a more abstract overview.

Figure 3. Formation of ‘Environmental Preservation’ discourse. Source: author’s own figure.
Discursive networks

Movements of self-organization through community engagement, such as the river keeper organization, form a nodal point habitually as an index for the need to protect interests that
are otherwise unprotected. The nodal point of ‘community engagement’ connects to another nodal point, i.e., ‘mandate’, through symbolic necessity: the nature of self-organization as the result of various NIMBY sentiments ensures the mandate of this type of community engagement. As one of the leading landscape architects from the BIG-U team explains:

Landscape architect from BIG-U team:

These community organizations are so active because that is the only way of preventing they’ll be disadvantaged. That is what a lot of these processes (Rebuild by Design community outreach – KR) are about as well: to make sure that especially corporations and wealthy white people don’t get the chance of displacing the more vulnerable communities.

Social vulnerability constitutes another important nodal point, as it ties into the aforementioned issue of governmental distrust:

Landscape architect local university:

Social segregation within New Jersey is according elevation: higher land is safe and desirable, lower land is unsafe. So you have low income groups on unsafe land... these folks have a massive distrust in the government and have the experience that the government does not care for them, but for the big investor.

These nodal points of community engagement, mandate and NIMBY form a discourse of ‘grassroots movements’ (Figure 5).

This sense of community connects once again to another dominant discourse: that of ‘local identity’. The urban developments proposed by the design teams, visualized in Photoshop images (Figure 6), are iconic for a degree of building density and gentrification that seems to contradict the symbolic idea that local inhabitants have of the area. A project developer, key stakeholder in the New Meadowlands project, explains:

Project developer:

People in New Jersey are afraid of density, even though it’s the densest populated state in the country, they saw apartment buildings, and when they see apartments they think: transients, young professionals, people that may move from NYC.

Despite the seemingly apparent ‘density’ of the Meadowlands area, this nodal point is symbolically connected to another nodal point, i.e., ‘small communities’. The Photoshop image showing new urban development along the proposed berm (Figure 6) triggered a counter-productive interpretation amongst several stakeholders. The environmental protectionist, key stakeholder in the New Meadowlands proposal, explains:

Environmental protectionist:

They had pictures of apartment buildings... all these high rises, and right now along that property line there’s probably all individual homes... that gives it that small town flavour that people want. People that live in the Meadowlands live there because they don’t like New York city.

To the local stakeholders, the Photoshop images showing new urban development symbolized an image of wealth and the political institutions behind that wealth that contradict their idea of small communities:

Landscape architect local university:

People know this kind of graphic language from rich investors and rich people... New York Times magazine, the first couple of pages are all about these investments and big fancy homes, and that’s the same graphics.
Figure 5. Discursive formation of ‘environmental preservation’ and ‘grassroots movement.’ Source: author’s own figure.

Figure 6. Example of Photoshop rendering of urban developments along the Hackensack River in the Meadowlands. Source: MIT-CAU, ZUS, and Urbanisten (2014).
This type of graphic language is inextricably linked to the nature of design competitions. Rebuild by Design, as a competitive jury-led and time-pressured process that is focused on simultaneously achieving innovative flood defence solutions, transdisciplinarity, public participation and political support, placed the design teams in a complex web of partly irreconcilable sign systems that gave rise to conflicting interpretants. For example, the position of the design teams in relation to the implementation of their own projects in the long term was uncertain:

Lead urban designer OMA team:

The amount expected from the teams in the competition was unusually high ... huge investments from the teams ... it didn't actually mean you won funding for the project, you won funding for the state to implement the projects.

This overturning of the design process to the State exposed the differences in politics and culture between the implementing agencies and the design teams:

Lead organizer Citizens Advisory Group Hoboken:

Yes there were interdisciplinary design experts involved, and yes there was a wide section of the public, but as the money ... gets turned over to the public agencies, because its government money, it goes from being a community and participatory NGO driven process to a bureaucratic and public procurement process. ... A government entity as opposed to an NGO ... their interests and their value system, and their matrices quite honestly are different.

The design teams were presented with the challenge of facilitating public outreach sessions whilst at the same time catering to the expectations of potential implementing agencies. The visual representations that were attuned to the interpretants of project developers and implementing agencies had an adverse effect on the interpretations of those same images by local stakeholders. The interpretive habits of local stakeholders, i.e., the sign-systems that actively guide their interpretations, differ substantially from those of the implementing agencies. Having the state government as their client made the design teams prioritize communications attuned to a specific audience, despite the disruptive power that one local stakeholder and his or her lawyer might have on the implementation of their projects.

The examples above illustrate that mapping a discursive network following a relational ontology from a social semiotic perspective results in myriad connections between discourses and nodal points. Nodal points, such as ‘community engagement’ or ‘failing government’, can also belong to several discourses at the same time, acting as points of convergence within a network. In the following section it is discussed how one can arrive at a selection of the most significant interpretive habits and discursive regimes, and how one can determine the limit of the context that needs to be mapped.

Discussion

The excerpts described above only reproduce parts of the social-political context of the RbD competition. In practice, it is imperative to come to a selection of the most significant discourses at play to determine with which interpretive habits landscape planners and designers need to engage. This selection is based on the semiotic relationships between elements and nodal points, as well as on the proponents of the relevant discursive regimes, i.e., social roles and institutions. The significance of semiotic relationships is primarily dependent on their semiotic topology, i.e., whether these relationships are symbolic, iconic or indexical. For
example, a chain of indexical relationships constitutes a strong causality of events, e.g., the history of urban developments in the New Meadowlands wetlands, and thus has a strong ontological significance for habit formation. Chains of symbolic relationships, e.g., the perspectives and values of the environmental community and the project developer as a result of the historical developments in the area, map the range of contingent interpretations of the New Meadowlands design by those stakeholders.

For Peirce, ‘the identity of a habit depends on how it might lead us to act, not merely under such circumstances as are likely to arise, but under such as might possibly occur, no matter how improbable they may be’ (Peirce 1992, 131). This means that the interpretive habits that belong to social roles and institutions, as proponents of discursive regimes, determine how design representations are interpreted and acted upon. By extension, these habits constitute the context of the audience with which the designers need to engage. Determining the semiotic hierarchy of discourses and their proponents is heavily dependent on the semiotic typologies attributed by the researcher. A comprehensive and conscious approach to the first order hermeneutic coding round of the analysis is therefore crucial for a consistent reconstruction of interpretive habits during the second order hermeneutic coding round.

The premise of the relational ontology and explorative approach of SSPDA advocates developing the ability to uncover latent discourses that would otherwise be overlooked. It does so by detailing a discursive network that allows the tracing of the interconnectedness of all material and non-material signs, nodal points and discourses. In turn, this could make it possible to anticipate design interpretations not only by looking for dominant power structures, but also by identifying other, latent semiotic relations whose significance has not immediately been acknowledged yet which can shape the contingent effects of interpretive habits.

The incremental approach to the explorative mapping of discursive elements and relations to arrive at interpretive habits does raise questions of ‘interpretive drift’ (Eco 1990). If, as Derrida claims, infinite semiosis is an endless deferral of meaning (Baugh 1997) one is confronted with the challenge of determining the ‘limit of context’. The discourse analyst needs to know when saturation is achieved in mapping the context. This can be problematic if every sign is potentially connected to another sign, as it is presupposed by the relational ontology of post-foundational discourse analysis. Eco invoked the Peircean definition of the sign to explain that unlimited semiosis does have a sense of direction, as opposed to an interpretive ‘free for all’. Peirce stated that ‘a sign is something by knowing which we know something more’ (Peirce, as cited by Eco 1990, 28) ‘Knowing more’ implies that the deferred interpretation enriches the meaning of a sign within a specific context. During this process of ‘enrichment’ meaning accumulates in relation to different sign systems as specific interpretants are highlighted in conjecture with a given ‘universe of discourse’ (Eco 1990). This means that by defining a problem-driven universe of discourse to interpret the research object one also determines the openness of the analysis. This raises the crucial question whether a SSPDA can still be performed to uncover discourses without a priori excluding them.

The answer lies in the combination of the problem-driven contextualization with a theory-driven contextualization of the research object (Marttila 2016). The limit of context is thus constructed during the first order hermeneutic analysis of relational interpretations by the interviewees themselves. The construction of discourses within that context is done during the second order hermeneutic analysis. In this way the limit of context emerges from
the open-ended collection of empirical data, whilst the semiotic interrelatedness of discourses within that context, as the historical formation of their interpretive habits, is incrementally constructed by the researcher.

Therefore, is it possible to arrive at the anticipation of stakeholders’ interpretive habits provided that a SSPDA enables the (re)construction of a relational socio-political context? According to Eco, an interpretive habit requires, ‘a community as an intersubjective guarantee of a non-intuitive, non-naively realistic, but rather conjectural, notion of truth’ (Eco 1990, 39). The contingent and conjectural nature of interpretive habits implies that these specific interpretations are, to a certain degree, shared between stakeholder groups. At the same time, the notion of contingency also implies that the ‘collateral experience’ of stakeholders continuously changes. Contexts, and therefore sign systems, evolve or come into play during the different stages of a planning and design process. Moreover, the interpretations of different design iterations ‘enrich’ the habits of stakeholders as one visualization follows another. The mapping of discourses and the anticipating of interpretations is thus an ongoing activity tailored to each design stage and stakeholder configuration, and thus to changing local political and cultural sensitivities.

The contingency of interpretive habits arises from the historical formation of discursive networks coupled with the discursive agency of social roles and institutions within discursive regimes. However, to anticipate which range of contingent interpretations is ‘productive’ for a design process, one first has to determine the range of interpretations that is theoretically ‘counterproductive’ (Eco 1990, 1992). The relations of difference and contrariety help to anticipate these ‘counterproductive’ interpretations by identifying nodal points and discourses that cannot be reconciled with the content or expression of a design representation. For example, the Photoshop representation showing urban development (Figure 6) could have had the intention of showing the increased level of flood protection of the hinterlands as the result of a proposed berm. However, this image contradicts the discourse of local identity with its nodal points of small communities, gentrification, density and failing government. Taking this incompatibility into account, the designer could look for other ways to visualize the possibility of urban development due to increased flood protection, or rethink the ways to express flood safety in general.

Conclusion

The relational conceptualization of discursive formations, as described in this paper, demonstrates how specific discourses within the socio-political context of the RbD processes influenced the interpretation of the representations of the RbD process outcomes. As discourses express themselves through signs, or a collection of signs, landscape planners and designers may be able to identify discursive networks during the different phases of participatory planning and design processes. An SSPDA enables the recognition of these networks, which then could enable the landscape planner or designer to anticipate which discourses influence the interpretation of the ideas that are embedded in a design representation. For example, when a stakeholder informs a designer that the proposed design solution is impossible due to a violation of environmental laws one should not interpret this statement as a mere notification of legislative facts. One should interpret this statement as a sign connected to other signs that make up a discourse that influences an interpretation that could prevent a design from being implemented. When confronted with a sign, or
nodal point such as the Clean Water Act, the designer could then proceed by asking why it is impossible to build in that area, how powerful these environmental laws are, how these laws came into being, and which actors actively enforce them. These questions could uncover a discursive network that helps to anticipate the design’s interpretation in consecutive design phases.

By adapting a more post-foundational and social semiotic perspective, planners and designers can become more sensitive to how discourses inform what people think and do, what type of stakeholders are involved and how they present themselves in interaction with others. The notion of contingency helps planners and designers to think in possibilities instead of certainties and enables the identification of signs with strong ‘semiotic potential,’ such as the Clean Water Act or the high-rise buildings depicted in an artist’s rendering. Moreover, such a perspective helps to understand how habits are formed and, consequentially, how they can be influenced through particular visualization choices that have the discursive power to do so.

Ideally, plans and designs resulting from participatory processes reflect the input and imaginations of local communities, the knowledge of disciplinary experts, and the wishes of a project commissioner. Attuning design representations to specific socio-semiotic discourses is about depicting specific content in ways that resonate with the images’ intended audiences. In turn, more consciously attuned visualizations could help attain public and political support for implementing a design based on its content rather than on the way that content is visually expressed.

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