The semiotics of landscape design communication: towards a critical visual research approach in landscape architecture

Kevin Raaphorst, Ingrid Duchhart, Wim van der Knaap, Gerda Roeleveld & Adri van den Brink

To cite this article: Kevin Raaphorst, Ingrid Duchhart, Wim van der Knaap, Gerda Roeleveld & Adri van den Brink (2017) The semiotics of landscape design communication: towards a critical visual research approach in landscape architecture, Landscape Research, 42:1, 120-133, DOI: 10.1080/01426397.2016.1257706

To link to this article: https://doi.org/10.1080/01426397.2016.1257706

© 2016 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group

Published online: 21 Nov 2016.

Submit your article to this journal

Article views: 3687

View related articles

View Crossmark data

Citing articles: 4 View citing articles
The semiotics of landscape design communication: towards a critical visual research approach in landscape architecture

Kevin Raaphorst\textsuperscript{a,}\textsuperscript{b}, Ingrid Duchhart\textsuperscript{a}, Wim van der Knaap\textsuperscript{b}, Gerda Roeleveld\textsuperscript{c} and Adri van den Brink\textsuperscript{a,}\textsuperscript{b,}\textsuperscript{c}

\textsuperscript{a}Landscape Architecture Group, Wageningen University, Wageningen, The Netherlands; \textsuperscript{b}Land Use Planning Group, Wageningen University, Wageningen, The Netherlands; \textsuperscript{c}Urban Land & Water Management, Deltares, Utrecht, The Netherlands

ABSTRACT
In landscape architecture, visual representations are the primary means of communication between stakeholders in design processes. Despite the reliance on visual representations, little critical research has been undertaken by landscape architects on how visual communication forms work or their socio-political implications. In this theoretical paper, we argue that such research is of great importance. We explain how concepts of visual and critical social theory such as visual semiotics, simulacra and simulation, and power/knowledge can be used to critically reflect on landscape architectural representations. We further propose to study these representations at different stages of meaning-making by using visual methodologies such as visual discourse analysis, iconographical content analysis and social semiotic analysis. We conclude that these research approaches have the potential to explain issues such as dominant power structures, miscommunication between participants, and visual path-dependencies during landscape design processes.

Introduction
Landscape planning and design processes are participatory and transdisciplinary activities, in which experts and laypeople collaborate and play an active role in designing landscape projects (Thering & Chanse, 2011). During these processes visual representations are an important means of communicating analytic findings, abstract ideas, and design principles, and to inform and persuade participants (van den Brink & Bruns, 2012; Mertens, Robinson, & Kirkland, 2010). Representations range from free-hand sketches, photomontages and video to digital 2D and 3D perspective views (Appleton & Lovett, 2005; Barnaud, Le Page, Dumrongjrojwatthana, & Trébuil, 2013; Paar, 2006). As catalysts for discussions (van den Brink, van Lammeren, van de Velde, & Däne, 2007) representations help to establish mutual understanding through knowledge construction. The many forms of knowledge, e.g. local, community, scientific, indigenous, applied, and institutional knowledge, are recorded, legitimised and communicated through visual representations (Cross, 2006; Lawson & Dorst, 2013; Lenzholzer, Duchhart, & Koh, 2013). The critical or uncritical use of representations, therefore, determines the ability to communicate different types of knowledge between participants, the quality of a design, and subsequently the quality of the landscape. This issue is not just confined to landscape architecture; professions such as urban planning, interior design and urban architecture deal with comparable complexities.

CONTACT Kevin Raaphorst kevin.raaphorst@wur.nl

© 2016 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group. This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives License (http://creativecommons.org/licenses/by-nc-nd/4.0/), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited, and is not altered, transformed, or built upon in any way.
Many scholars stress doing research into the meaning-making process that influences the interaction between the producers and the users of visual landscape representations, and consequently the socio-political implications of these images (Dee, 2004; Lewis, Casello, & Groulx, 2012; Perkins & Barnhart, 2005). Recent studies focus primarily on the visualisation effectiveness of digital decision-making tools in participatory planning processes (Bailey & Grossardt, 2010; Gill, Lange, Morgan, & Romano, 2013; Schroth, Hayek, Lange, Sheppard, & Schmid, 2011), their usability in terms of user experience (De Boer, Breure, Spruit, & Voorbij, 2011; Ruotolo et al., 2013) or the affective appraisal of 3D visualisations and human–computer interaction (van Lammeren, Houtkamp, Colijn, Hilferink, & Bouwman, 2010).

Dee (2004) suggests further research into critical visual studies that looks at effectiveness and usability in terms of the convergence between image intent and image reception. Besides using the visual as a research method (Dee & Fine, 2005), Dee suggests a research approach that could ‘highlight the relationship between drawing form and content, product and process, the subjects they privilege and the damaging effect of the uncritical use of techniques’ (Dee, 2004, p. 22). She also suggests addressing the problems and potential of digital imagery, because these techniques can be subjected to the same type of criticism levelled at ‘analogue’ drawing techniques. Moreover, several scholars observe that a ‘technological thrust’ has provided unprecedented technological possibilities yet insufficient knowledge on how to use them (Bishop & Lange, 2005; Lewis, 2012).

Our aim is to elaborate the critical aspect of Dee’s concept by establishing a strong connection between landscape architecture, visual research, and critical social theory. Dee argues that representations can assume a range of critical functions that are often overlooked. We claim these functions connect visual landscape research with a body of work on critical social theory, which is defined as a form of reflective knowledge that aims to reduce entrapment in systems of dominance and dependence (Habermas, 1972). By making explicit the implicit social structures that influence human behaviour, we can engage in transformative action that reduces inequalities. The principles of critical social theory are thus similar, if more political, to those of transformative research approaches (Creswell & Plano Clark, 2011) which are already being applied in the field of (landscape) architecture (Groat & Wang, 2013; Lenzholzer et al., 2013). A critical visual approach in landscape architecture aims to make explicit the implicit functions of visual representations during design processes, and in doing so uncover and reduce inequalities between stakeholders.

The research question central to this paper is how can the implicit critical functions of visual representations in participatory landscape planning and design processes be made explicit. It therefore focuses on introducing a theoretical and methodological framework for carrying out critical visual research in the field of landscape planning and design. We introduce and combine relevant work on critical social theory and visual communication research available, for instance, in communication science, art history, architecture, media studies, and political geography. First, we discuss and link several theoretical and philosophical concepts that are related to visual semiotics, i.e. visual meaning-making, through a literature review. We then argue how these theories feed into visual methodologies that address the different ‘stages’ of visual meaning-making: the production, the image and the audiencing stages. We conclude by describing the relevance of a critical approach to design representations with reference to recent developments in architectural education and profession.

**Semiotics**

We start by explaining the relevance of semiotic theory for the study of visual design representations in relation to landscape design processes. Representations are a form of visual communication that involve a collection of visual signs. Every sign engages in a process of meaning-making called semiosis (Eco, 1976). Semiotics is considered to be a rich resource for landscape researchers (Lindström, Palang, & Kull, 2013) who explore the semiotics of the landscape as an entity. They try to shape and trace meaning within the physical and sensual experience of the landscape (Howett, 1987), or to interpret how meaning and identity is reflected in visual design representations (van Assche, Duineveld, de Jong, & van Zoest,
We expand on these writings by considering the visual representations of landscape designs as an entity that engages in semiosis.

To understand how semiosis works, and how it might be studied, we present a brief overview of the way semiotic theory developed. Ferdinand de Saussure (1857–1913), a historical linguist, presented a ‘synchronic’ approach to linguistics, which involved a study of the momentary conditions under which language gains meaning in a network of signs; how language functions as it is, not how it came to be (Holdcroft, 1991). Saussure argued that a linguistic sign is a dyad, a two-sided entity, consisting of a signifier and a signified (Figure 1). A signifier is the physical representation of a sign, such as a written word, an image, or a sound. The signified is the mental concept, or meaning, that is attributed to a signifier or a collection of signifiers. In semiotics, communication entails a transfer of mental concepts between individuals through the use of signifiers (Eco, 1976). This transfer presupposes a process of constant encoding and decoding, during which meaning is embedded within, and derived from, a signifier.

As a linguist, Saussure found that the relation between a signifier and a signified was culturally determined. For instance, in landscape design practice, the extensive use of symbols can easily lead to confusion between different participants. The basic treetop symbol, to a layman’s eye, resembles a tree as much as it does a parasol (perhaps more the latter) (Figure 2). This concept stresses the importance of studying how signs function within society through cultural relations; a study that Saussure called semiology, a term that is used to describe the European school of semiotics.

In the US, almost simultaneously, the philosopher Charles Sanders Peirce (1839–1914) developed a semiotic theory of logic that advocated a triadic understanding of semiosis. He made a distinction between the *representamen* (the physical sign), the real-world *object* that the sign refers to, and the *interpretant* (a ‘proper significate effect’ or ‘sign within the mind’) (Eco, 1976) (Figure 3). This triadic understanding describes the decoding process that takes place as the audience establishes a new mental sign, or ‘interpretant’, which can again relate to an object, and thus forms a new ‘interpretant’. This potential of ‘unlimited semiosis’ (Eco, 1976, 1994) explains why an image can trigger an endless stream of connotations.

The dyadic theory of Saussure aimed at culturally determined denotation (what does the sign refer to?), whilst Peircean semiotics opened up the possibility for connotation (invoking other, existing sign systems). According to Peirce’s understanding, the treetop symbol would refer to a real-life tree. The mental image of that tree opens up possibilities for connotation: of a tree that provides shade under which to read books, but also of a tree that drops dead leaves that make the ground slippery, people...
falling and requiring medical attention. These connotations are assembled into a personal interpretation of the meaning of the treetop symbol: an assemblage that is often unpredictable (Figure 4).

Roland Barthes (1915–1980), is a Saussurian successor who, like Peirce, incorporated the power of connotation. Barthes explained how to deconstruct an advertisement by separating the image into three messages: a linguistic message (the text), a coded iconic message (connotations) and a non-coded iconic message (denotations) (Barthes, 1977). In Peirce’s understanding, the non-coded message refers to the object of the sign: the apparent denotation. The coded message refers to the interpretant of the sign; the string of invoked connotations. To avoid confusing these concepts, please refer to Table 1 for a comparison of semiotic terminology. We have highlighted various aspects of a photomontage and denoted their non-coded message, as an example, in Figure 5. We address the coded, connotative layer of meaning of the same image later in this paper. According to Barthes, the process of connotative

---

**Figure 3.** Triadic model of semiosis of Charles Sanders Peirce. Source: Own figure.

**Figure 4.** Possible assemblage of meaning through a triadic signifying chain of connotation. Source: Own figure.
decoding is so natural and immediate that it is often difficult to distinguish connotation from denotation. He explains how these natural connotations, or ‘grey areas’, exist within popular culture as myths and make an unjustified claim to being ‘real’. What people perceive as reality is in fact an interpretation shaped by personal experiences, background and beliefs (Barthes, 2009).

This perceptual blending of denotation and connotation caused scholars to question whether the existence of a stable ‘objective' signified is possible. In fact, philosopher Jacques Derrida (1930–2004) claimed that it is not through Saussurian difference (the way a sign differs from other signs) but through Derridean différance (the way the meaning of a sign is deferred, or postponed, until it is influenced by another sign) that the meaning of a sign is continually altered, and thus unstable (Baugh, 1997; Gottdiener, 1995; Hall, 1997). For example, the symbol of the treetop refers to a tree; combined with an empty field it refers to shade; combined with buildings it suggests that this tree could block the view from inside that building. The meaning of one sign is influenced by its relation to another sign. Derrida’s différance emphasises the importance of contextualisation, the reconstruction of the sign systems that influence the process of meaning-making (Baugh, 1997; Pada, 2009).

**Iconography**

This stance on contextualisation is similar to that of iconography, an analytic strategy strongly related to Barthesian semiotics. It goes beyond the image alone: it also studies the image’s context (Panofsky, 1957). Primarily used in disciplines such as art history, iconography—guided by cultural and historical contexts—enables the interpretation of cultural meanings and expressions over several historical

---

**Table 1. Comparison of semiotic concepts.**

<table>
<thead>
<tr>
<th>Saussure</th>
<th>Peirce</th>
<th>Barthes</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Signified</td>
<td>Object</td>
<td>Non-coded message</td>
<td>The referent (fire)</td>
</tr>
<tr>
<td>Signifier</td>
<td>Representamen</td>
<td>Sign</td>
<td>The material sign (smoke)</td>
</tr>
<tr>
<td>Signified</td>
<td>Interpretant</td>
<td>Coded message</td>
<td>The interpretation (campfire)</td>
</tr>
</tbody>
</table>

---

**Figure 5.** Denotative meaning in a photomontage. Source: BMD (2011) (own analysis).
periods, including the social class and political regime in which the artist and the audience lived (van Leeuwen & Jewitt, 2001; Rose, 2012). Iconographic landscape research has a long tradition within the field of art history and political geography. For instance, a body of work studies the landscape as a cultural image. Landscapes, represented either in a painting, literary prose, or as a cultivated environment, can be recognised as important signs of political, economic and social issues (Cosgrove & Daniels, 1988). Moreover, the designed landscape is also viewed as a cultural and political representation of power that in turn shapes and controls the people who are part of the landscape (Corner, 1992; Mitchell, 2002).

In line with landscape iconography we propose an iconographical study of the power of landscape representations. Through intertextuality—the comparison of images from a similar context—we can describe the intentions of the producers of landscape visualisations from a critical semiotic perspective (Rose, 2012).

Peircian semiotics, iconography, and Derrida’s *différence* concept can be used to study visual representations of landscape designs. At the macro level, the object of semiosis is the imagined design in the mind of the designer; the representamen is its visual representation, and the interpretant is the way in which different participants in design processes interpret the design. At the micro level, the scale, the perspective, the use of certain colours, building materials, and figures all refer to certain coded (interpretant) and non-coded (object) messages. These layers of meaning illustrate the complexity of effective design communication. Moreover, it shows that not every visual representation refers to reality or to the imagined reality in the same way.

**Simulacra and simulation**

Derrida’s unstable signifieds make us question the extent to which a landscape design representation can legitimately represent an imagined reality or landscape. These socio-political implications of semiosis were explored by Jean Baudrillard (1929–2007) in a post-structural turn in semiotic theory. Baudrillard claimed that it is not reality that emits signs in order to be perceived, but that the signs themselves construct reality as simulations. Signs circulate increasingly up to the point that their domination becomes so complete that they replace reality entirely and the representation becomes more important than the reality it aims to represent. This precession of simulacra, as Baudrillard called it, posits the idea that the only way we can perceive reality is through the mediation of reality by culture and media (Baudrillard, 1981, 1988).

Baudrillard’s critique concerning the dominance of signifying practices has inspired critical theory about the relationship between (urban) architecture, culture, and representations (Proto, 2003; Rattenbury, 2002). These theorists argue that, despite the fact that architecture is driven by physical reality, designs are generally discussed through visual representations. Even unbuilt, imagined designs sometimes claim the same architectural status as their built counterparts blurring the distinction between the real and the unreal. This ‘hyper-real’, so they argue, might very well lie at the core of our definition of architecture.

Simulacra and the concept of hyper-reality have gained increasing attention with the rise of modern 3D modelling techniques that give unprecedented levels of visual detail and a sense of realism (Kullmann, 2014). However, the socio-political status of imagery is equally important. A concrete example of this is the political power of cartographic images. Maps have credibility and authority. They are assumed to represent the world ‘as it is’ (Bushell, 2012; Crampton & Krygier, 2006). Maps can also be used to distort reality (Monmonier, 1995) because they mediate reality for us, not through a comprehensive gaze but through a regime of mathematical equations, political choices and financial interests (van Houtum, 2013). The cartographic use of scale, level of detail, and perspective reduces the complexity of reality to simplified symbolic representations (Wohl & Strauss, 1958). For the majority of the population the only idea of place that exists outside the reality of their own personal experience is mediated through this subjective cartography and representation (Menatti, 2011).

The precession of cartographic simulacra occurs when representations of reality shape reality itself. For instance, the incorrect depiction of state borders between Costa Rica and Nicaragua by Google Maps
flared up a long-standing border dispute and lead to military action (Brown, 2010). This suggests that if it is on the map it is true, for it is part of the cartographical simulacrum. This dominant view ignores the unmapped places that often speak more to our imaginations than their charted rivals (Bonnett, 2014). Similarly, the credibility of design representations shapes the expectations of the built reality. This issue is especially relevant if we consider the temporal nature of landscapes: a design might take 20 years to come to fruition.

Different stages of the simulacrum depict the degree of abstraction from reality—i.e. the conceptual distance between the interpretant and the object—and thus the similarity between the envisioned and the built landscape. One could argue that a landscape design can potentially become a simulacrum when certain semiotic strategies (colour scheme, perspective, figurines, weather effects) create strong expectations in the early stages of the design process. This can be intentional or unintentional, and depend on the visual (il)literacy of the audience or on different ‘visual languages’. If this image looks too real or definitive and becomes a benchmark for the designs that follow, successive visualisations could enforce the initial misrepresentation by making it more specific, detailed and ‘real’. At its final stage the design no longer holds any reference to the built reality. In more practical terms, this precession of simulacra is captured by the phrase ‘it looked better in the pictures’.

‘Power/knowledge’

Considering the influence of visual representations on the perception, understanding, and evaluation of the (imagined) landscape, the production of knowledge, and thus the design process, criticism should focus on the social relations within which the production of visual representations is embedded. Regard for the different social positions of the producers and the users of visual representations is lacking, despite the fact that the power relations between these two groups define what can be represented. Few people and institutions control the content and availability of visualisation techniques such as GIS or AutoCAD, and not all participants possess the expertise to apply these techniques. Because of this inequality in the ability to visualise, many theorists acknowledge it to be a ‘critical imperative to examine in detail how certain institutions mobilise specific forms of visuality to see, and to order, the world’ (Rose, 2012, p. 10).

In regard to issues of ability, power and control, we follow the argument that Western thought is dominated by ocularcentrism (Jay, 1993): one can make a claim to truth through visual representation. Therefore, we regard the act of creating visual representations of landscape designs as an act of knowledge construction; as making a claim to truth. In landscape design practice, participants can make these knowledge claims by sharing and applying their knowledge, expertise and ideas through design representations, either by drawing themselves or through the mediation of landscape architects. The (in)ability of participants to communicate their knowledge determines the credibility of that knowledge. We propose to study this issue through theory that relates to the intersection of power and knowledge.

According to Foucault, power and knowledge are inextricably linked (Foucault, 1980). Although he never wrote specifically about landscape representation, his view on power is nevertheless relevant. Foucault's project was not about defining an absolute truth (he considers ‘truth’ to be highly subjective), but, among other things, about describing the production of a multiplicity of truths by analysing how power functions within society. Power is everywhere and can consist of many things: political influence, skill, expertise, experience, charisma, literacy, and ultimately: knowledge. Power is used to make a claim to truth through knowledge construction. In doing so, power shapes specific knowledge about the world and the way people act on that knowledge. This understanding of knowledge is called discourse. According to Foucault, discourse causes people to think and act in certain ways not because it functions through oppression or the imposition of rules, but because discourse also produces the subjects it governs. Our ideas about places, landscapes and objects consists of those ideas that are presented to us as the truth. Discourses are produced based on the claim that their knowledge is ‘true’. The discourse that substantiates this claim most effectively is the one that becomes dominant (Foucault, 1974). Therefore, in this paper, we consider visual representations of landscape designs not only as objects of semiosis,
but also as a discourse: specialised forms of knowledge that are constructed by specific actors and influence the way people act upon that knowledge (Rose, 2012).

Stakeholders that present their ideas, knowledge, and design solutions in the most comprehensible and persuasive way are the ones that become dominant during a design process. If we relate this to semiotics, a power dynamic at the production side of design representations a priori influence the interpretations of those designs. This power dynamic of struggling discourses is therefore not only a dynamic of agency (the decisions of the image producer), but also a dynamic of materialisation (what the visual representations of landscape designs, and thus power, look like).

Visual methodologies

The three main theoretical concepts that we have presented, namely semiotics, simulacra and simulation, and power/knowledge, tie into several visual methodologies that can be applied to study visual representations of landscape designs. Closely related to Peirce’s triadic understanding of semiosis, Rose (2012) distinguishes three meaning-making ‘sites’: the production, image, and audiencing site. These three constitute, respectively, how an image is made, what it looks like and how it is interpreted by the user. To avoid confusing these ‘image sites’ with physical landscape sites, we choose to refer to these sites as ‘stages’ of meaning-making.

Each stage constitutes a different focus of visual research. At the production stage, the focus is the social and institutional context within which images are produced. At the image stage, the focus lies on the image itself, what it looks like, its medium and the visualisation techniques that were used. At the audiencing stage, specific attention is paid to the way the audience interprets the image, but it is sometimes also necessary to trace how an image functions within a larger socio-political context. These are all different aspects of the meaning-making process, and can be studied using different visual methodologies.

The choice of visual methodology and analytical depth depends heavily on the context, the availability of visual data, the interpretive skills of the researcher, and the willingness of participants (Rose, 2012). Given the complexity and diversity of design processes, there is no ‘one way’ to do critical visual research. Nevertheless, numerous methods can be drawn from related scientific disciplines and used to conduct such a study. In her book on visual methodologies, Rose (2012) discusses methods such as compositional interpretation, content analysis, semiology, psychoanalysis, discourse analysis and ethnographic methods. van Leeuwen and Jewitt (2001) suggest methods such as visual anthropology, social semiotics and ethnomethodological approaches. Others advocate visual ethnography (Pink, 2012) and critical semiotic approaches (Spencer, 2010). Using different but complementary methods to study several image stages generates a deeper understanding of semiosis, but for each study a clear prioritisation is necessary to avoid methodological excess and disjointedness.

We will explain how three interpretive methods can be combined within a critical visual research approach for landscape design processes: iconographical content analysis, visual discourse analysis, and social semiotic analysis. These methods focus on different stages of meaning-making, yet overlap: production, image and audiencing are always related.

Image stage: iconographical content analysis

We consider collecting visual data as the starting point of a comprehensive visual analysis and begin by addressing the visual methodologies related to the image stage. It is clear that it is not just how the image looks, but also the socio-political context that determines how a design is interpreted. We should, therefore, relate the specifics of an image to its maker as well as to its audience. To do so, we can use an iconographical content analysis. This method allows us to make an inventory of the visualisation techniques that are used in a specific design process. Similar to a traditional content analysis, source material is analysed using a coding scheme which allows the quantification of data characteristics. In the context of landscape design, one can look at the kinds of visualisation techniques, media, drawing perspectives and colour schemes.
The coding scheme can also be more detailed and in-depth if we relate this to semiotic theory. A content analysis enables us to study semiotic strategies within specific design contexts. For instance, which shade of green is used to depict trees within the design? A darker shade of green can promote a sense of consistency, history and preservation, while a brighter shade of green implies spring, new beginnings, a futuristic design and human progress. A bird’s eye perspective signifies control over the landscape and the ability to shape it to your liking. However, an eye-level perspective appeals to the human sense of scale and to sensory perception (van Leeuwen & Jewitt, 2001). Modern photomontages tend to include human figures on streets, balconies and benches. These figurines attribute meaning and function to certain spaces. For instance, children running through a field of high grass while flying a kite implies a safe environment for children (Figure 6). This could very well be a distortion of reality, a simulacrum: the actual field in which the girl is playing could be located next to a busy traffic intersection of busy roads.

Semiotic strategies do not stand alone. They have been implemented by someone at a specific moment in the design process and for a specific reason. Based on an iconographical overview of semiotic strategies, the researcher can identify particular points of interests and decide on the direction in-depth follow-up research should take. For instance, the next step might be to conduct a visual discourse analysis in order to study the production of these images or to engage in a study of social semiotics to address the audiencing stage.

**Production stage: visual discourse analysis**

For the production stage, we refer to the concept of power/knowledge and define visual representations of landscape designs as discourses. If we consider visual discourses as the materialisation of power, then it is imperative to question whose power is being represented, and what this power consists of. To study how a particular discourse is structured and how it produces certain kinds of knowledge, Rose (2012) suggests a Foucauldian visual discourse analysis. Foucault argues that the institutional location of the discourse should be studied by analysing statements in terms of the position of the speaker and his or her social status. To do so, one should look at how the institutions concerned function by focusing on what Foucault calls their apparatuses and technologies (Foucault, 1974). The apparatus of

---

**Figure 6.** Denotative meaning and possible connotations in photomontage. Source: BMD (2011) (own analysis).
the image producer can be defined as—and this is where we observe an overlap with the audiencing stage—the environment where the image is presented: for example, an exhibit at a convention centre, a presentation at the offices of municipal planners, a workshop at a community centre, a poster at a bus stop, or a newsletter viewed in the privacy of your home. Likewise, we adopt a broad definition of the technologies a producer may use, for example, the panels on which a design poster is printed, the 3D model on virtual reality glasses, the charcoal of an artist's sketch, and even the watermarked stationery on which a report is printed. Once again we note an overlap. The image stage is intertwined with the production stage.

Foucault presented several distinct methodologies in the course of his career, e.g. discourse studies, genealogy, but he never prescribed any concrete analysis techniques. Rather, his works provide a framework with 'things to look for' when applying techniques of data collection (Kendall & Wickham, 1999). Some of the main questions within a visual discourse analysis relate to the social context: who produces the image; what is the producer's social authority; what producer-specific medium or materials are used; what is the preferred meaning (Hall, 1997) of the image; and in what kind of physical environment was the image presented to its audience? Techniques such as in-depth semi-structured interviews with the producer of a representation can be applied for a reflective case study, as well as interviews with the intended audience, to elicit elaborate descriptions of the communication process. Furthermore, observation techniques can be applied reflectively, or during a more experimental set up in an ongoing design process, to ascertain the characteristics of the physical apparatuses involved.

**Audiencing stage: social semiotics**

The extent to which the intended meaning, established through a visual discourse analysis, was conveyed to its intended audience can be studied at the audiencing stage through social semiotic analysis. Social semiotics is the study of the social effects of implicit semiotic strategies on the perception of human artefacts (Hodge & Kress, 1988; van Leeuwen, 2005). Derrida's concept of *différance* adds the notion that the meaning of signs is constantly influenced by the ever-changing context of a sign. If we consider the landscape planning and design process as a sign-system, the meaning-making of an image does not occur at a specific moment in time, but rather during a process of agency in time. Influenced by the changing context the interpretation of these images will also change. As a result, images acquire a variety of socio-political statuses within different social groups at different stages of the design process.

This diversity of meaning and social status connects the audiencing stage to Baudrillard's theory of the simulacrum. The research objective is to trace the precession of landscape design simulacra through contextualisation: by reconstructing the social, political and institutional contexts in which the image was received. We focus not only on the production of discourse (the intended meaning) but primarily on the reception of discourse (interpretation). Social semiotics, therefore, complement visual discourse analysis by describing the interpretation of the different precession stages of a landscape design simulacrum. In this way we can trace the simulacrum at the production stage and describe the socio-political functions of the images at the audience stage. In terms of knowledge construction: a simulacrum occurs when the interpreted knowledge differs greatly from the represented knowledge.

To do so, we need to determine the lifespan of these images and establish a timeline to describe the 'functional' moments in the design process. This enables us to trace whether, for different stakeholders, the socio-political function of a design visualisation has changed over time. This can also be related to the concept of power/knowledge: if an image indeed assumes an intended socio-political function, to what extent was this determined by the apparatus and technologies used by the producer?

To answer these questions, semi-structured interviews can be used. To attain so-called 'socio-semiotic responses', including, for example, detailed descriptions of how respondents experienced the use of design representations, a 'probing' strategy can be used. These probes can be verbal, i.e. follow-up questions, non-verbal i.e. body language (Bernard, 2011) or material using stimulus objects (Törrönen, 2002) such as design representations. The interview strategy can consist in the first instance
of broad, general questions that set the stage for a wider topic, e.g. the design process, communication techniques, or knowledge production. Based on these general descriptions, probes are used to elicit responses to specific topics, e.g. participatory design workshops, sketches, 3D visualisations and the mutual understanding of situated knowledge.

Conclusions

In this paper, we argue that by connecting visual and critical social theories and methods of other visually oriented disciplines, e.g. architecture, art history, and human geography with those of landscape planning and design, a comprehensive critical visual research approach can be developed. We have indicated how theoretical concepts such as semiotics, iconography, simulacrum and simulation, and power/knowledge, provide insight into the meaning-making process that design representations engage in and how these images attain a certain socio-political status during design processes. Also why they should be considered to be—and treated as—an important tool in the construction of knowledge.

Semiotics and iconography teach us that there are as many meanings as there are stakeholders. Peirce’s triadic system of object-representamen-interpretant explains the logic behind connotation, and illustrates the complexity of meaning. It is essential to consider this complexity in order to develop a mutual understanding of design challenges and solutions. The theory of the simulacrum provides an insight into hyper-reality; how representations relate to the (imagined) designed reality and how an uncritical use of visual techniques can influence future design decisions and create expectations that might be impossible to meet. The concept of power/knowledge explains why the ability to visualise design ideas is an extremely powerful ability, and that a more equal distribution or mediation of this ability amongst stakeholders is desirable for a fair design process.

The visual methodologies presented in this paper enable studies of various analytical depth. Iconographical content analysis can prove to be a very effective tool for establishing an initial overview of the characteristics of visual material. Subsequently, the researcher might decide to engage in a more detailed iconographical study of visual semiotics or focus on an in-depth visual discourse analysis. In a closed design environment, the audience of an image might be easily traced and this will enable a detailed social semiotic analysis of personal meaning-making. In a more public design process, the researcher might prefer a more general social semiotic analysis in order to determine the social effects of a landscape design over time.

Considering the social complexity of design processes, we do not claim to offer a ‘recipe’ for carrying out critical visual studies, nor do we advocate a standardised visualisation approach to design processes. Such strategies would impair the creative process as well as ignore case-specific circumstances. Rather we plead for a critical visual research approach tailored to the specific type of design process, the stakeholders that are involved, and the visual materials that are available. We argue that the theories and methods presented in this paper are particularly relevant, yet we also encourage other approaches that contribute to a comprehensive critical visual research approach.

Our proposed research approach can help make the process of meaning-making between producers, images and users more transparent. Furthermore, it emphasises the need to think critically about the recent trend of outsourcing visualisation activities to third-party graphic designers to meet the market’s graphic expectations. These practices externalise the design phase during which most expectations are raised. We therefore conclude by saying that a reflective, knowledge based and transparent use of design representations, in both practice and education, could contribute to a wider acceptance of visual studies as a communicative and transformative research strategy.

Notes

The photomontage used for Figures 5 and 6 is entitled: Stadsbrug ‘De Oversteek’ in Nijmegen, Design: Ney Poulissen, Visualisation: BMD.
Acknowledgements

The authors would like to thank the Editor and the anonymous reviewers for their kind words and constructive criticism on the earlier version of this paper.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

The research for this article was carried out in the context of the research programme ‘Multifunctional Flood Defences’, funded by the Stichting Technologie & Wetenschap (STW), part of the Netherlands Organisation for Scientific Research (NWO). Additional ‘in-kind’ funding has been provided by knowledge institute Deltares.

ORCID

Kevin Raaphorst http://orcid.org/0000-0003-0809-4315
Adri van den Brink http://orcid.org/0000-0002-8403-7470

References


