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## Research through Design as a Transformative Approach

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## RESEARCH THROUGH DESIGN AS A TRANSFORMATIVE APPROACH

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### Abstract

New and experimental research methods to understand and co-steer processes of spatial transformation are called for. From the perspective of designing urban landscapes this paper draws a connection between Research through Design and transformative science. (Urban) landscapes constantly undergo (spatial) transformation, and not only have landscape architects always dealt with perpetual change, they increasingly often catalyze it. Designing is an integrative activity and the central means of the discipline to understand issues and draw up possible solutions. Furthermore, design often reaches out to other disciplines, involves multiple participants, and can be paradigm shifting. Research through Design is an increasingly acknowledged approach in landscape architectural research. With regard to the procedures, characteristics and goals of knowledge production, this paper presents commonalities between Research through Design and transformative research, highlighting the integrative and projective nature of designing. In conclusion, I suggest positioning Research through Design among the methods of transformative research.

### Keywords

Research through Design – urban landscape – spatial transformation – transformative research – integrative method

### „Research through Design“ als transformativer Ansatz

#### Kurzfassung

Um Prozesse der räumlichen Transformation zu verstehen und zu steuern, sind neue und experimentelle Forschungsmethoden notwendig. Aus der Perspektive der Gestaltung urbaner Landschaften stellt dieser Beitrag eine Verbindung zwischen entwerfender Forschung – *Research through Design* – und transformativer Wissenschaft dar. (Urbane) Landschaften befinden sich in permanenter (räumlicher) Transformation. Landschaftsarchitekten setzen sich daher nicht nur mit deren Veränderungen auseinander, sondern katalysieren diese auch. Das Entwerfen stellt somit eine integrative

Tätigkeit und die zentrale Vorgehensweise der Disziplin dar, um Themen zu verstehen und Lösungsansätze zu erarbeiten. Entwurfsprozesse erstrecken sich daher oft auch auf andere Disziplinen, integrieren verschiedenste Akteure und können Paradigmenwechsel fördern. In der landschaftsarchitektonischen Forschung ist *Research through Design* ein innovativer Ansatz. Im Hinblick auf die Vorgehensweisen, Eigenschaften und Ziele der Wissensproduktion stellt dieser Beitrag Gemeinsamkeiten zwischen entwerfender Forschung und transformativer Forschung dar und hebt den integrativen, bereichernden Charakter des Designs hervor.

### **Schlüsselwörter**

Entwerfende Forschung – urbane Landschaft – räumliche Transformation – transformative Forschung – integrative Methode

## **1 Urban landscapes, spatial transformation and transformative research**

This paper points out commonalities between transformative research and a Research through Design approach (in the field of landscape architecture), aiming to demonstrate that the latter can contribute to transformative science. I expect to illustrate that the inherent qualities and goals of Research through Design resonate with those of transformative research. These reflections are based on both theoretical and practical experience from my doctoral research and landscape architectural practice revolving around spatial transformation.

To anchor a concept of space for this paper, I refer to urban landscapes: contemporary open spaces that are not only compact cities or traditionally understood natural landscapes, where new practices and forms of space, culture and production emerge (Cronon 1992; von Seggern/Werner 2008:55–57; Giseke 2010; Nassauer 2013:80). As “complex and multilayered spatial interactions of built and unbuilt areas” (Giseke 2010:525, translated from German), urban landscapes are the product of different processes that emerge in space, and “consist of different spatial images and are modified by different spatial forces and actors” (Giseke 2010:527). Composed of both physical and social elements, urban landscapes thus represent a relational understanding of space (Levin-Keitel/Mölders/Othengrafen et al. 2018).

The contemporary understanding of urban landscapes underpins dynamics and change, and (urban) landscapes constantly undergo transformation (Waldheim 2006; von Seggern/Werner 2008:55–57; Giseke 2010; Prominski 2011; Reed/Lister 2014). According to dictionaries, transformation means a thorough or dramatic change in the appearance, medium, character or function of an object, organism or system. It comes from Latin ‘trans-’ across and ‘formare’ to mould, make up or organize. This paper regards spatial transformations in plural, not as one orchestrated process but including diverse developments. Not only have landscape architects always dealt with perpetual change, they increasingly often catalyze it. This is where I draw a connection to a topical framing: the German Advisory Council on Global Change uses the term ‘Great Transformation’ to conceptualize a necessary, comprehensive sys-

tematic shift towards low-carbon societies in response to today's crisis of natural life-support systems and global population growth (WBGU 2011). I see both designed/planned and uncontrolled spatial transformations implicit in the Great Transformation.

To address the goals of the Great Transformation, a call for transformative research has emerged in German-speaking Europe to globally address environmental and social sustainability (WBGU 2011, 2016; Schneidewind/Singer-Brodowski/Augenstein et al. 2016; Wittmayer/Hölscher 2017:89). Transformative science is defined as “a specific type of science that does not only observe and describe societal transformation processes, but rather initiates and catalyzes them” (Schneidewind/Singer-Brodowski/Augenstein et al. 2016:6). Transformative research is concerned with socially robust knowledge that supports change through concrete innovation; it is application oriented, trans-disciplinary and integrates different types of knowledge (WBGU 2011:23–24; Schneidewind/Singer-Brodowski/Augenstein et al. 2016). These include systems knowledge, target knowledge and transformation knowledge (Wuppertal Institute www) – that is, knowledge about what is, visions about what should be, and practice-oriented knowledge about how to direct the desired change. That is also what landscape architects handle. In laboratories of reality (from German *Reallabor*) (Schneidewind/Singer-Brodowski/Augenstein et al. 2016) the expertise of design/planning disciplines in producing ideas and visualizing alternative scenarios is highlighted (Alcántara/Arnold/Lindner et al. 2018:286). I further elaborate on the potentials of (landscape architectural) Research through Design to provide meaningful contributions to transformative research.

## 2 Producing knowledge through designing

Recent theories investigate the creation of new knowledge through design/planning practice (Prominski 2004; von Seggern/Werner/Grosse-Bächle 2008; M. Jonas/Monacella 2012; Engels-Schwarzpaul/Peters 2013; Buchert 2014b; Schultz 2014; Verbeke 2015; Prominski 2016). Research through Design (RtD) is a category of design research that has gained ground since the 1990s. In landscape architecture it usually means acquiring or ‘creating’ both theoretical and practical knowledge through the act of designing (von Seggern/Werner/Grosse-Bächle 2008; Moore 2010; M. Jonas/Monacella 2012; Jenner 2013; Verbeke 2015; Prominski 2016). There is no single format for RtD and it is also generally called Research by Design, where “the act of designing is the key process to develop understanding and knowledge” (Verbeke 2015:79). It is applying “[t]he act of designing as a means to answering a research question” (Prominski 2016:27).

Designing is the central activity of landscape architecture in solving problems and developing spatial or conceptual forms, visions and strategies. For the discipline, which looks for solutions to complex natural and urban issues, exploratory design processes are the most natural and comprehensive way to answer research questions (Lenzholzer/Duchhart/Koh 2013; Reed/Lister 2014; Prominski 2016). RtD is an essential way of developing methodology and scientific thinking in landscape architecture,

and helps to engage with other disciplines (von Seggern/Werner 2008; Lenzholzer/Duchhart/Koh 2013; Weidinger 2015; Prominski 2016). Before discussing the characteristics of a design process and what qualifies designing as (transformative) research I give a brief picture of some of the outcomes and forms it takes.

Typically, research through design in landscape architecture is undertaken with the help of (producing) various analogue and digital media such as drawings, concepts, spatial plans, graphics, models, reports, guidelines and videos. Scales and topics vary from small objects to gardens, parks, cities, blue-green infrastructure and regions – like any landscape architectural design that might be visionary and/or implemented. Many undertakings focus on environmental and urban issues on a relatively large scale (Shannon 2004; Viljoen/Bohn/Howe 2005; Reed/Lister 2014; Giseke 2015), or explore particular tools such as playing, walking, narrating, landscape urbanism etc. (Shannon 2004; Langner 2013; Schultz 2014; Erixon Aalto 2017; Kania-Feistkorn 2017; Schmidt 2018) to understand complex phenomena and to develop methodological approaches and solutions. Beyond universities, trans-disciplinary design labs address environmental challenges by bringing stakeholders and experts to dialogue (Westley/McGowan 2014:294–95). These labs can be seen as analogous to the ‘real-world labs’ of transformative research. In my doctoral thesis I apply RtD in order to: 1) gain a multi-faceted understanding of the topic (of spatio-temporal dynamics on urbanizing islands) 2) test a hypothesis about integrating seasonal dynamics into building resilience, and 3) produce both practical and theoretical new knowledge for islands. One of the case studies involved teaching a M.Sc. design studio. Besides context-specific solutions for the chosen cases, the research produces transferable knowledge about island urbanization and seasonal phenomena, and potential applications for designing urban landscapes in general.

In a scientific context, designing is considered in the category of creative or subjective practices and its viability as research raises critical questions. In order to go beyond an individual project or piece of art, research in creative disciplines qualifies scientifically by being a systematic inquiry, knowledge directed and transparent (Archer 1995). To recapitulate, designing is the means to answer a research question, and what distinguishes research from a design project is critical reflection of the process and outcomes within a theoretical framework and the drawing of transferable conclusions from specific cases (Prominski 2016). Like Mode 2 sciences, designing is contextual, temporal and application-oriented (Prominski 2004:106–07). A great number of publications consider design processes as a meaningful mode of research and knowledge generation (Prominski 2004; von Seggern/Werner/Grosse-Bächle 2008; De Maeyer 2011; M. Jonas/Monacella 2012; Engels-Schwarzpaul/Peters 2013; Lenzholzer/Duchhart/Koh 2013; Buchert 2014b; Weidinger 2015; Prominski 2016).

### 3 Integrative approach

There have been calls for academic understanding of knowledge to be amplified with other conceptions and types of knowledge such as tacit knowledge (Polanyi 1967), practitioners' reflection in action (Schön 1983), and creating or designing knowledge (Prominski 2004; von Seggern/Werner/Grosse-Bächle 2008; Weidinger 2015). Integrating different modes of discovery, perception, and types of knowledge is central for designing (Schön 1983; von Seggern/Werner 2008; Braae/Diedrich/Lee 2013; Buchert 2014a; Corner 2014; Schultz 2014; Verbeke 2015). Designing deals with unpredictability and complex processes (Prominski 2004: 23–25, 116). Design processes are non-linear (von Seggern/Werner/Grosse-Bächle 2008), reflective and reflexive (Schön 1983; Buchert 2014a) and embrace an openness to distraction – an “intentional serendipity” (Braae/Diedrich/Lee 2013:194). This is helpful for reframing situations and generating insights. Subjective engagement and intuition encourage sensing, experiencing, understanding, interpreting and making apparent the non-tangible aspects and abstract qualities of landscapes, such as atmosphere, dynamics, and cultural meanings (von Seggern/Werner 2008; Braae/Diedrich/Lee 2013; Schultz 2014). Designing urban landscapes incorporates both implicit and explicit knowledge (Schultz 2014:284). As ‘reflective practitioners’, designers integrate rational and subjective threads, practice and theory (Schön 1983) In RtD subjective elements purposefully complement a plain rational-analytical approach by expanding observations and diversifying the means of knowledge production. Nurtured by experience, openness and heuristics, intuition helps where objective reasoning fails to reach (Flyvbjerg 2004:20).

Both urban landscapes as a medium and the process of designing are integrative. Furthermore, design processes explore across disciplines such as ecology, sociology, urbanism, hydrology, geology, fine arts etc., and beyond theory to be informed and inspired. Designers and planners increasingly often assume a role as mediators between expert teams and users, and as facilitators of participatory processes. This enables a transfer of different types of knowledge between academia and society, and the development of new models of creative cooperation besides design labs (Westley/McGowan 2014). Thus RtD in many cases is trans-disciplinary, in line with the definition usually applied in transformative research (Schneidewind/Singer-Brodowski/Augenstein et al. 2016). An integrative and trans-disciplinary approach is necessary for understanding the complexity of landscapes, and particularly for the forward-looking nature of designing urban landscapes. According to von Seggern and Werner, “[T]he specific quality of the activity of design lies in the conscious combination of analytical, intuitive and emotional faculties [...] in order to grasp complex relationships and consequently to formulate possible solutions” (2008:37–39). Fusing art, imagination and poetry can overcome what instrumentalized problem-solving lacks, and create not only alternative forms of landscape but “meaningful relationships between people, places and earth” (Corner 2014). The subjective, implicit knowledge, uncertainty and heuristics are essential to discovery and the creative capacity of designing (and any research, see Flyvbjerg 2004 and Polanyi 1967).

#### 4 Research through Design catalyzes transformation

*“[Design] can integrate the knowledge gained in the process projectively.”*  
(Buchert 2014a:42)

In the context of transformative research, I finally highlight the expected capacity of Research through Design to produce integrated and solution-oriented knowledge for spatial transformation. Landscape architecture is transformative in the literal sense of shaping and re-using existing spaces, places and landscapes and their processes (Braae 2015). But what I point out here is that designing is “oriented towards development” (von Seggern/Werner 2008:35). It “[tries] to project into the future, and thus to change things” (Verbeke 2015:79). Designed objects, materials, functions, concepts, spaces, and systems can challenge customary practices (Buchert 2014a:46; Corner 2014; Hight 2014). Through ecological and creative processes, landscape architecture can employ effective transformative powers (Corner 2014). New forms of urban landscapes have the potential to foster changes in urban ecological systems and societal attitudes towards more sustainable futures (Corner 2014:60; Hight 2014:100–01). I argue that when embedded in a research context, a design process can produce strategic and visionary knowledge that contributes to transformative science.

Designing is managing necessary and desirable change (Lynch 1972:1). In my view, recent responses such as Landscape Urbanism (Waldheim 2006, 2016), Projective Ecologies (Reed/Lister 2014), Continuous Productive Urban Landscapes and urban agriculture (Viljoen/Bohn/Howe 2005; Giseke 2015), the urban metabolism project of International Architecture Biennale Rotterdam 2014, Landscape Machines (Roncken/Stremke/Paulissen 2011), Water Atlas Hamburg (Studio Urbane Landschaften 2008) and projects such as the Emscher Park in the Ruhr Region illustrate transformative potential. Contemporary landscape architecture seeks to reject a nature vs culture dualism and to encourage meaningful engagement and awareness (Prominski 2014; Reed/Lister 2014). This echoes the aspirations of transformative science and the Great Transformation. By integrating different modes of inquiry and projection, and types of knowledge, existing practices and theories are challenged. While this is not to conclude that all design is transformative in the sense of transformative research<sup>1</sup>, or that designing alone is omnipotent, landscape architects can facilitate ecological and societal transformation and challenge paradigms (Brown/Kjer 2007; Corner 2014; Jonas 2014; Prominski 2014).

#### 5 Conclusions

Focusing on the field of landscape architecture this paper has described Research through/by Design and how its characteristics and goals resonate with transformative research. RtD is a methodological approach that searches to answer research questions and create new knowledge through (a) design process(es). This paper underpins its integrative, solution-oriented, trans-disciplinary, and projective nature. As an ex-

<sup>1</sup> For example refurbishing a plaza without amending its ecological or social functions.

ploratory methodological approach, RtD challenges paradigms of science and knowledge production. Designing (urban landscapes) integrates physical and social spaces, rational and intuitive modes of inquiry and different types of knowledge, as well as inputs from different scientific and non-scientific fields and processes. It is both analytical and visionary – often aiming for change towards sustainability by challenging conventional models. RtD can profit from these characteristics in producing theoretical and practical knowledge – or integrated, applicable, solution-oriented knowledge and innovation that contribute to transformation. I conclude that with the qualities described, landscape architectural RtD is inherently transformative, and suggest embedding it in the agenda of transformative research. In this context collaborations are necessary to overcome disciplinary limitations and to impact on society. Based on the commonalities presented through this paper I argue that the processes and means of knowledge production in RtD can be useful for transformative research.

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