URBAN AND LANDSCAPE PERSPECTIVES

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Transdisciplinary Knowledge Production in Architecture and Urbanism

Towards Hybrid Modes of Inquiry

Springer

Chapter 1
Editorial: Transdisciplinarity, the Hybridisation of Knowledge Production and Space-Related Research

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Following a long period of ever-increasing specialisation, a need for more relational knowledge has become apparent. The hybridisation of knowledge production has become a widespread and intensively debated issue within the scientific and academic communities. With the breakthrough of systems theory,[1] a new epistemological perspective has been launched that seeks to understand the whole of the mechanism at work (system-oriented) instead of focusing exclusively on fragments and parts (object-oriented).

Likewise, there is growing evidence and awareness that the earlier established, discipline-bound epistemology alone cannot effectively deal with the world's complexity. This is not to say that the production of discipline-specific knowledge is no longer relevant. Quite the opposite is stipulated here. The so-called "Mode 1" form of knowledge production does not need to be abandoned, but rather *complemented* by a new form of knowledge production that focuses on the *combination* of different types of knowledge.[2] Such complementarity is also reflected in Basarab Nicolescu's description of transdisciplinarity (Nicolescu, 2002, p. 45):

> [T]ransdisciplinarity is nourished by disciplinary research; in turn, disciplinary research is clarified by transdisciplinary knowledge in a new and fertile way. In this sense, disciplinary and transdisciplinary research are not antagonistic but complementary.

That this combination of different kinds of knowledge production moves beyond a mere "putting things together" is expressed by the plethora of terms deployed to describe the different modes, methods, and degrees of combining disciplinary knowledge: *multi*disciplinarity, *inter*disciplinarity, *post*disciplinarity, *cross*disciplinarity, *trans*disciplinarity. Even if each single term deserves further

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attention, we will, in this volume, focus on the notion of *trans*disciplinarity, because it refers to a hybridisation of knowledge and modes of inquiry that, in our view, is of specific importance for the disciplines of architecture and urban planning. This is a notion that will be demonstrated throughout the various chapters of this book.

In this editorial, we will attempt firstly to define transdisciplinarity within the context of the book's theme and to understand the different components of which it is made. Secondly, we will focus on how the different chapters in this book contribute to or expand such understanding. Thirdly, we will explore how recent, existing, research endeavours, in our opinion, contribute to the understanding of architecture's transdisciplinarity, even if those efforts are processed under different banners. We will then conclude with a tentative proposal for furthering transdisciplinary research in architecture and urbanism.

1.1 Defining Transdisciplinarity

When researching transdisciplinarity (in architecture and urbanism), one quickly runs into a first obstacle; namely the absence of a clear-cut definition of transdisciplinarity, despite extensive debate and study. Different interpretations of the concept have been produced, often depending on how transdisciplinarity is distinguished from inter- and multidisciplinarity. However, notwithstanding this lack of a precise, articulated definition of the concept of transdisciplinarity, there seems to be a strong sense of the kind of knowledge production at work. Namely, one that turns around three major elements: the integration of discipline and profession (theory and practice) in knowledge production, the ethical dimension, and the importance of experimental, *designerly* modes of inquiry. As we shall see, these elements also appear as central in the definition of transdisciplinary research provided by the *Handbook of Transdisciplinary Research* (Hirsch Hadorn et al., 2008). The first two elements, integration of discipline and profession and the ethical dimension, are expressed in the first part of that definition (Pohl & Hirsch Hadorn, 2008, p. 431):

> [T]ransdisciplinary research is needed when knowledge about a societally relevant problem field is uncertain, when the concrete nature of problems is disputed, and when there is a great deal at stake for those concerned by problems and involved in dealing with them.

This is what architecture's and urbanism's complex agency and "being-in-the-worldness" is, of course, all about. It is, in fact, an intrinsic part of architectural and urban design. Architecture's complex engagement with the world, acting as it does as both profession and discipline, requires it to deal with a broad range of disciplinary and practical forms of knowledge. Not only does architecture allegedly balance between the two most extreme ends of the spectrum of knowledge production, namely arts and science; it also balances between individual agency (creativity, authorship, ideology, but also use) and work for a client (architecture is always commissioned, "on behalf of" and, certainly so in relation to urbanism, "at the service of"). Therefore, some authors claim that design is ahead of the game in matters concerning the hybridisation of knowledge production and dealing with different types

of knowledge. Wolfgang Jonas, in this respect, mentions that design is the art of dealing with scientific and non-scientific knowledge, with fuzzy knowledge, with outdated knowledge and with no knowledge at all (Jonas, 2003, p. 1). Acting as a discipline (theory, history) as much as a profession (practice), and having to incorporate this plethora of different disciplinary and non-disciplinary knowledge forms, architecture and urbanism, indeed, behave *par nature* in a transdisciplinary fashion.

Yet – and this is where the second element of transdisciplinarity enters – architecture does not always enhance its transdisciplinary output towards ethical/societal ends. It is precisely the split (rather than cooperation) between architecture as a discipline and architecture as a profession that has led to important ethical tensions and even democratic deficits. Architecture's criticality has been largely processed in an *inter*disciplinary manner, namely within the realm of the *discipline* of architecture – e.g. Critical Theory, social theories and ideology, and transcendental utopias – but this critique has not always survived well in the messiness of practice.

Therefore, the question of whether architecture would not benefit from identifying itself as a *transdiscipline*, seems most appropriate, if not urgent. Jane Rendell has argued that, as a subject, architecture encompasses several disciplines and brings together modes of research that are often kept apart (historical analysis and materials science, for example) and thus provides possibilities for multi- and interdisciplinary research. But Rendell has also emphasised architectural *design* as a particular mode of practice-led research; a disciplinary specificity that cannot be found in other types of practice or design (Rendell, 2004, p. 144):

> [O]ver the last decade research "for" and "into" design has developed non-problematically, partly because the work can easily be positioned within existing disciplinary modes in science and the humanities. Research "through" design has produced more debate and is currently being further developed in discussions around the relation between theory and practice.

Herewith, Rendell points to the third element of transdisciplinarity, namely the importance of research by design, or – in Nigel Cross' terms – "designerly ways of knowing" (Cross, 2001). When we, therefore, argue for a transdisciplinary approach to architecture and urbanism, it is precisely an attempt to explore that which is so specific about architecture and urbanism, namely the "specific[ity of] 'designerly way[s] of knowing'" (Findeli, 1999, p. 3) and their complex agency in the world. It thus relates both to the tensions between theory (discipline) and practice (profession), and the ethical dimension. One such *way* to do this is "research through (or by) design" (Findeli, 1999, p. 2).[3] Research *through* design is distinct from research *for* and research *into* design – the former referring to practice (typically research and development, oriented to a design application); the latter to theory (historical and theoretical perspectives on design) – in the sense that it brings to the centre of discussion questions about the role of practice in theory building and theory in practice (Findeli, 1999, p. 2; Rendell, 2004).

This designerly "method" is also suggested by the second half of the *Handbook*'s definition of transdisciplinarity (following the first part as given above), namely, by stating that the process for transdisciplinary research consists of three phases: problem identification, problem analysis, and "bringing results to fruition" (Pohl &

Hirsch Hadorn, 2008, p. 431). The designerly aspect has to do with the fact that these three stages do not necessarily occur in the given order, and with the fact that "bringing results to fruition" is not the same as problem-solving, and does not necessarily occur at the end of the research process. Rather, it takes place "in the course of the research process in order to enable learning processes" and is achieved "in the form of a real-world experiment" (Pohl & Hirsch Hadorn, 2008, p. 428), which is, indeed, what an architectural design can be considered to be.

Because (architectural, urban) design engages, both as a discipline and as a profession, with broader societal concerns (e.g. situated knowledge, participatory design, everyday practices), it therefore seems obvious that hybrid modes of inquiry are part of the knowledge landscape.[4] In the context of this book we use the broad understanding that, whereas *inter*disciplinary knowledge is located in scholarly environments, *trans*disciplinary knowledge production entails a fusion of academic and non-academic knowledge, theory and practice, discipline and profession.

The definitions of transdisciplinarity, adopted by the contributors of this book, appear in relation to design research (the act of creating, designing) or design practices (participatory, pedagogical). They are related to knowledge production, and often enhance the ethical dimension of design. For example, Michael Biggs and Daniela Büchler (Chapter 5) relate transdisciplinarity to New Paradigm research in architecture, and, more particularly, to practice-based approaches. Referring to both Häberli's and Gibbons' definitions of transdisciplinarity, they consider design's unrealised intellectual potential and effectiveness, while also referring to the situatedness of knowledge – the knowledge that emerges from a particular context of application, and which is not always locatable on the prevailing disciplinary map.

Julie Thompson Klein, outside the context of this book, has defined transdisciplinarity as the following (Thompson Klein, Grossenbacher-Mansuy, & Häberli, 2001, p. 7):

> [T]ransdisciplinarity is a new form of learning and problem-solving involving cooperation among different parts of society and academia in order to meet the complex challenges of society [...]. A practice-oriented approach, transdisciplinarity is not confined to a closed circle of scientific experts, professional journals and academic departments where knowledge is produced [...]. Through mutual learning, the knowledge of all participants is enhanced, including local knowledge, scientific knowledge and the knowledges of concerned industries, businesses, and non-governmental organizations.

Following Klein's description, Halina Dunin-Woyseth and Fredrik Nilsson (Chapter 6) relate transdisciplinarity to a "Mode 2" of knowledge production. They recognise in particular the relevance of "Mode 2" research, or transdisciplinarity, for design scholars as a new "in-practice model" of research, which has great similarities to design and thus allows for design professions to contribute to knowledge production from within their own intellectual identity.

The ethical aspect of transdisciplinary research is, so we believe, implicitly present in all the contributions to this volume. Some chapters, such as Chapter 2 by Tony Fry and Chapter 4 by Rolf Hughes and Ronald Jones, have further explicated this dimension: in Fry, by arguing for continual learning from situated problems, and, in Hughes and Jones, by discussing transdisciplinary knowledge processes

against the background of a so-called post-critical condition. Also, whereas Carole Després, Geneviève Vachon and Andrée Fortin (Chapter 3) elaborate on how urban planners, architects and social scientists can become "agents of change", Tatjana Schneider (Chapter 7), following Basarab Nicolescu and Roderick Lawrence, also emphasises the inclusion of the know-how of lay-people in such constellations. Even if perhaps only implicitly, we believe we can also read an unmistakably ethical dimension in Albena Yaneva's (Chapter 8) proposal to map controversies as a way to understand architectural issues by taking into account a complex set of agencies and stakeholders.

1.2 Introduction to the Chapters

This section provides a detailed reader's guide to the book, covering both its thematic structure and individual chapters.[5] The different chapters in this book elaborate on transdisciplinary knowledge production in architecture and urbanism from three perspectives. The first perspective is from specific (design) practices. The second perspective, by departing from design research and design methodology, explores the possibility of a "designerly way of knowing" in research. The third perspective investigates how transdisciplinarity and hybrid modes of inquiry can be embedded into design education. Here questions of format and representation once again come to the fore.

The first three chapters of this book link the issue of "other" or new ways of knowledge production to specific practices and their ethical stances (in the sense of how they engage with the world). Whereas Tony Fry introduces the idea of "redirective practice" in relation to architectural practice, Carole Després, Geneviève Vachon and Andrée Fortin demonstrate the working of transdisciplinarity in the context of an integrated practice of research and action through collaborative processes. Rolf Hughes and Ronald Jones then argue that contemporary designers might pursue greater responsibility, influence and relevance vis-à-vis complex societal concerns by designing transdisciplinary social, political, economic and educational "systems" instead of objects.

In "Getting over Architecture: Thinking, Surmounting and Redirecting", Tony Fry provokes us to think about what is left "unthought", or what is thought of in another way. In this essay, trying to think the yet-to-be-thought is not based on conformity to existing modes of scholarship. Fry's essay places architecture and urban design in a collective moment wherein the practices (including "sustainable" architecture) are shown to remain still deeply implicated in the unsustainable. In fact, architecture will be characterised as complacent and still dominantly sustaining the unsustainable. Moreover, it will contend that we, for all our differences, exist mostly in a condition of almost total unawareness of the age of unsettlement that we are entering. The chapter will also engage the idea of technics (as it enfolds design as well as technology, techno-science and the culture of technology) and the agency of design independent from the designing subject. To do this, it will look specifically at the ontological design of things and complexity as designed things

go on designing. Such thinking will lead us to look at redirective practice, and the aim of redirecting what a designing subject is and does. A reconceptualisation of what the designing of the designed should design is also introduced and supported by three case studies.

In "Implementing Transdisciplinarity: Architecture and Urban Planning at Work", Carole Després, Geneviève Vachon and Andrée Fortin develop the aforementioned argument that architecture and planning are predisposed disciplines and professions for implementing transdisciplinarity. They argue this by describing how GIRBa (Interdisciplinary Research Group on Suburbs in Quebec City, Canada) has managed to make operational this mode of knowledge production by issuing back and forth between practice-based research and evidence-based design through collaborative processes, in order to identify strategies for countering urban sprawl and its negative consequences on sustainability. This chapter relates how a transdisciplinary program of research and action gradually and almost naturally emerged as GIRBa's understanding of the complexity and multidimensionality of this space-related problem accumulated. The group went from the distinct production of interdisciplinary research, architectural and urban design schemes, and contractual applied research, to an integrated program of research and action where each type of knowledge nourishes each other in a truly transdisciplinary manner. The limitations and strengths of GIRBa's work are highlighted; namely its limited power within academia to implement design solutions and policies, in contrast with its assured capacity to empower decision-makers and future generations of architects, planners and social scientists with an understanding of the complexity of urban problems, and a concrete experience of how to operate within a transdisciplinary mode of knowledge production to identify solutions. Challenges facing both academic programmes and professional organisations in terms of revising teaching models and training methods conclude the chapter.

In "Modern 2.0 – Post-criticality and Transdisciplinarity", Rolf Hughes and Ronald Jones give an account of a graduate seminar on transdisciplinarity they led in December 2009, for the Experience Design Group at Konstfack University College of Arts Crafts and Design, Stockholm. Rather than deliver a pair of prepared monologues, they decided on a more dialogic mode of presentation. This chapter is the record of their conversation. Developing Jack Burnham's identification of a paradigm shift from an "object-oriented" to a "systems-oriented" culture, Hughes and Jones consider how contemporary designers pursuing greater responsibility, influence, and relevance might contribute to today's complex social problems. Their answer: by designing transdisciplinary social, political, economic, and educational "systems". In a global economy, the authors argue, the seductive promise of epistemological transformation is less significant than the transdisciplinary design team's capacity to impact meaningfully on urgent social, political, and ethical questions in ways beyond the reach of corresponding monodisciplinary, crossdisciplinary or even interdisciplinary initiatives. They discuss the increasing need to design transdisciplines "as interdisciplinary methods begin hitting walls, finding their own limits of relevance". Citing examples ranging from Hans Haacke's Rhinewater Purification Plant and Filipe Balestra's Samba Architecture project in

Brazil, to Freeman Dyson's vision of artists and designers in the near future using genomes to create new forms of plant and animal life that will proactively reverse the effects of global warming, their vision is that of a debugged modernism – a post-critical, transdisciplinary project – a "Modern 2.0" capable of "realistically rebooting the Modern dream of an attainable Eden".

The following two chapters develop the second perspective, namely the relation of transdisciplinary knowledge production with the development of research in (architectural) design areas. The chapter by Michael Biggs and Daniela Büchler discusses a reconceptualisation of architecture as a culture of knowledge in its own right. Halina Dunin-Woyseth and Fredrik Nilsson discuss the potential of transdisciplinarity for practitioners in various design professions, leading towards an inclusive model of research that can emerge from more practice-based approaches.

In "Transdisciplinarity and New Paradigm Research", Michael Biggs and Daniela Büchler revisit their earlier survey of Swedish doctoral theses in architecture and urbanism, in order to discuss the outcomes in terms of what they tell us about the nature of transdisciplinarity in architectural research. The original survey analysed a sample of theses and generated a representation of the main cultures of knowledge with which architecture engages. Cultures of knowledge arise within communities that share common values, and which in academic research, form recognisable disciplines with their own research methods that have the potential to add knowledge in ways that are meaningful to that community. A dimension of creative practice was included in the representation, leading to two conclusions: that the presence of generic practice was not a unique characteristic of architectural research; and that creative practice is not accommodated by the research models that are used to manage generic practice elsewhere. The chapter reconsiders this representation and the earlier conclusions in the light of two definitions of transdisciplinarity, by Häberli and Gibbons respectively. The former is found to emphasise the disciplinary boundaries found in the original study. The concept of homogenisation in the latter could also be regarded as emphasising these boundaries, but invites a reconceptualisation of architecture as a culture of knowledge in its own right. In contrast to Gibbons, the authors conclude that this reconceptualisation should be realised through a reassessment of the values of the architectural community, which will reveal what questions are meaningful to it and therefore what research methods it needs to develop in order to address them. This process is not a homogenisation of existing disciplines, but instead, an analysis that will result in a so-called new paradigm.

In "Building (Trans)Disciplinary Architectural Research – Introducing Mode 1 and Mode 2 to Design Practitioners", Halina Dunin-Woyseth and Fredrik Nilsson discuss Mode 1 and Mode 2 forms of knowledge production from the perspective of the authors' practice as educators at a doctoral level for PhD students based in the practice of architecture, design and the arts. It builds on a series of lectures and seminars which have explored the potential of transdisciplinarity and Mode 2 knowledge production for practitioners in various design professions, and focuses on various existing "knowledge landscapes" as well as on more recent developments in relation to emerging new modes of knowledge production. The article

attempts to grasp the meta-level issues of the new mode of knowledge production and the opportunities it presents with regard to design research. It discusses the development of architectural research during the last four decades together with the essential features of Mode 1 and Mode 2, and tries to relate these features to contemporary architectural and design theory, and various practices in architecture and urban design. As the "scaffold" for constructing this chapter, the authors propose to discuss, firstly, the Scandinavian development of the doctoral scholarship in architecture, and secondly, the international debates that have formed the backdrop to this development with regard to the three major modes of knowledge production: monodisciplinarity, interdisciplinarity, and transdisciplinarity. Knowledge production in the area of transdisciplinarity and creative practice was previously seen as being outside of research and scholarship, while developments in the last decade have made it possible to conceptualise the knowledge field of design and architecture in new ways. The authors consider that an inclusive model of research is emerging where more practice-based approaches are possible, that is beginning to achieve academic recognition as well as vital interest from practitioners.

The last two chapters are related to the theme of transdisciplinarity and hybrid modes of enquiry in design education.

In "Discard an Axiom", Tatjana Schneider presents a manifestation of the issues and problems transdisciplinarity confronts and is confronted with within the context of architecture, with a particular focus on the interface between education and practice, theory and praxis. In her text, these issues and problems purposely appear as fragments to illustrate quite literally the multi-facetted nature of different ways of doing: teaching approaches, ideology and architectural thinking, the organisation and expectancies of the profession, and teaching and design methodologies. Personal opinions are intermingled with notes from a series of design studios or instructions given to students; interviews are fused with theories and teaching; "I" is mixed with the voices of others, each of which is expressed in a different style – the voices of students (underlined text), teaching and writing collaborators (italic text) and "experts" (capital letters) – to be used as a reference guide throughout the text. The format, as a result (and despite its artificial construct), is a direct reflection on both the possibilities of a transdisciplinary approach and on what the author would see as the transdisciplinarity impasse. The text argues that architecture has eliminated chance, innocence, the unknown, and the ability to see that wasting time could be a positive thing. Over the last few decades, architecture has been introspective. It has isolated itself inside its black box, has progressively internalised discourse, and has put its entire focus on the building and technology. Architecture willingly adhered to rules and regulations, to client demands, until it was controlled entirely from the outside. Moreover, at the same time, it became fragmented into separate fields of knowledge. Yet architecture concerns the world. It sits within it and is embedded within it and depends on this world's knowledge. This chapter attempts to conceptualise processes that value "open-endedness" over "closedness", non-plan over tight-fit functionalism, soft over hard, games of chance over games of skill, disjunction and friction over problem-solving. By such means, it tries to

rethink and redefine architecture as a field of questions and uncertainties wherein these tactics become tools of change, of transformative action.

In "From Reflecting-in-Action Towards Mapping of the Real", Albena Yaneva, in the first part of her text discusses two possible ways of architectural enquiry: reflective enquiry (recalling a particular example from Donald Schön to exemplify his understanding of the term); and the mapping controversies method as an example for a hybrid self-exemplifying mode of enquiry. She draws a comparison between Schön's descriptions of reflexivity in the studio and the type of reflexivity implied by a mapping controversy exercise. She uses a real case study done by her students on Heathrow airport, but tells the story of what they did as if we were to follow them in the process of mapping a controversy. This description will aim at tracing some parallels with Schön's approach while illustrating at the same time what it means to engage in such a mapping (it is a social science enquiry into the complexity of design rather than a purely technical mapping of reality – the reader will be told that at the end). She then further explains the mapping controversies approach, its history and how this method has been used in design education. She illustrates how this type of social science is translated into design, and vice versa, how designers can inform controversy studies in a better way. In her conclusion, she discusses the object/thing distinction in an architectural context, and considers what design education can gain from similar exercises of visualising things as complex ecologies rather than static objects. She also argues for the need of more realistic and less meta-reflexivity-based approaches in design education.

1.3 Conclusions – Incitements (Agenda Setting)

The contributions in this book have not just articulated and studied specific aspects of architecture's and urbanism's transdisciplinary processes; they also seem to suggest the need to further such research. We can detect three important reasons for this: (1) because, as we have emphasised before, transdisciplinarity is *par nature* part of the process of architecture, and of design more generally; (2) because transdisciplinarity allows us to explore in greater depth the ethical dimension of spatial practices (for instance through involving cooperation among different parts of society and academia); and (3), because, apart from the ethical aspect, it recognises the aesthetic and creative dimensions of architecture (for instance through research by design). The latter refers to the difficulties faced by critical and transformative architecture practices to translate their critical, social project into appropriate, corresponding design proposals. However, it also refers to the difficulty of reconciling architecture's ethical and critical agency in the world with the designer's creative-aesthetic authorship. This is demonstrated by the somewhat cramped distinction between "good design" (socially engaged, participatory), where the aesthetic desires of the architect tend to get trivialised in favour of "what the people want", and those branches that over-emphasise authorship and design autonomy at the cost of ethical engagement. They are as far apart as the creative/engineering extravaganza of

post-political, star- or iconic architecture, and those community-driven designs that are nevertheless driven by the style-preferences of their creators (e.g. Community Architecture, New Urbanism, European neo-traditionalism).

Transdisciplinarity allows us to account simultaneously for architecture's ethical-critical agency and for its specificity in terms of creative authorship. It provides for alternative ways to process the ethical and critical in architecture and urbanism, rather than dwelling on artificial distinctions such as that between critical theory and projective practice, or between "good" and "bad" architecture.[6] Furthermore, it allows us to process creativity and aesthetics beyond the register of architectural autonomy.

Consequently, we believe that transdisciplinarity warrants further attention, particularly in architecture and urbanism. Therefore, rather than offering *solutions*, we consider the contributions in this volume as important incitements for the setting of a transdisciplinary agenda for architecture and urbanism. In doing so, we believe that we can build on other discourses and practices that, in our opinion, have delivered important – even if often only implicit – contributions to such agenda.

Firstly, we can think of the discourses and practices concerning everyday architecture and participation as important attempts to incorporate "the real" in architecture. Such discourses and practices traditionally have been embedded in the context of critique, empowerment, and dissent: induced by the works of, amongst others, Henri Lefebvre, Michel de Certeau, and the Advocacy tradition of Paul Davidoff, Henri Sanoff and Sherry Arnstein, and expressed by all sorts of grassroots, artistic, and social activists.

Secondly, architecture has recently undergone an important "pragmatic turn", and has thus revalidated and re-articulated practice. Such architecture, often collected under the banner of "architectural pragmatism" (Saunders, 2007), nevertheless struggles to provide a critical agenda. This is demonstrated by the contradicting interpretations of what exactly constitutes critical engagement and ethical agency in practice, perhaps most explicitly demonstrated by the plethora of so-called "pragmatopic" approaches (Ruby, quoted in Gausa et al., 2003, p. 488) that balance pragmatism and realism, criticism and utopia.[7]

Thirdly, several attempts have been made towards less reductive approaches to space and design; approaches that no longer *choose* between theory and practice as the ideal locus for critique, but, instead, allow critique to be processed in ways that are more complex and more entangled; approaches that advocate hybrid modes of inquiry. One can think of the hybridisation of nature and technology, engineering and the social, facts and values, human and non-human, and the explicit attention to agency in Science and Technology Studies (STS) and Actor-Network-Theory (ANT). Such approaches have in common their suggestion to approach architectural issues not according to predefined ideologies or (critical) theories but to study them as situated, complex gatherings of all sorts of agencies: expressed through notions such as Donna Haraway's "Cyborg" (Haraway, 1991), Bruno Latour's "matter of concern" (Latour, 2004) and by Latour and Albena Yaneva's study of "objects-in-flight", "controversies", or "hybrids" (Latour, 1993; Latour in Rania, el Hadi, Ramos, & Latour, 2008; Latour & Yaneva, 2008).

Additionally, one can think of practice-based research approaches that recognise practice as a valuable locus of disciplinary knowledge production – often inspired by notions like "the reflective practitioner" (Donald Schön), "the craftsman" (Richard Sennett), or "design intelligence" (Michael Speaks). But one can also think of recent debates on architecture and agency, which allow one to take into account the complex workings of architecture, incorporating many different agencies, while at the same time safeguarding criticality in architecture's placement in the (post-political) real (Doucet & Cupers, 2009; Awan, Schneider, & Till, 2011; Rendell, Hill, Fraser, & Dorrian, 2007).[8] Such approaches seem to suggest fully exploiting architecture's transdisciplinary nature as a way of discovering what a "concerned practice" consists of – in which theory is not renounced, and where reflective, ethical, and practical concerns interlace in one and the same endeavour.

Fourthly, transdisciplinarity, and the ethical dimension of design practice, have been at the heart of Design Methodology, in particular through the recognition of "design generations". The recognition, by Horst Rittel, of "second-generation design methods" reflected the reactions against the perceived ethical failure of the science-driven "first-generation design methods" inspired by systems analysis and systems theory (see Bayazit, 2004).[9] That Design Methodology gradually incorporated more societal and ethical concerns is demonstrated not least by approaches such as "design by society", and also, the influence of STS on design research. By referring to "proximate designers" (architects, planners, graphic designers and so on), as well as the complex networks and constellations in which they are always engaged, "design by society" brings an important ethical dimension into design: namely, it asks "how design [might] move into public debate, systematic inquiry, and institutional practices?" (Woodhouse & Patton, 2004, pp. 1–3). It does not merely acknowledge that a myriad of persons participate in design processes, including "undesignerly persons" (non-experts, laypersons) (Woodhouse & Patton, 2004, p. 3); it also examines how societal norms are built into design and how design can be or should be held accountable for its impact on society at large (Woodhouse & Patton, 2004, pp. 3–4).

In conclusion, we believe that these attempts and experiments with transdisciplinarity in architecture confirm the need to further elaborate above all three different yet related elements: accountability, representation, and contingency.

Now that politics and ethics are no longer limited to State bodies and institutions but rather distributed over all sorts of bodies and networks that are no longer accountable through traditional democratic channels (De Vries, 2007; Amin & Thrift, 2007), and because design practices are embedded in complex, networked and distributed endeavours, the issue of accountability is particularly important. One cannot just "add" ethics to design, rather one must explore ways in which to understand distributed politics, and therefore, how politics and ethics are processed and channelled through design.[10]

In order to map such distributed politics and the *changes* to the political landscape during the life of a (design) issue, representation grows correspondingly in importance. For design processes, this implies typically designerly agencies such as drawing and modelling, but it also implies a more explicit sensitivity for the

agency of writing as a way to bridge, even hybridise disciplinary and professional discussion.

Finally, we believe that, when countering the idea of design practice as a mere applied theory, and instead considering the architectural and urban question as hybrids, complex gatherings, and "messy undertakings", we should nevertheless not content ourselves with doing this alone. Both accountability and designerly, complex ways of understanding architecture's agency in the world should be confronted with the fact that, no matter how well we develop tools to deal with it, and thus account (take responsibility) for such complex engagements, we will always be facing the contingency of design, a "leap in the dark". Namely, we can never entirely predict what the design itself will result in and what effect a design outcome will have, which unexpected agencies may enter, and what surprises we can enjoy. So how can designers, despite insecurities about the effects of their actions, nevertheless act in a concerned manner and be held responsible for their actions? How can they engage with the world in an irreductive, complex, and *problematising* manner rather than in a reductive fashion? In other words, how can they allow for surprises and with it "other possibilities" and, thus, "hope" as necessary elements for the enhancing of architecture's projective capacity?[11] No matter how well our design methods may become in order to deal with the complexity of the world, as soon as it starts to aim to *control* that complexity and contingency again, chances for the unexpected, for events to emerge, are constrained, and with it, any possibility for change.

Notes

1. Systems theory appeared roughly after the Second World War, and was preoccupied with complexity, connectionism, and adaptive systems.
2. See also the chapter by Dunin-Woyseth and Nilsson in this book.
3. In reference to Christopher Frayling.
4. This is what the *Handbook* calls a "cooperation within the scientific community and a debate between research and the society at large" (Wiesmann et al., 2008, p. 435), and see Doucet, forthcoming (2011).
5. The individual chapter contents are based on the abstracts as provided by the authors.
6. On the artificiality of opposing Critical Theory and Projective Practice, see Hilde Heynen (2007) and Ole W. Fischer (2007). See also the distinction made by the editors of the edited volume *Philosophy and design* (Kroes & Vermaas, 2008), between star-architects and the socio-environmental activists of Bryan Bell's *Good deeds, good design*.
7. "Pragmatopia" = "an alternative territory of architectural operation [...] resists the escapism of utopia [...][and] the automatism of the pragmatic [...] rolls out a new plane of events in order to enable action (*pragma*) to take place (*topos*)".
8. See also the editorial in *arq* vol.13, nr.2, 2009 on "Agent Architect"; and the fifth AHRA (Architectural Humanities Research Association) conference on *Agency*, 2009, University of Sheffield.
9. The distinction between generations comes from Horst Rittel (1972). See also the writings of, amongst others, Nigel Cross, Geoffrey Broadbent, Victor Margolin, and Richard Buchanan.
10. Such questions have also been addressed in the *Politics of Design* International Seminar at The University of Manchester, Manchester Architecture Research Centre, June 2010.
11. This is what Isabelle Stengers (2002) did when she suggested looking at interstices.

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Chapter 3
Implementing Transdisciplinarity: Architecture and Urban Planning at Work

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Suburban Utopia, by Josiane Dufault & Mireille Duchesneau © GIRBa

3.1 Introduction

"Sustainable development" and "green buildings" are two popular locutions in the discourse of many politicians. Best practices are borrowed from countries around the globe, green certifications such as LEED (*Leadership in Energy and Environmental Design*) in North America are becoming the norm in architecture, public transportation systems are being built, and eco-communities developed. Yet, in Canada, greenhouse gas emissions and energy consumption per capita continue

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to increase, and the bulk of citizens drive a car to work and either own or dream about a single-family house. French sociologist Alain Bourdin (2009) affirms that our incapacity to deal with sustainability is due to our thinking in terms of *solutions* (technical, prescriptive), whereas in actual fact it is a *complex problem*. He further argues that architecture and planning have not yet embraced the complexity paradigm with regards to multiple contemporary urban configurations, uses, and representations. By neglecting the complexity of urban life, new problems have a propensity to be tackled using familiar concepts (e.g. centre/periphery model, neighbourhood-centred lifestyles), often leading to poorly adapted solutions.

Yet we are witnessing a unique momentum in urban research with a gush of studies that stem from important societal and urban transformations (e.g. urban sprawl, geographical mobility, ICT, innovative lifestyles, social diversity), as well as major theoretical, methodological and technical development (e.g. systems theory, interdisciplinarity, GIS). This new context has generated an abundant and rich scientific literature endorsing the complexity of urban phenomena. Why, then, has it not sunk into urban and architectural practices? We suggest that this is due to the persistent gap between scientific, professional and artistic knowledge, to the sectoral division of professional responsibilities in architecture and urban planning,[1] and to the rigidity of established disciplinary academic traditions. This chapter is about implementing transdisciplinarity to better define complex problems and identify customised solutions for sustainable development. It illustrates how the programme of research and action of GIRBa – the Interdisciplinary Research Group on Suburbs – constitutes an attempt to stimulate and improve collaboration between scientists, professionals and policy decision-makers, as well as to train urban planners, architects and social scientists to become "agents of change".

Our argument is that urban planning and architecture are both disciplines capable of a constructive dialogue with other domains of knowledge, including the natural and social/human sciences, due to their multidisciplinary position and action-oriented identity aimed at transforming the built and natural environment (Lawrence & Després, 2004). However, these professions' disconnected respective training models, i.e. the long-established design studio in architecture and the more recent "rational scientist" model in urban planning, make it difficult for these two disciplines to take full advantage of their complementary predispositions for transdisciplinarity, which could lead to a more effective and better-connected problem-seeking and problem-solving process with regard to complex urban problems. By presenting the programme of research and action that GIRBa has been conducting for the past 10 years, we want to illustrate with concrete examples how the group was able to bypass the rigidity of academic disciplinary training and narrow the gap between research and practice by conducting in an intertwined manner empirical research, design, and participatory processes on ageing suburbs.

After defining in Section 3.2 the concept of transdisciplinarity as well as the main characteristics of its mode of production, we discuss in Section 3.3 the nature of architecture and urban planning as multidisciplinary disciplines and action-oriented professions. Section 3.4 illustrates how GIRBa has built on the complementary nature of architecture and urban planning, as well as on their respective openness to multidisciplinary knowledge, to define its current research and action programme on ageing suburbs. The last section highlights the strengths and shortcomings of implementing transdisciplinarity within academia's predominantly disciplinary mode of operation and its disconnected professional and research education programmes, pointing out challenges facing both universities and professional corporations in terms of revising educational culture.

3.2 Defining Transdisciplinarity

In what ways does transdisciplinarity differ from the more familiar interdisciplinary and multidisciplinary concepts? Indeed, the words multidisciplinary and interdisciplinary have been used consistently to denote scientific research that involves a number of disciplines. In multidisciplinary research, each discipline works in a self-contained manner, while in interdisciplinary research an issue is approached from a range of disciplinary perspectives integrated to provide a systemic outcome (Bruce et al., 2004). In contrast, the word transdisciplinary is not confined to scientific research and has been used since the 1970s in debates about teaching and professional practice. The Latin prefix "trans" denotes transgressing the boundaries defined by traditional disciplinary modes of enquiry. For German philosopher Philip W. Balsiger (2004), the focus of transdisciplinarity is on the organisation of knowledge around complex heterogeneous domains rather than on the disciplines and subjects into which knowledge is commonly organised. While research groups are generally defined as multidisciplinary in view of the diversified nature of their members' disciplinary education, the research conducted can be either multi, inter or transdisciplinary, the latter two implying that the final knowledge is more than the sum of its disciplinary components (Després, Brais, & Avellan, 2004).

French environmental psychologist Thierry Ramadier (2004) makes a distinction between the outcome of transdisciplinary research as "knowledge coherence" and the outcome of interdisciplinary research as "knowledge unity". For this author, instead of reducing reality to the parts researchable at the intersection of multiple disciplinary perspectives, transdisciplinary research includes at once what stands between disciplines, across disciplines and beyond any discipline, thus combining all the processes of multidisciplinarity and interdisciplinarity. For Balsiger (2004), implementing transdisciplinarity necessitates the replacement of strict research protocols with flexible methodological practices that stem from concerted dialogue around societal problems between academics, policy decision-makers and laypeople. Figure 3.1 recapitulates what Lawrence and Després (2004) identify as the recurrent characteristics of transdisciplinary research from the work of numerous researchers with various disciplinary backgrounds.[2] These are the dimensions of transdisciplinarity endorsed in this chapter.

3.3 Architecture and Urban Planning as "Undisciplined" Disciplines

The title of this section is borrowed from French architect and sociologist Daniel Pinson, in his contribution to the special issue of *Futures* on transdisciplinarity

1) Mode of knowledge production characterised by its hybrid nature, non-linearity and reflexivity, transcending any academic disciplinary structure.
2) Tackles complexity in science and challenges knowledge fragmentation, dealing with research problems and organisations that are defined from complex and heterogeneous domains.
3) Accepts local contexts and uncertainty; it is a context-specific negotiation of knowledge.
4) Includes the practical reasoning of individuals with the constraining and affording nature of social, organisational and material contexts.
5) Requires close and continuous collaboration between actors during all phases of a research project, through "mediation space and time".
6) Often oriented toward action, making linkages not only across disciplinary boundaries but also between theoretical development and professional practice.
7) Frequently deals with real-world topics, generating knowledge that not only addresses societal problems but also contributes to their solutions.
8) Generally aims at understanding the actual world and at bridging the gap between knowledge derived from research and decision-making processes in society.

Fig. 3.1 Characteristics of transdisciplinary research according to Lawrence and Després (2004) © GIRBa

(Lawrence & Després, 2004). Although Pinson applies this qualifier to urban planning only, it is appropriate to extend its use to architecture.

3.3.1 The Case of Urban Planning

When Pinson (2004) refers to the multidisciplinary character of urban planning as a profession, he brings forth three arguments. First, the initial academic training of urban planners is often completed in various disciplinary programmes. Second, planning programmes are themselves characterised by multidisciplinary curricula taught by faculty members trained in diverse disciplines (e.g. architecture, economics, engineering, geography, political science, planning, and sociology). Third, several urban planners work in multidisciplinary teams. The author points out the challenges brought by this explicit multidisciplinary position: (1) scientific knowledge about what constitutes the city in several fields must be accurately appropriated and constantly updated; (2) friction can occur during exchanges between the various disciplines represented in a planning team; (3) last but not least, planners are often questioned about the originality of their contributions. This author advocates that the capacity of urban planners to bring together knowledge from multiple disciplines in order to define complex urban problems in a relevant way should not only be highlighted but also developed in a more systematic way during academic training.

Pinson (2004) also affirms that the evolution of democracy has changed the conditions of planning practice, altering the connections between power and decision-making in relation to physical planning. It is increasingly difficult for urban planners to act as delegated experts working on the basis of scientific knowledge and judicial authority; working with citizens is now part of their responsibilities. Although the concept of "citizen participation" has been used since the early 1970s, namely with advocacy planning growing out of a reaction to the urban renewal movement in the 1950s and 1960s (Davidoff, 1965), a new intensity has been given to public participation since the late 1980s, prompted by societal problems and pressure from user groups (e.g. environmental activism, peace and conflict research, international cooperation, women's studies) asking for their know-how or tacit knowledge to be considered (Elzinga, 2008). Collaborative planning theory and practice arose in response to the inadequacy of traditional public participation techniques to provide real opportunity for the public to make the decisions affecting their communities. Collaborative methods are designed to empower stakeholders by actively involving them as legitimate decision-makers, along with public agencies, in the planning process. The aim is to reach consensus or at least an acceptable compromise (e.g. Patsy Healy, University of Newcastle-upon-Tyne, UK, 2005, 2007; Judith E. Innes, University of California, Berkeley, USA, 2003; John Forester, Cornell University, USA, 1999; Susan S. Fainstein, Columbia University, USA, 2000). Urban planners must be able to handle mediation tasks, mixing scientific and political interests. In Canada, the US and the UK, several urban planning programmes have been or are being adjusted to prepare future planners for these tasks. For those that are not, graduates are forced to learn in the course of job training where they are inevitably brought to work with citizens, not always with the best results. This competency should therefore be reinforced as an urban planning strength. With their respective books, *The Deliberative Practitioner* (1999) and *Collaborative Planning* (2005), US and UK planners John Forester and Patsy Healy have made significant contributions to help schools of planning with revising their curricula.

According to British architect Nigel Taylor (2007), urban planning was much closer to architecture before the 1960s. Both disciplines were then considered an art, albeit "applied" or "practical", in which utilitarian or "functional" requirements had to be accommodated. He associates this major shift to the 1960s, and summarises it as the replacement of a physical or morphological view of towns by a definition of cities as systems of inter-related activities. Cities here are considered to be constantly evolving rather than static entities, including social and economic activities, as well as a conception of planning as science rather than art, requiring specific training to support rational decision-making with empirical modes of investigation. One drawback of this shifting vision is that urban planning gradually lost its expertise on the physical aspects of projects. Indeed, despite the fact that the focus of this discipline was on planning the built environment, planners got more and more detached

from the design dimensions of their work, which required, beyond scientific knowledge and consensus-building skills, aesthetic and technical knowledge as well. For this reason, they have made a more limited contribution to physical interventions, and became commonly dedicated to regulations and master planning.

3.3.2 *The Case of Architecture*

This situation gave way to a theoretical and professional reorientation of architecture toward urban planning in the last two decades or so, with a specific interest in project-making (e.g. Ian Bentley, Oxford Brookes University, UK; Andres Duany and Elizabeth Plater-Zyberk, University of Miami, US; Jan Gehl, School of Architecture in Copenhagen, Denmark; Bernardo Secchi and Paola Vigano, Venice University Institute of Architecture, Italy). It gave birth to urban design as a specific area of academic training now taught in various programmes around the world, including Laval University in Quebec city, Canada. As a field of professional practice, an important share of the contributions from urban design have been carried out by architects and architect-planners (and also landscape architects), owing to their capacity to formalise and materialise projects through the design process. The increasing presence of designers in this growing field of practice is sometimes considered threatening by planning educators who feel the invasion of artist-designers might jeopardise more "rational" and "scientific" approaches.

Thanks to the development of systems theory (Simons, 1969), complexity paradigm (Morin, 1977) and constructivist epistemology (Piaget, 1967), design is now recognised as a legitimate mode of inquiry that requires specific skills, knowledge and intuition to translate multidimensional problems into design solutions. In *What Designers Know* (2001), UK architect Bryan Lawson describes the specificity of design as the combination of both precise and vague ideas, systematic and chaotic ways of thinking, calculations, and creativity. Lawson qualifies design as interdisciplinary by its very nature, the smallest project making connections between a variety of factors, calling for different types of knowledge and involving several actors. Confirming the complexity of the process, US architect Robert S. Harris (1972) identifies five interrelated dimensions of any design project that correspond to different modes of inquiry for designers: ecological, societal, operational, experiential, and perceptual. The sequence with which knowledge is integrated into the design process is not linear but iterative, involving several loops in which hypothetical solutions are constantly adjusted with additional information brought by clients, users, decision-makers, and experts. For Harris, design decisions are a result of group interaction involving individuals who contribute their own creative insights: "The processes of design must allow for open and continuous externalization [sic] of ideas and information, and must welcome contributions from numerous directions and at all times" (1972, p. 1). This implies that designers must develop skills for working with others and assure that effective decision-making includes being able to hear what others are saying and respond constructively to one another. One specificity of design brought up by Lawson (2001), that supports designers in their collaborative work, is the use of drawings and images to not only convey their ideas and converse with others, but to serve as a tool for problem-solving. Drawings and computer models are indeed not only used to communicate but also to build up knowledge on multidimensional problems and develop solutions. This creative process also calls for intuition. In his seminal work *The Reflective Practitioner*, US philosopher Donald Schön (1983) refers to a kind of "knowing in practice" or tacit knowledge possessed by practitioners, a "capacity for reflection on their intuitive knowing in the midst of action" and which they sometimes use "to cope with the unique, uncertain, and conflicted situations of practice" (pp. 8–9).

Although scientific and multidisciplinary knowledge is essential to the definition of complex design problems (e.g. sustainability), architecture students have less opportunity compared with planners to interact with researchers from the social sciences and learn to interpret scientific results from research during their education. Indeed, architectural programmes across the US and Canada are overseen by national architectural accrediting boards, which dictate considerably their educational content. Conditions for accreditation include 32 criteria for evaluating student performance classified under three realms: a) critical thinking and representation; b) integrated building practices, technical skills and knowledge; c) leadership and practice (NAAB, 2009). The criterion "understanding the role of applied research in determining function, form, and systems and their impact on human conditions and behavior [sic]" (NAAB, 2009, p. 22 - criterion a.11) was just added to the 2009 edition. Although the "ability to work in collaboration with others and in multidisciplinary teams to successfully complete design projects" (NAAB, 2009, p. 24 - criterion c.1) is also one of the criteria, it is more difficult to operationalise since faculty members are, with few exceptions, trained as architects (although their post-professional degrees might be in related disciplines). Indeed, because design studios constitute the heart of an architect's education, as a means for developing students' "proficiency in using specific information to accomplish a task, correctly selecting the appropriate information, and accurately applying it to the solution of a specific problem", educators must be able to teach such processes (NAAB, 2009, p. 21). As a result, few students have the appropriate training for searching scientific databases for specific cutting-edge knowledge and translating it appropriately to support decision-making, and most do not experience working in close collaboration with social scientists. This separation between research and design continues well into professional practice where architects' exposure to research is often limited to conference attendance and continuing education programmes. Lawson (2001) criticises the fact that despite its interdisciplinary nature, design often sits uncomfortably in the old-fashioned structures that he encourages us to challenge. Easier said than done! How can academics train architects and planners differently within existing educational cultures?

3.3.3 *Narrowing the Gap Between Research and Practice*

Social scientists are generally trained to conduct and interpret empirical research early in their educational training. However, those involved in urban studies (e.g.

urban sociology, urban geography, urban anthropology, environmental psychology) are often disconnected from the applied world of planning and urban design, except for the expert opinions and research they might be required to understand. The gap between research and design, criticised over 25 years ago by Schön, seems to persist: "[...] research is institutionally separate from practice, connected to it by carefully defined relationships of exchange. Researchers are supposed to provide the basic and applied science from which to derive techniques for diagnosing and solving the problems of practice" (1983, p. 26). Again, academic institutions might have contributed to the situation. Even though multidisciplinary training is valued and encouraged – for instance at Laval University, ten percent of the total credit load must be acquired outside the student's main department – in reality, programmes are often competing for students, namely with regard to annual budget calculation methods, thus discouraging mobility across disciplines. On the other hand, topics taught in the social sciences often fluctuate according to both faculty research interests and the priorities of research funding agencies. This is the case with urban sociology, which used to be one of the strengths of Laval University's sociology program, but where no course on the topic is being taught anymore. This situation adds to the challenge of bringing together architects, planners and social scientists to work together on complex urban problems.

On the other hand, a growing number of architects and planners are seeking specialties beyond their professional education and, for this purpose, engage in a complementary research programme (Master's degree in sciences or PhD). In this manner, they are combining their competencies for collaborative multidisciplinary work and problem-solving with a capacity to conduct and interpret "scientific" research. They are becoming privileged knowledge translators, able to interact with social scientists and interpret research data in terms that can be understood by designers and integrated in the design process.

UK planner Patsy Healy (2007) challenges us "to make sense of the complexity of urban life" and manage "the dilemmas of 'co-existence in shared spaces'" (p. 3). GIRBa's experience suggests that together, architects, urban planners and urban researchers hold complementary sets of competencies that allow for implementing transdisciplinary research and action programmes that, in turn, could lead to identify creative solutions to complex urban problems. To reach this goal, however, we need to train the next generations of professionals and researchers to work closely together, and to show mutual respect for each other's knowledge and skills. How is it possible to do so within the disciplinary limits and constraints of architecture, planning and social sciences education?

3.4 Bringing Architects, Planners and Social Scientists to Work Together: The Case of GIRBa

This section presents a modest example of how transdisciplinarity can be operationalised within academia. More specifically, it tells the story of how GIRBa (in French: Groupe interdisciplinaire de recherche sur les banlieues) came to implement a transdisciplinary programme of research and action at Laval University, in Quebec City, Canada, with the intention of identifying alternatives to urban sprawl and its negative consequences on environmental, economic and social sustainability. The programme of research and action emerged gradually and almost naturally as GIRBa's understanding of the complexity and the multidimensionality of the problem took shape. The group went from conducting interdisciplinary research, on the one hand, and architectural and urban design, on the other hand – two distinct knowledge production modes – to their integration into a transdisciplinary mode, issuing back and forth between practice-based research and evidence-based design through collaborative projects. In other words, GIRBa went from the distinct production of publicly-funded interdisciplinary research, contractual applied research, and architectural and urban design professional training, to being an integrated programme of research and action where each of the above contributes to the others in a truly transdisciplinary manner.

GIRBa is an academic research group that annually comprises around 25 members – professors, postdoctoral fellows and graduate students – the majority of which are trained in architecture and planning, but also in sociology, rural engineering, geography, political science, and environmental psychology. The group's headquarters are located in Laval University's School of Architecture, in the Faculty of Visuals Arts, Architecture and Planning. GIRBa is part of the broader Research Centre in Planning and Development (CRAD) that comprises 16 regular faculty-researchers teaching in the departments of social and human sciences, science and engineering, administrative sciences, as well as arts and humanities, along with about 50 graduate students and fellows.

3.4.1 A Context to Narrow the Gap Between Research and Practice

In 1998, Carole Després, professor of architecture and urban design, and Andrée Fortin, professor of sociology, teamed up and were granted money from the federal agency SSHRC to study ageing post-war suburbs. Geneviève Vachon, professor of architecture and urban design, joined the team, as did Thierry Ramadier, a post-doctoral fellow in environmental psychology from Paris. The objective was to understand how people's residential biography and aspirations influenced their attachment to their home, and also how their use of a car for daily mobility influenced their experience and representations of the city, suburb and countryside, with a special attention paid to elderly suburbanites. The mode of knowledge production was interdisciplinary. The group addressed the multiple challenges of learning a common vocabulary since members held various disciplinary backgrounds, of establishing what was shared at the intersection of the disciplines involved in terms of theory and methods, of defining a consensual research protocol, and of identifying powerful interpretative concepts. Apart from several master's and doctoral students contributing to empirical research, professional master's students were working

in design studios on projects for retrofitting ageing suburbs, on the basis of what resident surveys, as well as demographic and spatial analyses, had revealed. In parallel, contractual research was being conducted by GIRBa's directors with the help of graduate students for suburban municipalities and governmental planning agencies (e.g. the development of intergenerational housing types, the revision of zoning regulations, and the analysis of suburban poverty).

After 3 years of moving back and forth between fundamental research, contractual research and design, we realised that not much had been published on ageing suburbs, neither in Canada nor in the US, and there were a lot of negative stereotypes circulating about these neighbourhoods and their associated lifestyles among architects and planners from both the private and public sectors. In fact, suburbs were being left out of various planning debates and new research directions. We thought our work could contribute to change the situation, at least locally. We wrote the book *La banlieue revisitée* (2002, in French), which we purposively addressed to a wide audience. Together, the chapters describe the morphology and origins of post-war suburbs, their demographic outlook, the activity of residents, and representations of housing and neighbourhoods, as well as propose sustainable design solutions to retrofit these suburbs.

In the meantime, GIRBa was granted 3 years of funding from one of Quebec's main research agencies, FQRSC, to coordinate its work around a programme of research and action on suburbs, with a strong emphasis on knowledge transfer. The grant was timely, just a few months in fact before the City of Quebec amalgamated with its surrounding suburban municipalities in January 2002. This gave GIRBa a unique opportunity to share its knowledge of post-war suburbs with decision-makers in a more active and structured manner. GIRBa invited decision-makers from key government agencies to take part in a collaborative planning exercise on the future of Quebec City's post-war suburbs. During the process, two other university colleagues joined the group, GianPiero Moretti, professor of architecture and urban design, Florent Joerin, professor of geomatics and head of the Canada research Chair in territorial decision-making strategy, as well as a post-doctoral fellow, Nicole Brais, specialised in urban geography and citizen participation. An important number of graduate students – researchers and designers – in architecture, urban design, planning and sociology also took part in the project.

Some additional contextual information will help understand why GIRBa was able to involve architects and urban designers in such a research and action program. First, Laval University was one of the first American universities to offer, 25 years ago, a 2-year professional master's programme in urban design to architects. Since then, the programme was opened to landscape architects, environmental designers, and more recently to planners. Second, in 2001, it became mandatory for architects across Canada to hold a Master's degree to access their professional order. Laval University's School of Architecture, with its well-established tradition of scientific research, took advantage of this additional academic requirement to introduce a series of elective one-semester specialisation modules led by faculty members specialised in particular areas of leading research (built heritage, programming, physical ambiances, construction, digital architecture, international

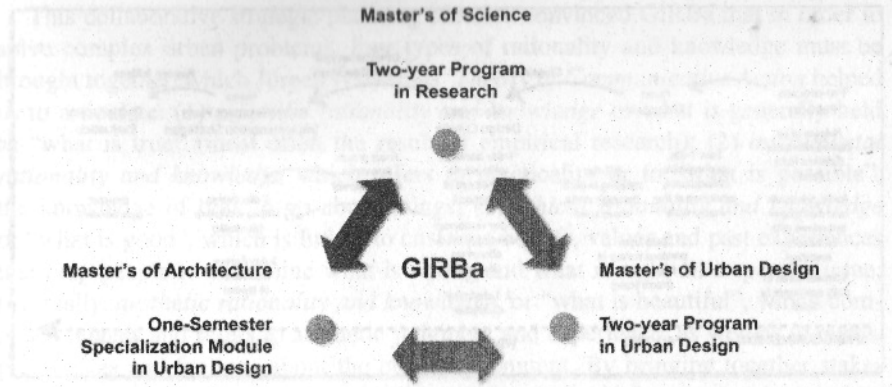

Fig. 3.2 The functioning of the urban design programme and specialisation module at Laval University, Canada © GIRBa

cooperation, urban design). Since the three faculty members teaching urban design were GIRBa members, the research group gradually, and almost naturally, became associated with the education of urban designers. These combined circumstances contributed in drawing research and design closer together, allowing for a constant to-and-from between GIRBa's funded research projects, urban design studios and class assignments, and contractual research mandates. Since 2002, as part of mandatory urban design studios, about 30 graduate students have annually searched for original solutions to retrofit ageing suburbs and minimise urban sprawl, in collaboration with researchers and decision-makers. Several architectural and planning students have graduated since then with theses directly related to our research programme. Figure 3.2 illustrates the functioning of the urban design programme and the urban specialisation module at Laval University, Québec city, Canada.

3.4.2 A Research and Action Programme on Suburbs and Urban Sprawl

In 2002, an 18-month collaborative process was put together, involving over 100 stakeholders in more than 45 activities. The ultimate aim was to build consensus around: (1) a diagnosis on ageing suburbs, (2) general planning orientations and means of retrofitting suburbs, and (3) a strategic revitalisation plan. As the process evolved, GIRBa conducted fast-track research to give a voice to tenants, teenagers, single-mothers and immigrants, as well as to families with young children who were under-represented in an initial survey. Overall, close to 500 citizens were consulted in face-to-face interviews, focus groups and through an Internet survey. GIRBa's graduate students were involved at all stages of the project. Their specific contribution varied according to their own disciplinary training, such as conducting relevant research and literature reviews and developing exploratory design hypotheses, identifying appropriate collaborative activities and organising planning sessions, and

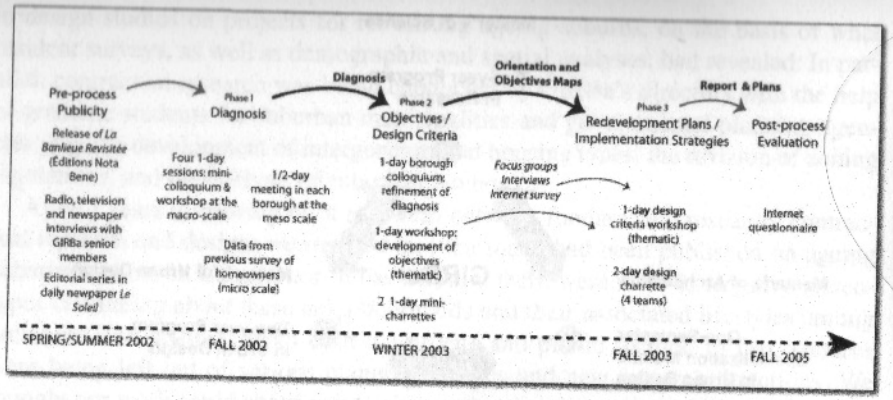

Fig. 3.3 GIRBa's collaborative planning process on the future of post-war suburbs © Springer

building the communication plan. They also participated in the collaborative activities, which could involve presenting their own research and hypotheses, taking and transcribing meeting minutes, redrawing in-progress diagnoses, visions and design hypotheses, preparing the final reports, updating the website, and also taking care of logistical aspects. The project is presented in more detail in Després, Brais and Avellan (2004), in a special issue of *Futures* on transdisciplinary research. Figure 3.3 summarises the collaborative process.

In 2005, 2 years after completing the collaborative planning exercise, GIRBa posted an Internet survey on its website and invited all participants to evaluate their perception of the strengths and weaknesses of the process, as well as of the success of its outcome. The overall results suggest a very positive perception of the collaboration. Several key actors indicated that the general orientations, objectives and design criteria had made their way into their government agency, something that GIRBa was able to verify in their official documents and websites. The results are presented in a chapter of the *Handbook of Transdisciplinary Research* (Després et al., 2008). Although the GIRBa students' evaluation of the collaborative exercise was monitored in the survey, it is not considered in the chapter's analysis since we wanted to evaluate first the perception of non-academic participants. Nevertheless, both a debriefing meeting with all GIRBa's participants and the survey results confirm that the students were very satisfied with what they had learned throughout the process. First, they had learned a lot about suburbs. Second, they saw at work the respective rationalities and types of knowledge of different stakeholders, and realised how they can be complementary but also contradictory, revealing the complexity of the problem. Third, they learned how to plan and conduct a collaborative project through concrete experience. Fourth, students in social sciences learned to read maps and drawings and relate research data to specific geographical locations and intervention scales; designers learned to translate research data into design objectives, criteria or spatial concepts. Last but not least, students were able to start building up a multidisciplinary professional network.

This collaborative strategic planning exercise convinced GIRBa that in order to solve complex urban problems, four types of rationality and knowledge must be brought together, which Jürgen Habermas' *Theory of Communicative Action* helped us to articulate: (1) *scientific rationality and knowledge* or what is generally held as "what is true" (most often the result of empirical research); (2) *instrumental rationality and knowledge* which refers to practicality or to "what is possible", the knowledge of how to go about things; (3) *ethical rationality and knowledge* or "what is good", which is linked to customs, beliefs, values and past experiences that help people to determine what is wrong and what is right on a specific issue; (4) finally, *aesthetic rationality and knowledge*, or "what is beautiful", which comprises images and refers to aesthetic judgment and experience, as well as to tastes, preferences and feelings about the built environment. By bringing together stakeholders of these four types of rationality and knowledge in face-to-face interaction, a fifth type progressively emerged which was more than the sum of the four others since incoherencies in thought and arguments were revealed and collectively overcome. Figure 3.4 illustrates GIRBa's model of knowledge production.

GIRBa's transdisciplinary program of research and action is since then formally organised around three types of research: (1) *fundamental or scientific research* on suburban morphology, uses and representations; (2) *design research* mostly conducted in advanced urban design studios; (3) *collaborative* planning projects with municipalities, government housing and planning agencies, as well as with the population. Figure 3.5 illustrates the structure of the team's transdisciplinary research and action programme.

GIRBa's approach allows for blurring the frontiers not only between academic disciplines and designers, but also between academia, practitioners, decision-makers

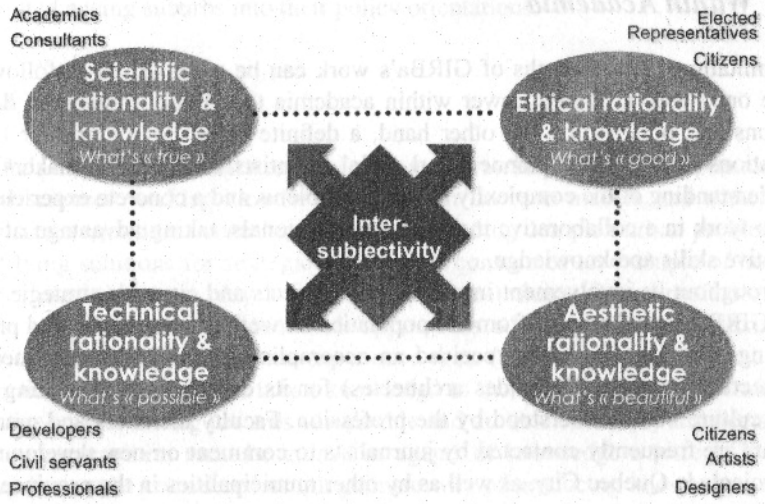

Fig. 3.4 GIRBa's model of knowledge production for complex problems © GIRBa

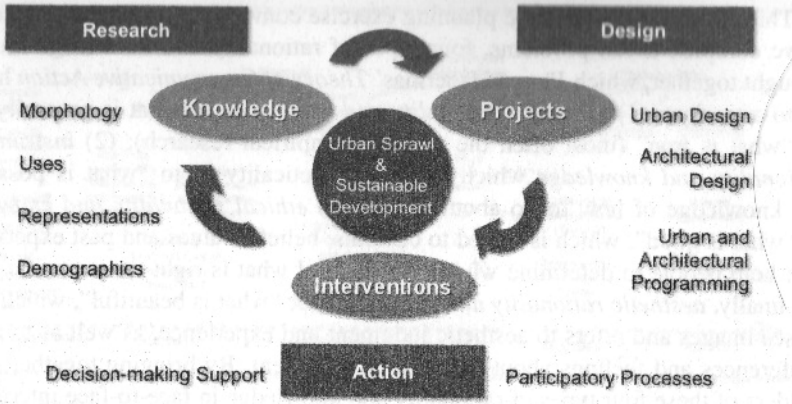

Fig. 3.5 GIRBa's transdisciplinary research and action programme on suburbs © GIRBa

and citizens. The group's experience in working on the issue of ageing suburbs strongly supports the following points: (1) *scientific research* is not performed in the same way when conducted in *close and constant collaboration between researchers from different disciplines*; (2) *design research* is a legitimate and autonomous way of producing knowledge for a given problem, one that accepts *intuition* and *uncertainty*; (3) finally, *action research* has proved to be an alternative mode of knowledge production that recognises *practical reasoning*, *material* and *organisational constraints*, and which values *public debate*.

3.4.3 The Limitations and Strengths of Operating Within Academia

The limitations and strengths of GIRBa's work can be summarised as following: on the one hand, a limited power within academia to actually implement design solutions and policies; on the other hand, a definite capacity to empower future generations of architects, planners and social scientists and decision-makers with an understanding of the complexity of urban problems and a concrete experience of how to work in a collaborative manner as professionals, taking advantage of their respective skills and knowledge.

Throughout its involvement in community projects and citywide strategic planning, GIRBa earned respect from the population as well as from public and private planning agencies. The team received an accomplishment award from Quebec's Architecture Institute (Ordre des architectes) for its contribution to making suburban culture better understood by the profession. Faculty members and graduate students are frequently contacted by journalists to comment on new developments and projects in Quebec City, as well as by other municipalities in the province who are also faced with the phenomenon of ageing suburbs. Carole Després is sitting since January 2009 on a task force mandated with developing a sustainable mobility plan for Quebec City; urban sprawl and increasing car dependency are at the heart of its concerns. Requested by the above task force, Geneviève Vachon was the head of two urban design studios in the autumn of 2009 with 30 Master's students reflecting on the types of environments that might favour sustainable mobility in Quebec City.

Over the years, GIRBa has become a real incubator for transdisciplinarity research for theses and studio projects, as well as a training centre that initiates future social scientists, architects and planners to collaborative planning and design. GIRBa students are trained to work differently, understanding the need for scientific evidence, technical and aesthetic knowledge, as well as ethical considerations. Our program of research and action is a good example of the potential contribution of universities in training professionals and researchers with different disciplinary backgrounds to work together, which may very well have positive effects on all levels of society. Several of GIRBa's graduate students are now working as civil servants in government agencies or in private firms in architecture, urban design and planning; they understand suburbs and are able to coordinate collaborative planning processes.

Ageing suburbs are now perceived as a valuable asset for the City, which is slowly endorsing a polynuclear urban model, with older suburbs acting as urban stepping-stones. The combination of quantitative and qualitative research, design and participatory processes certainly contributed toward a better understanding of the issues and challenges at stake with regard to the retrofitting of these neighbourhoods. The resulting "transdisciplinary" knowledge underlies the complexity of the problem and its multi-faceted reality. Even though a strategic plan for their requalification has yet to be adopted, several government authorities have explicitly integrated ageing suburbs into their policy orientations.

3.5 Conclusions

GIRBa's experience illustrates how students in architecture, urban planning and social sciences working closely together with decision-makers and stakeholders can make a significant contribution to understanding complex urban problems and identifying solutions for strategic planning. It constitutes an example of how academic institutions can play a leadership role in training future professionals to tackle sustainable development with approaches adapted to the complexity. The team has learned from its own experience that: (1) research competencies must cover the large spectrum of urban knowledge to increase architecture's chances of effectively contributing towards sustainable and durable cities; (2) architects, planners and researchers must be trained as agents of knowledge transfer; (3) design research must be considered as a legitimate way of producing knowledge; and (4)

professionals and social scientists should not only be taught not only how to work on collaborative projects but also how to put them into practice.

In *Les Sept savoirs nécessaires à l'éducation du futur*, Edgar Morin (1977) invites us to revise pedagogical models in order to deal with the complexity of our contemporary world. GIRBa's experience is an example of what can be done within existing academic structures, reminding us that universities are not only the locus of knowledge production but also of knowledge transmission; they are institutions where one learns to produce knowledge and to apply it (Lawrence & Després, 2004, p. 398).

Notes

1. Urban planning is used indifferently from town planning or city planning throughout the text.
2. See also *Handbook of transdisciplinary research* (Hirsch Hadorn, et al., 2008).

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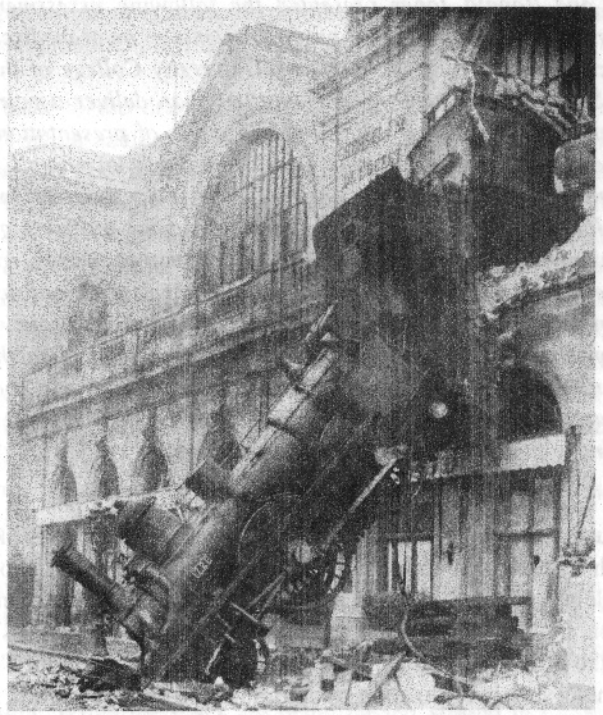
Chapter 4
MODERN 2.0 – Post-criticality and Transdisciplinarity

Rolf Hughes and Ronald Jones



Train wreck at Montparnasse Station, at Place de Rennes (now Place du 18 Juin 1940), Paris, France, 1895

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In evaluating systems the artist is a perspectivist considering goals, boundaries, structure, input, output, and related activity inside and outside the system. Where the object almost always has a fixed shape and boundaries, the consistency of a system may be altered in time and space, its behavior determined both by external conditions and its mechanisms of control.

Jack Burnham, "Systems Aesthetics" (1968)

Preface

Rolf Hughes and Ronald Jones presented the following assessment of current cultural entanglements as part of a graduate seminar on transdisciplinarity for the Experience Design Group at Konstfack University College of the Arts, Craft and Design, Stockholm, December 2009. Rather than deliver a pair of prepared monologues, they decided on a more dialogic mode of presentation. This chapter is the record of their conversation. Developing Jack Burnham's identification of a paradigm shift from an "object-oriented" to a "systems-oriented" culture, Hughes and Jones consider how contemporary designers pursuing greater reach, responsibility, influence and relevance might contribute to today's complex social problems. Their answer: by designing transdisciplinary social, political, economic and educational "systems". In a global economy, the authors argue, the seductive promise of epistemological transformation is less significant than the transdisciplinary design team's capacity to impact meaningfully on urgent social, political and ethical questions in ways beyond the reach of corresponding mono-disciplinary, cross-disciplinary or even interdisciplinary initiatives.

RH: Einstein's observation that "The world will not evolve past its current state of crisis by using the same thinking that created the situation" strikes me as an observation that impacts directly on the condition of disciplinarity today. As Julie Thompson Klein has noted, there is a reconfiguration underway – involving both the dissolution and convergences of existing disciplines – a process that is helping reverse "the differentiating, classificatory dynamic of modernity" and creating instead an "increasing hybridization of cultural categories, identities, and previous certainties."[1] There are, as a result, a growing number of problems – and forms of practice – without a discipline per se. Many artists, designers and researchers today work outside established disciplinary practices. Existing metaphors, networks and technologies mutate rapidly from such forms of "post-disciplinary" border crossings. Hybrids blossom. These demand in turn greater capacities for *seeing connections* and thus a more responsive and nuanced set of theoretical perspectives. I'd like, then, to raise the notion of post-criticality as a background for our discussion of transdisciplinary knowledge processes, and since this term comes from architectural theory, let's first consider the example of architecture. Throughout the twentieth century architects have sought to define their role by aligning themselves to various positions within a paradigm of criticality, linked in turn to specific semiotic, representational and sequential ambitions. More recently however, architectural theorists such as Sarah Whiting and Robert Somol, Michael Speaks, Chris Hight and others, have suggested an alternative "post-critical" paradigm described as *projective*. Rather than emphasising dialectic and negative critique, projective architecture claims to operate by seducing, instigating new events and behaviours – an instance of George Baird's call for careful reflection on "the respective roles of critique, innovation, authenticity, and expanded cultural possibility" which may then be integrated within "an 'operative' new theory of praxis for our times".[2] Michael Speaks' definition of "design intelligence" as "practices [that] allow for a greater degree of innovation because they encourage opportunism and risk-taking rather than problem solving" is one example.[3] This implies in turn a new kind of synthetic imagination, one that draws on the ability to work the boundaries between disciplines, to be alert to potentially useful nuances in the background "noise", to transform tools and methods in pursuit of new areas of relevance, all of which must surely leave our existing critical practices playing in vain a game of catch up?

RJ: I think back to the dramatic 1895 photograph of the locomotive wreck at Montparnasse as an analogy to where the practice of "criticality" has ended up. Whether criticality derives from the Frankfurt School, the French Situationists, the protracted critique of media culture, or postmodern irony, we have to ask – where is criticality, or "oppositional knowledge" currently positioned? I believe it's fair to characterise it using Cornel West's phrase "uncritical tribalism" - which he pinned to multiculturalism – a clique in such an absorbed state of self-satisfaction that it has lost touch. Consider, for example, Critical Design, which we typically associate with the work of Dunne and Raby, Troika, Martí Guixé, Jurgen Bey, and others. A routine example of Critical Design would be the t-shirt by Martin Margiela that reads: "THERE IS MORE ACTION TO BE DONE TO FIGHT AIDS THAN TO WEAR THIS T-SHIRT BUT IT'S A GOOD START". Really? Is this "good for me" self-indulgence, dressed up as a first thrust against a disease that has killed twenty five million people since 1981, really a *good* start?

RH: The phrasing, both imprecise and inelegant, is telling – the passive form means it remains unclear *who* does *what* – "THERE IS MORE ACTION TO BE DONE...." – an ellipsis on the very cusp of acknowledging its own political futility.

RJ: That's right. While the roses are being passed around in Critical Design circles we must admit that on the whole, these designers condemn themselves to manufacturing transgression against authority by consistently escalating old school radicalism, rather than by inventing new pragmatic and entrepreneurial systems that would directly intervene and empower change. If we look at truly wicked problems – global access to clean drinking water, for example - I am not sure what Critical Design's contribution would be. Another t-shirt? They have done no more than given themselves permission to re-arrange the deck chairs on the Titanic.

RH: Yes, we do welcome questions and comments from the audience, but please let us first flesh out our thoughts on the topic!

RJ: Critical designers stand where George Orwell placed Charles Dickens – both are masters of the platitude: *If men would behave decently the world would be decent.* If designers want to participate in reshaping their political, social, economic and

cultural futures they will have to begin to think beyond the exhausted forms of radicalism, beyond the stylistic tradition that limits their practice to a form of critical belligerence. That is nothing more than a blank virtue. Consciousness-raising or mere criticality may take the moral high ground, but it lacks the means or methods to achieve anything more. This means it can't meaningfully hold the high ground – and it is this, in my view, that is the core of this conversation.

RH: Bruno Latour critiqued the project of criticality in his important essay "Why Has Critique Run Out of Steam".

RJ: That's right – it should be required reading. So, to answer your question, designers, architects and artists must become proactive, offering substantial and actionable solutions drawn from multiple disciplines, possibly even transdisciplines, to the problems they abhor. We call this MODERN 2.0. Why? Not because we are interested in revisiting modernism – we are looking forward, rather than backwards, as we revise this second version of modernist ideals.

RH: A form of secular utopia.

RJ: Yes, because those ideals remain desirable. In this digital culture, 1.0, 2.0, 3.0 and so forth, represent not revisiting in the nostalgic sense, but revising to make a *new* and *improved* version. We have learned from the buggy first version of modernism to create this second version without the bugs. That is what MODERN 2.0 should imply – it is a metaphor.

RH: In a recent article on how designers are adopting the strategies of conceptual art, you cite Robert Pincus-Witten's distinction between ontological Conceptualism (advanced by Joseph Kosuth, among others, as an assault on art's very identity), and epistemological Conceptualism, which Pincus-Witten characterises as making or doing things "for the kinds of information, knowledge or data which things or activities reveal" – in other words, an emphasis on the experience of knowledge production rather than its ontological end.

RJ: Ontological Conceptualism might need a short explanation. Kosuth wrote in 1968 "Being an artist now means to question the nature of art", before declaring: "If you make paintings, you are already accepting (not questioning) the nature of art". This is why today, when you eat Thai curry made by Rirkrit Tiravanija or walk through a garden of black flowers planted by Jenny Holzer, you understand that the artist's identity has become inseparable from questioning their practice. Ontological Conceptualism today is everywhere – to the extent that it is no longer possible to speak about it in terms of influence.

RH: That's a useful clarification, but it's the perspective of epistemological Conceptualism that interests me here so I'd like to dig a little further into your argument in "Are You Experienced?", the *Frieze* article. Citing the increasing value of experiences over commodities in the entertainment, airline and sports industries, as identified already in B. Joseph Pine II and James H. Gilmore's 1998 article "Welcome to the Experience Economy", you make the following claim: "the potential of this methodology to design experiences in order to project power and influence has been consistently underappreciated by artists, especially when compared with contemporary designers who co-opted epistemological Conceptualism as a platform for designing the experiences of knowledge production, reception and comprehension across disciplines – often furthest from their own – affording them an expanding sphere of influence. [...] The customization of epistemological Conceptualism represents the most significant paradigm shift in living memory, as design professions migrate from myopic design assignments – design me a toaster – towards conceiving the intangible commodities that feed the experience economy – design me a system."[4] Architects and urban planners do design systems, of course, but your point applies more widely than to architecture and urban planning as conventionally conceived – it is a belief we share, namely that "designers should be critical thinkers and strategists first, capable of addressing cross-disciplinary problems by designing the social, political, economic and educational 'systems' that give them greater reach, responsibility, influence and relevance."[5] This is a more expanded role for the designer than simply that of problem-solver; the problem-solver typically works within narrowly prescribed limits, while the creative entrepreneurs you are suggesting here must be highly skilled in synthesising information from a diverse range of knowledge traditions. They face problems that are neither predictable nor simple, but rather highly complex. And so, as Julie Thompson Klein has noted, "the art of being a professional is becoming the art of managing complexity."[6]

RJ: Let's compare critical theory to transdisciplinarity. In real world terms, transdisciplinarity must be entrepreneurial to survive; the hybrid discipline does not naturally evolve projecting power and influence, but must be created out of the very crisis, or obstruction, or riddle it pre-empts or resolves. By comparison, "critical theory", unable to actualise divergent thinking or disruptive innovation, seems little more than toothless compliance with prevailing attitudes about its own efficacy. Criticality (in practice and theory) has, many believe, dug its own hole; while actively critical, it is usually without creative alternatives to the object of its critique, e.g. "writing poetry after Auschwitz is barbaric". True, "normal" changed forever because of Auschwitz, but we need to ask *what is the new normal?* We have arrived at a point where critical theory is being called upon to answer a basic question: what is the continuing *value* and *productive* potential of criticality, or "oppositional knowledge"?

RH: What do you say to those commentators, such as Reinhold Martin, who argue that the arguments of "post-critical" theorists may effectively serve the interests of conservative forces? "Is it possible", Martin asks, "that the 'post-critical' polemic is, like the more general rightward swing in American politics, actually a rather thinly disguised effort to bury the utopian politics of the 1960s once and for all? In other

Chapter 5
Transdisciplinarity and New Paradigm Research

Michael Biggs and Daniela Büchler

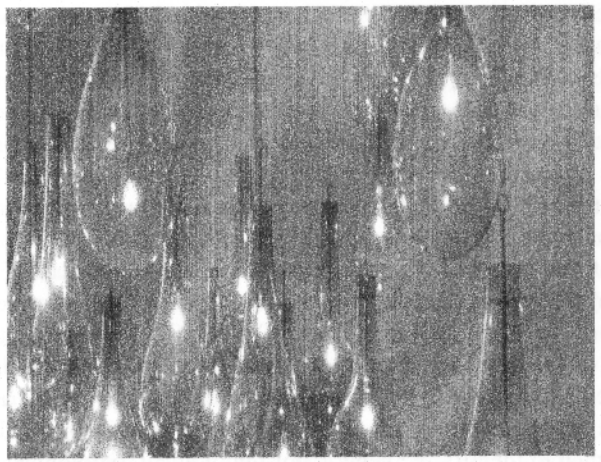

Photo © Daniela Büchler, 2005

5.1 Setting the Scene

In 2007/2008 we undertook a survey of Swedish doctoral theses in architecture and urbanism. The purpose of this study was to investigate the role of architectural practice in academic research. The central question asked was whether academic research in areas of creative practice, such as architecture and urbanism, is in some way different from traditional models that are used in other academic disciplines. Although the results have been published (Büchler et al., 2009), they have not been discussed in terms of the transdisciplinary nature of academic research in architecture. In this chapter we take the opportunity to revisit the outcomes of this study in

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order to consider what they show us about the nature of transdisciplinarity in architectural research. We will use the Swedish Architecture Theses project as a backdrop against which we will consider architecture as a discipline, the role of practice in academic research, and the transdisciplinary character of architectural research.[1]

The aim of the Swedish Architecture Theses project was to enable a discussion of how architectural design practice contributed to academic research in the sample of theses compiled. The objective was to identify any cases of so-called practice-based research, also known in Sweden as arts-based or artistic research [*konstnärlig forskning*] (Biggs & Büchler, 2008b). Practice-based research is sometimes claimed to be unique to areas of creative practice and often the researchers themselves assert that the artefacts produced have an essential role in the research, and as a result, that it could not be conducted or communicated without these artefacts. The study therefore aimed to clarify the characteristics of this kind of practice-based approach in architectural research through the analysis of a sample of doctoral theses. In the process, a selection and mapping of this sample was conducted. A critical analysis of this mapping enabled the proposition of an ontology of academic research in which the role of practice in architectural research, and its possible practice-based elements, was clarified.

The project hypothesised that academic research containing practice-based elements may constitute a novel paradigm. In an earlier article we explained that the genealogy of these models was characterised as arising either out of "exploratory practice within the traditional model of academic research, [or] practice as a generator of relevant questions" (Biggs & Büchler, 2008a, p. 87). In our view, this describes a polarisation of two roles for practice: as explanation and as generation of knowledge. This view prompted the Swedish Architecture Theses project as a means of unpacking the consequences of the different roles for practice in academia. In this project, we aimed to identify the generic epistemological, ontological and methodological positions of research containing an element of creative practice through the observation of PhD studies that were produced in architecture and urbanism.

The central question was investigated through empirical and theoretical methods, and prompted a further three complementary questions. The structure of the empirical part of the project used the sample of architectural theses to identify cases where traditional research criteria satisfied, or did not satisfy, the needs that the researchers themselves identified as relevant to them. When cases were identified in which the traditional research criteria did seem to satisfy the needs, these cases were further analysed in terms of whether this agreement was due to the existence of shared concepts between the traditional model of academic research and architectural practice. When cases were identified in which the traditional research criteria did not seem to satisfy the needs, these cases were further analysed in terms of whether the inadequacies of the traditional models of academic research were due to the demands of architectural practice and the particular concepts that are adopted in these areas. Finally, a response to the central question could be made in terms of the relationship between worldviews and research paradigms (Biggs & Büchler, 2009) and in terms of the role of design practice in architectural research in academia (Büchler et al., 2009).

Initially, two searches were conducted in order to establish the sample and thereby map defining characteristics of Swedish academic research in architecture. The first search was conducted in November 2007 and selected Swedish theses in architecture using the keywords: "architecture/Arkitektur, theory/Teori, philosophy/Filosofi, art, department of architecture, department of architecture and town planning, arts based research". This search was conducted in the databases: Swedish National Library, Regina and Libris, KTH (Royal Institute of Technology), Stockholm University, LUP (Lund University Press), MUEP (Malmö University Electronic Publishing), Chans (Chalmers library catalogue). A total of 212 PhD theses were identified, and a further selection of these removed those that did not centrally address architecture and that did not have an online abstract in English. This resulted in 79 PhD theses that comprised the sample.

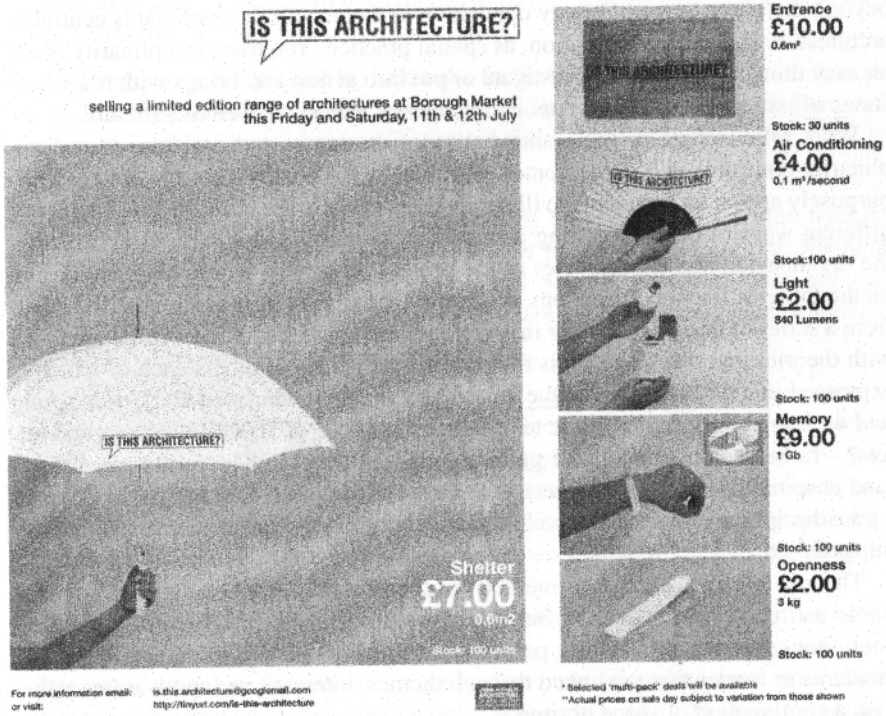
In order to enable a relevant mapping of the sample it was necessary to structure a provisional classification of models of academic research. This structuring stepped away from the particularities of the Swedish Architectural Theses project, and began to identify areas, disciplines and subjects that are adopted by research councils and universities in Sweden, the UK and Brazil. This range of countries was chosen due to the fact that the authors have each held academic appointments in these countries. Despite being convenient, such a heterogeneous mixture of national contexts, traditions and perspectives was also helpful in determining patterns of academic clustering of cultures of knowledge. We have previously claimed that "depending on how the matter is conceptualised, the distinction between PbR [practice-based research] and conventional academic research can go from visible and debatable to invisible and therefore not debated" (Biggs & Büchler, 2008a, p. 86). How one describes something suggests how one understands it and this impacts on how things are clustered. Certain academic communities adopted specific terminology to describe what they did and how they saw what other communities did. For example, in some communities, we found that the concept of research being "academic" is synonymous with it being "scientific". A critical reading of different community descriptions of academic research revealed that whilst the way in which the research activity is clustered can vary from one community to another, the fundamental understandings behind the clusters that emerged were broadly consistent.

5.2 Disciplines and Cultures of Knowledge

In the fields of cultural studies and activity theory, a community is defined as a group of individuals who share common values. A community has a shared set of values that define them and to which the members subscribe and thereby identify themselves as part of that community (Bourdieu, 1992). Values include cultural beliefs, and also epistemological beliefs about the nature of the world and how we can interact with it. When communities evolve naturally, these values reflect the community practices and these practices reflect the values. As a result, a community possesses an internal coherence between its values and the actions it performs. It is therefore apparent why each community does what it does given what it believes and values

Chapter 7
Discard an Axiom

Tatjana Schneider



Architects for Sale. Students of the MArch Design Studio SoftPraxis set themselves the challenge of selling architecture and ended up selling its consequences on a stall in Borough Market in London in 2008: Umbrella – Shelter, USB Stick – Memory, Light Bulb – Light, Doormat – Entrance, Fan – Air Conditioning, Doorstop – Openness. [Copyright: SoftPraxis and The University of Sheffield]

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I. Doucet, N. Janssens (eds.), *Transdisciplinary Knowledge Production in Architecture and Urbanism*, Urban and Landscape Perspectives 11,

If architects do not acknowledge and work with the multitude of relationships between non-humans and humans, theoretical and practical, knowledge that was learned in the first place becomes irrelevant. At the same time it is important to admit the existence of different kinds of knowledge. To not only acknowledge these different positions and points of view but also to actively work with them means that education needs to address this current inward focus. As Lima de Freitas, Edgar Morin and Basarab Nicolescu state as part of the Charter of Transdisciplinarity "AUTHENTIC EDUCATION CANNOT VALUE ABSTRACTION OVER OTHER FORMS OF KNOWLEDGE. IT MUST TEACH CONTEXTUAL, CONCRETE AND GLOBAL APPROACHES. TRANSDISCIPLINARY EDUCATION REVALUES THE ROLE OF INTUITION, IMAGINATION, SENSIBILITY AND THE BODY IN THE TRANSMISSION OF KNOWLEDGE" (1994).

Soft and Hard. Whilst seemingly crude to start with, the terms soft and hard identify several tensions in the field of architecture: between indeterminate and determinate approaches; between the possibility for users to adapt space according to their needs and the designer determining use over time; between flexibility in the hands of the users and the provision of flexibility, only on the architect's terms; between designing in redundancy and slack space and tight-fit functionalism.

The natural tendency of architects is towards the hard, because it is in the realm of the determinate that one maintains a sense of control. Soft use, on the other hand, passes control over to the user, allowing them to appropriate the space as they see fit. The architect, if indeed there is one, here plays the role of facilitator rather than determiner or, in Zygmunt Bauman's terms acts as interpreter rather than legislator (1987).

This spirit is analagous to the sensibility that Jonathan Raban develops in his book Soft City: "THE CITY GOES SOFT; IT AWAITS THE IMPRINT OF AN IDENTITY. FOR BETTER OR WORSE, IT INVITES YOU TO REMAKE IT, TO CONSOLIDATE IT INTO A SHAPE YOU CAN LIVE IN" (1974, p. 12). The potential for others to imprint an identity is paramount in any building, but most of all in housing, where there is an ethical imperative to allow the dwellers to live out their own lives and not that of the architect.

To design a building with the specific intent for it to be changed in any way is to accept that the building is in the first place in some way incomplete, or even imperfect. This is of course counter to normal architectural values, which privilege completion and perfection. In addition, to admit to social flexibility is to admit time into our buildings, and architects, as Karsten Harries notes, live in the "TERROR OF TIME" (1982, p. 65).

Against this I advocate an architectural approach that is at the same time more modest and more canny because only then can one fulfil Raban's vision:

WE SHALL NEED MORE DARING, MORE COOL, UNDERSTANDING THAN THAT WE ARE DISPLAYING AT PRESENT. WE LIVE IN OUR CITIES BADLY; WE HAVE BUILT THEM IN CULPABLE INNOCENCE AND NOW FRET HELPLESSLY IN A SYNTHETIC WILDERNESS OF OUR OWN CONSTRUCTION. WE NEED — MORE URGENTLY THAN ARCHITECTURAL UTOPIAS, INGENIOUS TRAFFIC SYSTEMS, OR ECOLOGICAL PROGRAMMES — TO COMPREHEND THE NATURE OF CITIZENSHIP, TO MAKE A SERIOUS IMAGINATIVE ASSESSMENT OF THAT SPECIAL RELATIONSHIP BETWEEN THE SELF AND THE CITY, ITS UNIQUE PLASTICITY, ITS PRIVACY AND FREEDOM. (1974, p. 3)

Thoughts on soft and hard were first developed together with Jeremy Till as part of a research project on the design of flexible housing (Schneider & Till, 2007b) and tested as part of two design studios, SoftSpace and SoftPraxis, which were based on the assumption that *softness*, that culpable innocence, social friction and mess could be a good thing.

On Teaching. I have never taught on my own. I have always collaborated with others. Since being at the School of Architecture in Sheffield, I collaborated with Jeremy Till on the design studios SoftSpace and SoftPraxis, and with Cristina Cerulli on design studios that have investigated the production of housing.

On Finding Soft Space. The design studio SoftSpace attempted to understand the present world through tools and mechanisms not usually applied to architectural projects.[1] Asked to *find* instances of SoftSpace, Jeremy Till and I gave each student a "site" of 2 km in length which had been generated at random: we had thrown Mikado sticks onto a map of Sheffield in a deliberate effort to get away from the "typical" site for an architectural project. We told the students that with their explorations of soft space they had to stay physically as close as possible to this line. Yet, digression and detours became unavoidable since each line produced from the projection of the Mikado stick crossed rivers, cut through buildings, went through the backyards of private dwellings and traversed public buildings (Fig. 7.1).

Anna Holder, a student of this design studio, writes that the subsequent representations of this found space focused on the way "spaces are used [and] the disjunction between people and built form".[2] Students started to understand boundaries as negotiable and often fuzzy (simply because the initial line did not have a specific boundary), encounters with the everyday became inescapable (simply because these random sites crossed areas the students were and were not familiar with), and the experience of a space posited a challenge to their learned knowledge (simply because it was outside their "normal" approach as problem solvers). The task of "finding" soft space propelled the students into the territory of the everyday where the voices of those they encountered became as important as their own. They found instances of space that were open to a more variable understanding and (re)interpretation; space that was open to changing conditions; and space that allowed choice.

As a result of these observations *out there* and *in the world*, the students produced a catalogue of SoftSpace that presented itself as a list, in no particular order, of the issues and problems encountered along each line.

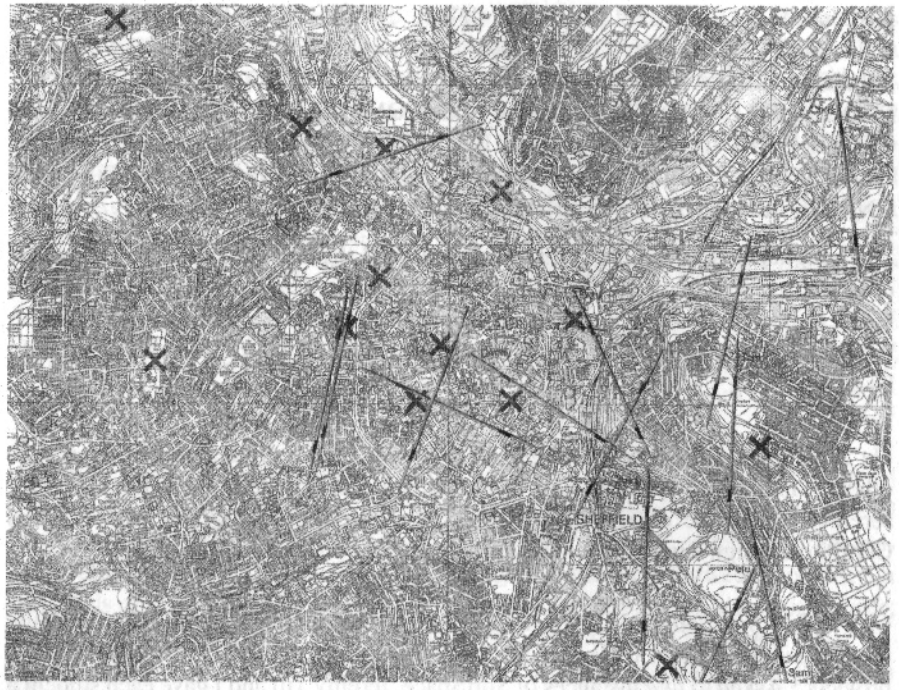

Fig. 7.1 Mikado sticks thrown onto a map of Sheffield to generate a "site". [Copyright: SoftSpace and The University of Sheffield]

SoftSpace, they write, has to do with:

Codes/ signs / Enclosure/ exposure defined physically / Places in transition between public / private ownership / Order(less) -> rubbish / (anti) surveillance /Humanising elements / The non-physical (sound, activity, smell, light) / The background frame / Accessibility / Self-expression / Sustaining over time /Multi-layered approaches / Intensity / Time (past, future use, permanence, day to day change) / Movement - freedom / Permeability / Hybrid use[3]

In subsequent studies and spatial proposals for architectural interventions, elements from this catalogue of SoftSpace were used as tools to oppose what we saw as modernity's overwhelming will to order, functional and technical determinism, ungiving determinism that provided neither true dialogue nor true choice. In this opposition we were joined by Michel Serres, who in a conversation with Bruno Latour exclaims that "THE GENTLE LASTS LONGER THAN THE HARD" (Serres & Latour, 1995, p. III), as well as by Jean Renaudie's call for the experience of "PLEASURE IN SPACE [and for giving] EVERYONE THE POSSIBILITY TO EXPRESS THAT WHICH IS NOT DETERMINED, BUT WHICH REMAINS LATENT VIS-à-VIS THE USE OF SPACE" (quoted in Scalbert, 2004, p. 40).

On Teaching. I work in a School of Architecture. I teach design and a lot of people ask me whether I am a practicing architect. I also teach history and theory though nobody ever asks me whether I am a practicing historian or theorist. I teach, though nobody ever asks me whether I have any teaching qualifications.

On Rules. Rules, guidelines, recommendations, regulations and laws govern architecture. There are internal rules about who is allowed to call him/herself an architect, rules that determine how to work as an architect, regulations about how form and plans are produced and other guidelines and laws about which use is and is not allowed in a certain space. And there are external rules to do with architecture as product, investment and object of value. Rules are commonly seen as restrictive and limiting, but what would happen if we were to see this plethora of *don'ts* as the ground for experimentation and imagination?

Writing about rules as one of the elements of SoftSpace, Anna Holder observes:

Who makes the rules of Softspace, and who enforces them? My early feelings in distinguishing soft and hard space concerned ideas about what one could or couldn't do in a space; from explicit rules to the pervasive feeling of being watched, overlooked [...]. Can these architectural rules be seen as the rules of a game: encouraging action, suggesting possibility? Can the built environment, inside and outside, present a loose structure that encourages moments of intensity, of event, as well as serving the purposes of quotidian activity. (2006, p. 11).

Rules, if understood through Anna Holder's lens, can work against these socially produced processes of specialisation and compartmentalisation. Instead, her suggestions for rules cross the boundaries of knowledge. The suggestions are still governed by rules yet propose conceptual possibilities and generate instrumental knowledge.

Delight. NO ONE SHOULD BE INTERESTED IN THE DESIGN OF BRIDGES – THEY SHOULD BE CONCERNED WITH HOW TO GET TO THE OTHER SIDE.[4] (Price, 1984, p. 51)

Tension. Architecture is usually considered as a noun, but what if it has been a verb all along? Our love for architectural objects has allowed us to be distracted from questioning what "to architecture" might mean. Why shouldn't we cross some of the hard, boring lines that define how architects think, what architects design, how, why and for whom? What is architecture worth? [see title image of this[5] chapter]

What indeed would it mean if architecture was a verb? Why does it seem so impossible to rethink and redefine architecture for it to become a field of questions, rather than a self-protecting problem solving discipline? And yet: What is the problem with loving and designing architectural objects? Why should we not have more star architects designing ever more iconic buildings?

The problem, for me, lies here: for most people the term architecture equals building. To say that one is an architect means that one designs buildings.

Most architects are incredibly adamant that their one special skill is that of design. They are "experts" in designing. When this is said, however, design almost exclusively links to aesthetics – the spatial arrangement of plans as well as a building's external envelope. It is this perfect picture of the aesthetic and external that becomes the permanent record and point of reference for the rest of the world (or at least those that are interested in architecture).

Once a building is finished, just prior to inhabitation, it is photographed. A building's pristine, untouched state is frozen in time and the image of this is printed in the outlets of the architectural world: magazines, newspapers, and journals. It is this perfected image that we keep coming back to again and again. Nobody wants to see paint peeling off (because it has been applied too quickly), buildings obsolete after only a few years of occupancy (because the plans are unchangeable), rubbish bins in the street (because no storage place was designed), or simply because all the intentions of a building scheme (it was meant to be lively. . .; vibrant. . .; a street. . .; a place for children to play. . .) on a second visit, had not been met.

Architects are afraid to face the mess. Apart from a few exceptions, architects do not return to their buildings once they are finished. The trouble is that a building is always only a moment in time. Handing a building over to a client does not mean the process finishes here, or that the responsibility for it stops (Fig. 7.2).

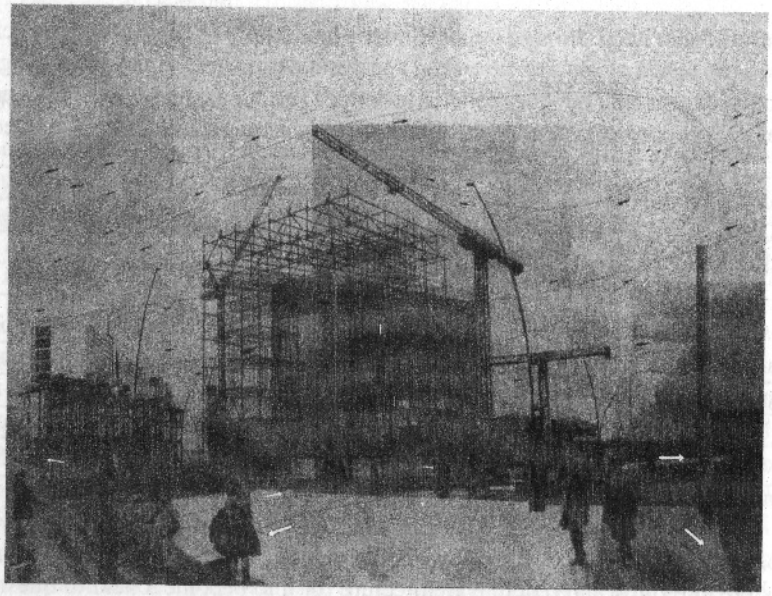

Fig. 7.2 Joe Mackey, Grey Areas, MArch Design Studio project. The drawing portrays traces of use, time and uncertainty. It was drawn on brown card to symbolise the impossibility of a tabula rasa condition. [Copyright: Joe Mackey and The University of Sheffield]

In the words of Giancarlo de Carlo:

THE QUESTION WAS HOW TO MAKE AN ARCHITECTURE WHICH CAN INTRINSICALLY BE PARTICIPATED, AND THIS QUESTION OF LANGUAGE. HOW CAN THE LANGUAGE BE SUCH THAT IT FAVOURS AND PUSHES PARTICIPATION? I THINK THAT THIS QUESTION STILL HAS TO BE EXPLORED, IN MANY DIFFERENT FIELDS: SO I BELIEVE THAT THE CRUCIAL ISSUE IS TO USE LANGUAGE THAT PEOPLE CAN UNDERSTAND, PENETRATE AND EVENTUALLY USE. SO THE PROCESS IN MY OPINION TAKES A LOT LONGER TO FORM. PARTICIPATION IS SOMETHING THAT YOU SHOULD START – AND THIS IS SOMETHING THAT YOU SHOULD NOT FORGET - IT LASTS FOREVER. (Quoted in Obrist, 2006, p. 18)

The Internal View of the Architect. In Britain, the path to becoming an architect is divided into three stages. Part 1 and Part 2 are an integral component of the architectural education at the universities, and the final stage, Part 3, is completed whilst already in practice. To gain Part 1 and Part 2, students have to demonstrate – through "ACADEMIC PORTFOLIOS", which focus on architectural projects – that they have an awareness, knowledge, and understanding of architectural history and theory, analysis and research, human well-being, cultural contexts, wider global issues, and so forth. Part 3, which can be taken after a year or two in practice in the form of an exam, is concerned specifically with work experience. The criteria for Part 3 neither relate to design or culture nor to the social environment any longer. Instead, the criteria focus on the context for practice, the management of architecture, the management of construction, and practice management and business administration.[6]

It seems bizarre that students, often confined to the inside of buildings and not able to work on real life projects during their education need to demonstrate an understanding of the wider world, whereas once in practice, when these things could really be tested they are simply not deemed relevant any longer.

Life as an architect, as perpetuated in the "Criteria for Validation" as published by the Royal Institute of British Architects, is no longer about criticality – in every aspect of the process of design – but about adherence to law and best practice – in terms of management. In fact, Part 3 defines the incredibly restricted set of current professional concerns. Is it not about time to work on a critical evaluation of these criteria and propose a different measure for qualification as an architect?

The Framing of Practice. Educators might have little influence on "professional" codes as set out by the Architects Registration Board or RIBA. Clearly practice is framed by a much more complex set of cultural and political conditions than can be dealt with by a revised educational system alone. Yet, many of the restrictive values by which architecture protects itself from the brute realities of the political and social context are first formulated in architectural education, which equips students with a critical set of values and ethics as well as another idea of practice. To unravel

those values, one has to pay attention to a critical pedagogy (in Paulo Freire's sense of the term).[7]

SoftPraxis. While much architecture education is conducted behind closed doors, with only selected and polished outputs allowed out, Jeremy Till and I used a blog to expose the process of a design studio. We published everything: briefs, instructions, comments, thoughts, tutorials, reviews and notes from meetings.[8]

The topic of this studio was SoftPraxis (and followed SoftSpace) and it was set up to challenge established ways of working as well as patriarchal values, and sought alternatives to this informed by feminist and political principles of integration and the other.[9] However, we started with a "Hard Sell": students were given a brief for a competition to culminate in a formal presentation to a real panel of judges. Each student, as Jeremy and I instructed via the blog, was to work individually (without communicating to anyone else within the studio) before submitting his or her anonymised proposal on a given deadline.

Joseph Mackey, one of the students of the studio SoftPraxis reflects on this in his project report:

> As diploma students at an architecture school that actively tries to challenge this autonomy, it was telling how easily the difficult "critical" way of thinking was discarded in-favour of easier ingrained routines and normative architectural procedures. In many ways the adversarial, pressurised environment of the Hard Sell informed the classic architecture students' response: there was an unquestioning obedience to the dogmatic, paternal voice of the online journal, a heavy reliance on the form and visual appearance of the project and a noticeable tendency developed to try and tick off all the assessment criteria (frequently only token gestures were made to context, sustainability and costing). We all resorted to coping tactics. No one really proposed a radical challenge to the functional and programmatic determinants of the brief. The prevailing trend was simply to parcel up the programme into an ordered rationalist bundle, wrap it in an attractive façade and present it as finished artifice. Essentially the assumption that an architects' role is to "design buildings" was upheld. (Mackey, 2008, p. 19)

What we had not told the students was that the promised jury (a person from the Council, a board member and CEO of a local organisation, a tenant for the proposed building and Andy Groarke of Carmody Groarke) did not exist. We had never invited anyone and had never intended to. Instead, the students were to be the jury, role-playing in pairs each member of the invented panel (Fig. 7.3).

Overall, we were at the same time pleased and depressed – and Joseph Mackey's reflections mirror this. Pleased that so much of the work met the expectations of the competition, many in a mature and sophisticated way. Pleased that we have so much stuff to work on, deconstruct, debate. Depressed how a normative brief and a normative competition system can make everyone play the architect game quite so expediently. What is sacrificed on the altar of hard sell? Or should we just be pleased

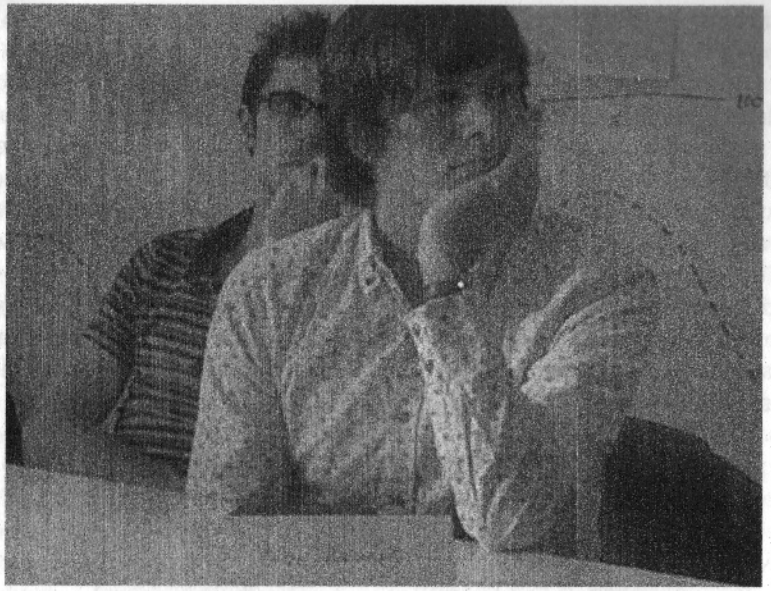

Fig. 7.3 Students of the MArch Design Studio SoftPraxis playing at being the architect Andy Groarke. [Copyright: SoftPraxis and The University of Sheffield]

that architecture students can so quickly get out stuff that looks like architecture, and forget about research, mapping, process, politics, sustained ideas?

On the Production of Space. THE SECTION OF SPACE ASSIGNED TO THE ARCHITECT – PERHAPS BY "DEVELOPERS", PERHAPS BY GOVERNMENT AGENCIES – IS AFFECTED BY CALCULATIONS THAT HE MAY HAVE SOME INTIMATION OF BUT WITH WHICH HE IS CERTAINLY NOT WELL ACQUAINTED. THE SPACE HAS NOTHING INNOCENT ABOUT IT: IT ANSWERS TO PARTICULAR TACTICS AND STRATEGIES; IT IS, QUITE SIMPLY, THE SPACE OF THE DOMINANT FORCE OF PRODUCTION [...]. (Lefebvre, 1991, p. 360)

Lefebvre describes the problematic notion that space, not unlike the fragmentation of knowledge into separate disciplines, is compartmentalised and divided into discrete plots to be manipulated remotely and objectively by the expert hands of the architect; an expert who will work within a predetermined set of conditions and a given site whose boundaries are defined by a thick solid line. Yet, what Lefebvre hints at is that there are important things beyond the purely physical at work.

Architects respond to client demands. They are given plans on which a site is demarcated with a line indicating the site's extension. This line is concerned with ownership yet at the same time it gives the architect his or her territory. Whilst this

should not mean that an architect's responsibility is only restricted to the area contained by this line, it often does. So, suppose this line was drawn not as a solid line but as a hashed one or even omitted. The act of making it permeable, even removing it could be an opportunity to consider the responsibility of the architectural process in far more expansive terms. It would open questions that go beyond the production of buildings as commodities, and approach design as a process that concerns the motivations behind a project, why and how it is produced, by whom and whom for. Transgressing, transcending and simply crossing the boundaries of a line (which could be understood as the crossing of disciplinary boundaries), as in the previous example of the Mikado sticks, allows for architecture to work in other ways and let in other forces and other opinions. Whilst this is a far from a genuine transdisciplinary approach to architecture it might at least be doing away with this line in thinking (Fig. 7.4).

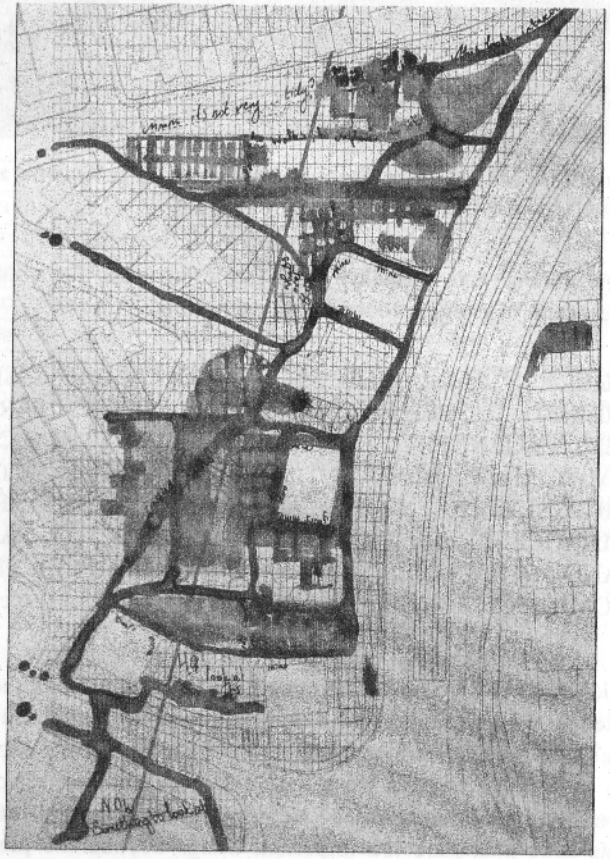

Fig. 7.4 Anna Holder, Softscape, MArch Design Studio project 2006. The Plot drawings were an attempt at mediating a landscape of social friction. Paint is layered on to "hard" line drawings, tracing connections and lines of sight, proposing a more fluid interpretation of a site. [Copyright: Anna Holder and The University of Sheffield]

Games of Chance. The students of the design studio SoftSpace had been invited to collaborate with the artist Alex Hartley. Hartley had been part of the project Cape Farewell and began the project "Nymark (Undiscovered Island)" which documented the finding and claiming of a "new" island in the Arctic. The island was only uncovered recently by a retreating glacier and Hartley asked the students for a variety of responses "FROM THE ENVIRONMENTALLY SENSITIVE TO THE ABSURD".[10]

We went to Rügen, an island in the Baltic Sea, combining a field trip with a workshop. Nearby was Prora, the colossal "Strength through Joy" sea resort (KdF-Seebad Rügen) that had been started in 1936 but was never finished. We started with a classical brainstorm session in groups to come up with a brief for the development of projects – which did not work out. Instead, Jeremy and I came up with a free interpretation of the surrealist game "Exquisite Corpse". We proposed a series of headings or categories which the students had to address in turn: each student wrote an answer or idea to one heading before folding it out of sight and passing the paper to his/her neighbour. Each answer was given in complete isolation, oblivious to what has gone before. As Jeremy explained to Alex: *We thought too much 'rational' thought would be wrong, so [we] wanted to work fast and from instinct. Left brain not right.*[11]

Out came strange juxtapositions, multiple story lines and scenarios that would never have come out of one individual hand. The next day, we went out onto the beach and built the scenarios at the scale of 1:10 with snow, ice and sand as the materials.

In the spirit of its surrealist inventors, "Exquisite Corpse" became a way for the group to explore ideas collaboratively, in contrast to rational subjectivity and individual authorship (Fig. 7.5).

Fragility/Failure. The Inconspicuous Yellow Office (IYO) was a group of MArch students and tutors at the School of Architecture, University of Sheffield. IYO was part of the Live Projects (six-week long projects that aim to bring groups of students together with real clients in real projects) that have been run by the school for a number of years. The IYO was different to other Live Projects because, on the one hand, it was part of the larger research project PEPRAV (European Platform for Alternative Practice and Research on the City). On the other hand, IYO was set up to research, document and analyse all the other Live Projects. IYO aspired to be part of every Live Project by infiltrating other current Live Projects, investigating past projects and seeking the potential for future projects.[12]

Nobody liked us, really.

We set out to question the sometimes problematic nature of collective practice and the various ways of setting up collaborations. We wanted to find out how Live Projects could be more than just a transitory involvement, how we could engage and take responsibilities on a longer term project (along side and beyond the academic curriculum). Yet, none of these questions were seen as helpful by the other Live Project groups. We were seen as intruding and invasive, rather than helping. Each

Prelude. If the goal of transdisciplinarity is, as Basarab Nicolescu puts it, the "UNDERSTANDING OF THE PRESENT WORLD, OF WHICH ONE OF THE IMPERATIVES IS THE UNITY OF KNOWLEDGE" (2002, p. 260) and that transdisciplinarity, according to Roderick Lawrence, implies "A FUSION OF DISCIPLINARY KNOWLEDGE WITH THE KNOW-HOW OF LAY-PEOPLE THAT CREATES A NEW HYBRID WHICH IS DIFFERENT FROM ANY SPECIFIC CONSTITUENT PART" (2004, p. 489), what are the implications for architecture where, as Magali Sarfatti Larson observed, more often than not, lay-people "ARE NOT ENTITLED TO PARTICIPATE IN THE PRODUCTION OF THE PROFESSION AS A DISCIPLINE" (1993, p. 5).

To limit this discussion to practice on the one side and theory on the other, however, would be to miss the point. Transdisciplinarity, as it is understood here, moves beyond these two terms of binary opposition to include all the *stuff* that is central to architecture as a field of operation, as spatial practice. Yet, transdisciplinarity is not an easy thing to comprehend, instigate or put into action and brings with it a whole series of issues and problems concerning agency, power, as well as structure.

What follows here is one manifestation of the issues and problems transdisciplinarity confronts and is confronted with within the context of architecture. They purposely appear as fragments to illustrate quite literally the multi-facetted nature of different ways of doing: teaching approaches, ideology and architectural thinking, the organisation and expectancies of the profession as well as teaching and design methodologies. Personal opinions are intermingled with non-contextualised notes from a series of design studios or instructions given to students; interviews are fused with theories and teaching; "I" is mixed with the voices of others each of which is expressed in a different style – the voices of students (underlined text), *of teaching and writing collaborators* (italic text) as well as those of "EXPERTS" (capital letters) – to be used as a reference guide throughout the text. The format, as a result (and despite its artificial construct), is a direct reflection on both the possibilities of a transdisciplinary approach as well as on what I would see as the transdisciplinarity impasse.

The use of fragments as a method to display these varying themes not in a linear and unfettered sequence, but in a rhizomatous and interconnected yet non-continuous manner, reflects my personal approach to architecture as a relation of incidents or stories that are linked through themes, interests, and motivations rather than a continuation of space or time.

Games of Chance. The idea for this use of fragments as a structure came from a card from Brian Eno and Peter Schmidt's *Oblique Strategies*, which told me to "Discard an Axiom". I took axiom to mean a well-established principle, rule or law, and decided that the axiom I wanted to discard was the standard academic text and instead wanted to assemble an array of non-hierarchical positions and influences. Therefore, I followed the instruction, suspended disbelief, not quite knowing what exactly it might mean or where it might lead me.

I began to compile ideas, notes, as well as talk to people about how to draw out the problem and struggle with transdisciplinarity until it became clear that this, precisely, was a representation of how different themes work together in their own inherent complexity. Soon it was not just this particular card that I followed or the initial instruction, but more both Eno and Schmidt's intention behind the game.

Brian Eno explains (in Taylor, 1997):

> [...] THE PANIC OF THE SITUATION - PARTICULARLY IN STUDIOS - TENDED TO MAKE ME QUICKLY FORGET THAT THERE WERE OTHER WAYS OF WORKING AND THAT THERE WERE TANGENTIAL WAYS OF ATTACKING PROBLEMS THAT WERE IN MANY SENSES MORE INTERESTING THAN THE DIRECT HEAD-ON APPROACH. [...] THE FUNCTION OF THE OBLIQUE STRATEGIES WAS, INITIALLY, TO SERVE AS A SERIES OF PROMPTS WHICH SAID, 'DON'T FORGET THAT YOU COULD ADOPT 'THIS' ATTITUDE', OR 'DON'T FORGET YOU COULD ADOPT 'THAT' ATTITUDE'.

The game here is not an end in itself but a tactic for setting in motion a different way of thinking and doing to allow an element of digression, of open-endedness, of chance into a process that is habitually dictated and controlled by skill.

Proposition. Suppose that normative methods of architectural education lead to certain values and methods being established in practice but also that different means of practice will develop different spatial possibilities. But: what are the conditions of such pedagogy? What are the challenges for architectural practice? (Schneider & Till, 2007c)

Architecture = Object. Suppose first that architecture is not what we have been told it is, that it is about a lot more than just the placing of objects in space. Yet, by concentrating on the polished presentation of completed spaces, architecture has shuffled itself into a state of almost complete irrelevance. The problem with reducing the architect to someone who merely designs or conceptually develops buildings is that work and projects are determined by externally set parameters.

Now, suppose architecture was not about problem solving but about problem posing in Paulo Freire's sense (Freire, 1970). Yet, architectural education still perpetuates the notion of the expert. In year after year of architectural education, students are educated into believing that only they might hold the answers to specific problems. They are trained to exhibit this position to the outside: being authoritative when all authority does is alienate, playing the expert when it would be more helpful to ask questions.

Architecture needs to be understood as an embedded and deeply dependent part of this world, as working within a complex web of social relations. Henri Lefebvre writes that if we fail to pay attention to those relations, "KNOWLEDGE MISSES ITS TARGET; OUR UNDERSTANDING IS REDUCED TO A CONFIRMATION OF THE UNDEFINED AND INDEFINABLE MULTIPLICITY OF THINGS, AND GETS LOST IN CLASSIFICATIONS, DESCRIPTIONS AND SEGMENTATIONS" (1991, p. 81).

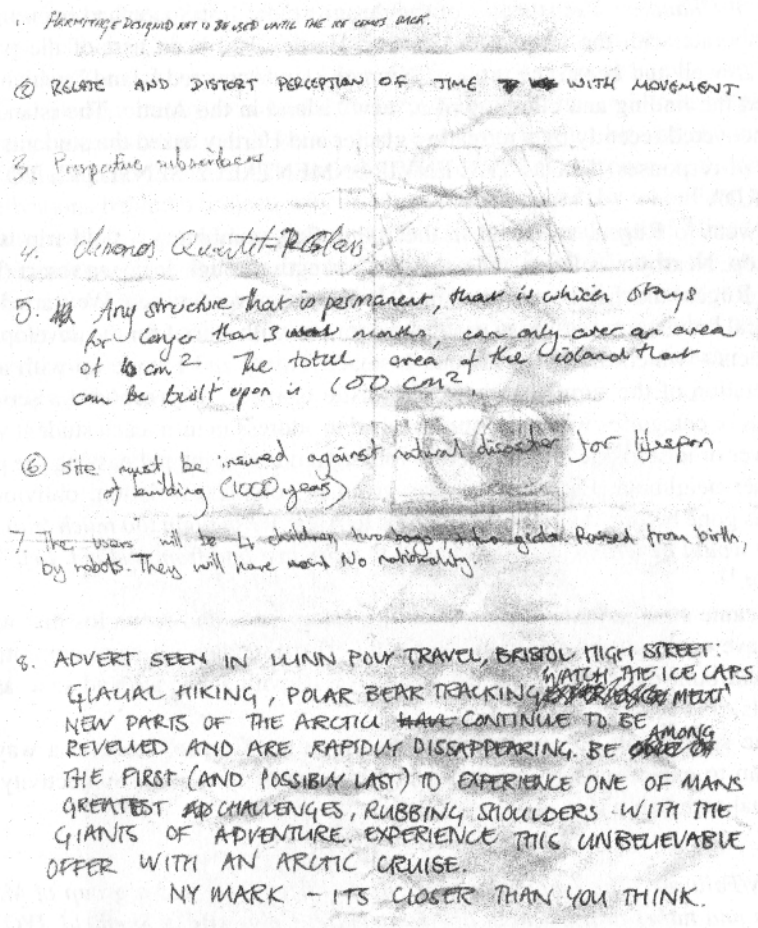

Fig. 7.5 Exquisite corpse: individual responses to nine categories by 14 designers, each written without knowledge of the previous answer formed the "brief" for three architectural proposals. [Copyright: SoftSpace and The University of Sheffield]

group was happy in their own confinement. To transcend a group's boundaries and let someone else in seemed too much. Hardly anyone understood why we were interested in continuing to ask questions. Why we wanted to learn? For what? To do what?

The aim of the IYO had been to bring together these fragmented sets of knowledge produced within the safe boundaries of each Live Project group. Trying to inform our own project we wanted to set in motion the communication and interaction between a complex set of actors (researchers, students, academics, artists, clients, representatives from local authorities) in order to produce a framework for an intersubjective (in Habermas's sense) platform – but failed.

On Collaboration. Whilst the design studio SoftSpace was an attempt at defining other ways of doing architecture and SoftPraxis one in challenging methods of architectural production in the studio setting, the studio Housing+ that I coordinated with Cristina Cerulli set out to produce projects as a collaborative endeavour.[13]

In the spirit of Patrick Bouchain, we wanted to be true to the following maxims: "INVOLVE AS MANY PEOPLE AS POSSIBLE, ENSURE THAT THE VARIOUS DESIRES CONVERGE, ALLOW YOURSELF TO BE CARRIED ALONG, LEAD THE OVERALL PROJECT LEAVING NO ONE ASIDE, COMBINE KNOWLEDGE AND MATERIALS, BRING IN THE USER BEFORE CONSTRUCTION IS COMPLETED, ALLOW HIM TO FINISH, TRANSFORM, MAINTAIN AND, IN TURN, PASS THINGS ON" (Quoted in Towle, 2009, p. 3).

Our studio was set up as a loose partnership between ourselves, our students and a number of people in other academic departments and universities as well as from outside the university. We envisaged and provided the basis for the studio as a research process that is open source as well as open ended, and where every student would be an active member of the research group – where the methods, aims and objectives of this collective production would be identified by the group.

The overall theme of social housing design was explored and researched from a number of disciplinary perspectives, including planning, economics, sociology, organisational science as well as from the points of view of residents, designers, neighbours, young and old people, young parents, people who live alone and so forth. Collaboration became a focus and thread common to many of the design proposals that hinged on collaborative processes or mechanisms, including community self-built, cooperatives and co-housing (Fig. 7.6).

As tutors, Cristina and I had developed a framework to start with, including a field trip and a series of seminars and workshops both within and outside the university setting. The students gradually took more "control" whilst we as tutors continued to guide and coach but, more importantly: we let go. Students took charge of inviting people relevant to their own project, teamed up with their peers within the MArch course, and organised workshops and seminars amongst themselves and, over the course of the academic year became active agents rather than re-active subjects.

On Wasting Time. CEDRIC PRICE: ONE SHOULDN'T IGNORE THE DELIGHT THAT CAN BE ACHIEVED FOR THE INDIVIDUAL THROUGH WASTING TIME. THROUGH SPENDING LONGER, RATHER THAN SPENDING SHORTER. SO THAT'S ANOTHER EQUATION. RATHER LIKE JAPANESE ZEN GARDENS WHERE THERE ARE JUST PEBBLES AND THEY RAKE THE SAND. NOW, I WATCHED THAT FOR HOURS. I WATCHED IT EVEN LONGER THAN THE JAPANESE WATCHED IT BECAUSE I WAS INTERESTED IN THE PERSON RAKING THE SAND AND HOW SOON HE GOT BORED. THE FOREIGN OBSERVER, NOT REALISING THE DELIGHT OR REALISING ANOTHER DELIGHT.

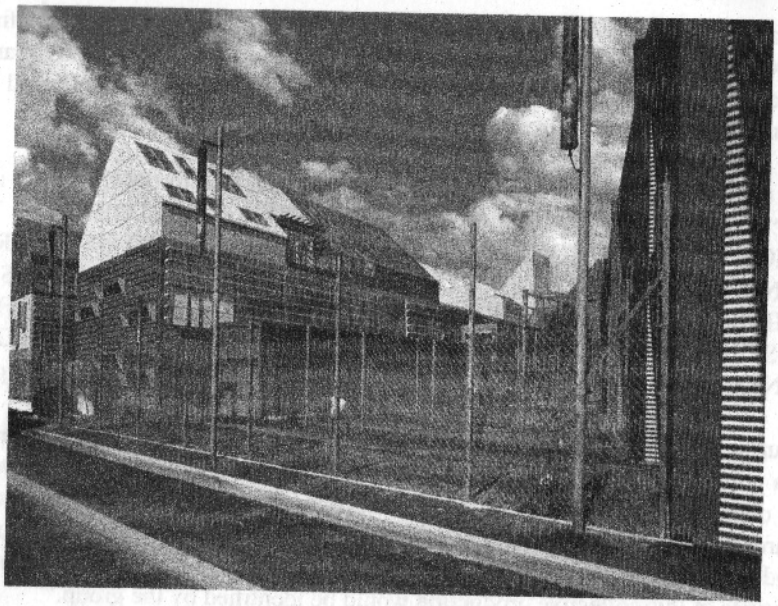

Fig. 7.6 Adam Towle, Open House Alliance, MArch Design Studio project 2009. Using the principles of Open Source Software, the project intends to halt the trend of standard, generic houses that lack individualised architectural input, yet also proposes to place key design decisions in the hands of the user and not the architect. [Copyright: Adam Towle and The University of Sheffield]

Florian Kossak: Probably we should start to invent elements that enhance the slowing down process or even the possibility of wasting time.

CEDRIC PRICE: I DON'T KNOW IF THERE IS ONE, BUT I LIKE TO THINK THAT THERE IS SOMEONE IN SOME DEPARTMENT OF SOME UNIVERSITY SOMEWHERE IN THE WORLD THAT DESIGNS BIG ROCKS THAT YOU CAN PUT ON THE ROADWAY BECAUSE IT MAKES IT MORE DIFFICULT TO GO ON THE ROADWAY. BECAUSE OF THE DELIGHT OF GETTING AROUND THOSE ROCKS AND THE TIME IT TAKES TO GET ROUND THEM. (From an interview in Kossak, 2002, p. 9)

Cedric Price puts "wasting time" forward as a tactic, which becomes an indicator of pleasure. He talks about delight in lingering, in seeming purposelessness and about the intentional creation of obstructions where there need not be any. In this sense, it is a call against determinism and for non-plan, against the rule of efficiency and for wastefulness, against the rational and for the illogical, against the most obvious for the ambiguous.

There are measures for time within each discipline: we know how much time it takes to fulfill certain tasks, how long it will take to do certain things. Yet, if working beyond the boundaries of a particular discipline, there is no such measure any longer. Not-knowing, re-negotiating time therefore – amongst other things – becomes a principle of transdisciplinarity.

Addendum. Thierry Ramadier writes that "TRANSDISCIPLINARITY IS NECESSARILY BASED ON DISCIPLINARY PRACTICES. HOWEVER, IT IS ALSO BASED ON THE ASSUMPTION THAT THESE PRACTICES MUST EVOLVE TO MATCH THE COMPLEXITY OF THE ISSUES FACING TODAY'S SCIENTIFIC COMMUNITY" (2004, p. 424).

Architecture concerns the world. It sits within it, is embedded within it. As a discipline it might still be relevant; but only if it starts to acknowledge different voices, different collaborations and different authors. And this is something that both teaching practice as well as professional practice need to acknowledge both through conduct and through the way things – education as well as buildings – are done.

I do not and cannot know everything. Collaborations, therefore, become a way of not standing still and recognising that architecture, like every other discipline, has its limits. To admit to multiple realities as one's working ground and to carry this ethos from pedagogy into practice and back into pedagogy begins to suggest steps outside of the alleged linearity of processes.

Yet, it is both the process and the product that needs to be reconsidered as both are inextricably linked. Architecture is not, as so often propagated, about the "ART OF BUILDING".[14] The discussion around architecture needs to move outside of what Iain Borden and Jane Rendell have described as the "GRAVITATIONAL PULL OF THE OBJECT" (2000, p. 5), where architecture equals buildings and making equals technology. We need to look beyond "THE INTERNALISED CONCERNS OF THE DISCIPLINE" (Borden & Rendell, 2000, p. 5) not only to understand it historically but to expand it into the future.

In this text, I have been oscillating between teaching, theory, comments on practice and personal statements and have put forward arguments in a loosely and associative manner in the hope that the various strands of enquiry would gradually converge to explain a position. Yet, having arrived here, it seems important to reiterate that transdisciplinarity, if applied only as a working method, misses the point.

Unless working in transdisciplinary ways becomes a qualitative tool, unless it becomes a means of choice with ethics and values attached, then it does not mean much. Hugo Hinsley argues that "NEITHER EDUCATION NOR THE STRUCTURE OF THE PROFESSION NOR THE DESIGN AND PRODUCTION OF BUILDINGS CAN BE SEEN IN ABSTRACT; THEY ARE ALL AFFECTED BY THE SOCIAL, POLITICAL AND ECONOMIC FRAMEWORK OF OUR SOCIETY, AND A PART OF EDUCATION IS TO CONSIDER AND QUESTION THIS FRAMEWORK" (1978, p. 9). What Hinsley reminds us of is that architecture, neither as object nor as process, neither in practice nor in education is neutral. Yet, we need to do more than just consider and question, more than just mediate and facilitate. To be involved in architectural education, for me, means being able to discuss architecture not as the simple imparting of skills or techniques but as something where these skills and techniques become tools of change, of transformative action.

Notes

1. The students of the design studio SoftSpace were: Chris Brightman, Dan Burn, Sam Goss, Philip Graham, Anna Holder, Peter Merrett, Anca Milache, Tom Price, Lisa Procter, Ruth Queally, Basim Shamsuddin, Kenji Shermer, Daniel Wiltshire and Jamie Wakeford.
2. Email on 13 May 2006 from Anna M. Holder to Tatjana Schneider and Jeremy Till, "project introduction/ design report summary", 2006.
3. Email on 19 January 2006 from Basim Shamsuddin to Tatjana Schneider and Jeremy Till, "softspace catalogue", 2006.
4. The quote refers to the text *On safety pins and other magnificient designs* which was published by Price in 1972 (Price 1972) and (Price 1984).
5. From a text prepared by the students of the design studio SoftPraxis (co-ordinated by Jeremy Till and Tatjana Schneider) at the School of Architecture, University of Sheffield for the event "Architects for Sale" during the 2008 London Architecture Festival.
6. For a full set of the criteria for RIBA Part 1, Part 2 and Part 3 see: *Royal Institute of British Architects. Criteria for Validation*, 2003.
7. This is related to a question posed by An Architektur in reference to a co-authored paper presented at the Camp for Oppositional Architecture in Utrecht in November 2006. For the full text and the Q&A session, see Schneider and Till (2007a).
8. The Softpraxis website (2007) can be seen at http://softpraxis.wordpress.com/category/tutorials [accessed 9 January 2010].
9. The students of the design studio SoftPraxis were: India Aspin, David Cook, Lorenzo Dwyer, Rachel Harris, Hannah Lambert, Joseph Mackey, Alastair Parvin, Chris Patience, Alexandra Pitney, Kevin Ryan, David Sparks and Naomi Taylor.
10. Email on 21 December 2005 from Alex Hartley to Jeremy Till and Tatjana Schneider, "undiscovered island", 2005.
11. Email on 01 February 2006 from Jeremy Till to Alex Hartley, "Look what you've started", 2006.
12. IYO were: Paul Bower, James Brown, Peter Buist, Florian Kossak, Pui Yu Zue Lee, Doina Petrescu, Matt Plummer, Kevin Ryan, Tatjana Schneider, Julia Udall, Thomas Vigar and Emma Williams. Other participants in discussions included: Kathrin Böhm, Carolyn Butterworth, Leo Care, Prue Chiles, Alan Deadman, Colin Havard, Pierre Jambé, Mark Kingsley, Rosie Parnell, Constantin Petcou, Jeremy Till, Sam Vardy.
13. The students of the design studio Housing+ were: Ben Asbury, Leanna Boxill, Adam Dainow, Sarah Green, Tomas Kangro, James Kenyon, Tom Kirby, Osamu Masaki, David Rozwadowski, Aditi Saxena, Peter Sofoluke, Adam Towle, Kieran Walker and Craig Western. We collaborated with: Anna Holder, Mel Davis and the Heygate Tenants and Residents Association, David Rosenberg, Dominic Church and CABE, Paul Hodgson, Duncan Bowie, Stephen Hill, Indy Johar, Tony McGann, George Evans, Jack McBane, Bill Halsall and the Eldonian Community Based Housing Association, Amanda Baxter, David Rodgers, Nishat Awan, Stephen Proctor, John Gillespie, Dan Usiskin, Judy Torrington, Jim Reed and Dan Burr.
14. For example: Edinburgh School of Architecture and Landscape Architecture ESALA, "Home. Welcome" (2009). http://www.esala.ac.uk [Accessed 17 November 2009].

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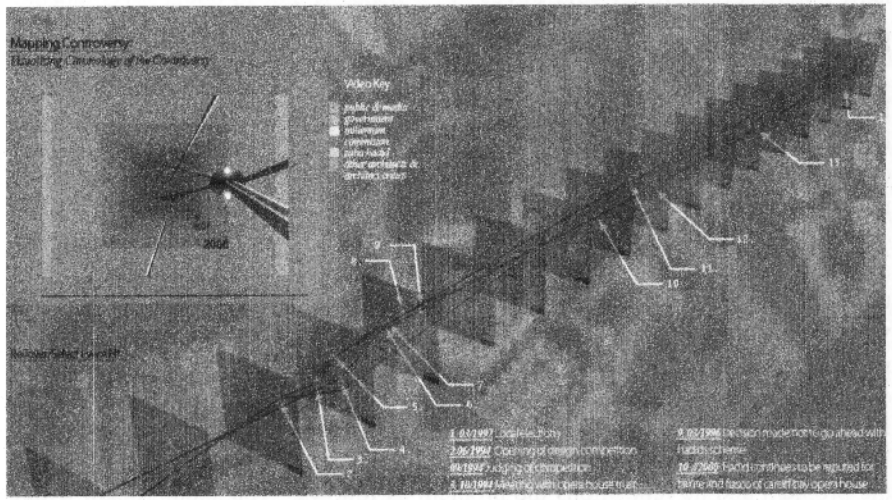
Chapter 8
From Reflecting-in-Action Towards Mapping of the Real

Albena Yaneva



Mapping of the Cardiff Bay Opera Controversy (2008/2009). Courtesy of Peter Brown, Lindsay Griggs, Natalie Harris, Abigail Phillips, and Sean Wilkins

Donald Schön's (1983) concept of "reflection-in-action" made a revolution in design anthropology in the 1980s, founding a new epistemology of practice, one that stands the question of professional knowledge on its head by taking as its point of departure the competence and artistry already embedded in skilful practice. This type of studio-based reflexivity can be followed in many architectural schools today, and is commonly privileged by the professional schools of many research universities. If reflection-in-action stands against the systematic, scientific, linear way of knowing,

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what kind of enquiry could complement the systematic way of knowing about architectural theory? I will argue that architects today need to engage more with a pragmatist type of architectural enquiry that would be a situation-based, distributed way of learning about architecture and its various entanglements, rather than one that would rely on a stable stock of systematic, scientific knowledge. An experiment in introducing such a pragmatist, self-exemplifying mode of engaging with architecture will be discussed here – Mapping Controversies – and some results of this educational experiment will be presented and discussed. As opposed to the reflective studio-based learning of what it means to design, Mapping Controversies implies an out-of-the-studio way of learning *about* design, which is simultaneously an out-of-the-auditorium mode of questioning the multifarious connections of architecture, society, economics, culture, and politics.

8.1 Two Types of Enquiry

Let us follow Petra (a student) and Quist (the coach) in their attempt to design a building. The example is taken from Schön's *Educating the Reflective Practitioner* (1987). They discuss the project and as they do so, they also sketch different buildings. That is to say, a reflective mode of designing. This reciprocally reflective dialogue of coach and student happens in the studio. Their design process traces a web of projected moves and discovered consequences and implications, sometimes leading to a reconstruction of the initial coherence – a reflective conversation with the materials of the situation. We follow Petra and Quist's conversation with materials and shapes. Drawing and talking, Schön informs us, are parallel ways of designing and together make up what he calls the "language of designing". Petra is stuck. She has tried to place the shape of the building into the contours of the land there, but the shape does not fit into the slope. Quist criticises her framing of the problem and he repositions the problem as follows: "you should begin with a discipline, even if it is arbitrary... you can always break it open". In the media of sketch and spatial-action language, he represents the site, draws and redraws different options, and simultaneously evaluates the consequences of every move on the sketch. Each of these moves has implications binding on later moves, and each of them can potentially create problems to be described and solved, sketched and re-sketched. Thus, Quist designs "by spinning out a web of moves, consequences, implications, appreciations, and further moves" – that is how Schön recounts what it means to design. Both Petra and Quist engage in a reflective conversation with the situation. Each move is a local experiment that contributes to the global experiment of reframing the problem. It is a reflective process: "As Quist reflects on the unexpected consequences and implications of his moves, he listens to the situation's back talk, forming new appreciations, which guide his further moves" (Schön, 1987, p. 57). Design progresses as Quist reframes the problems posed by the student Petra and engages in a reflective conversation with the situation and the implications of the new design moves.

Here is another type of enquiry: We are in the midst of 2006 with the controversy surrounding the proposed expansion of London's Heathrow Airport. Robert, Aisha, Joe and Sophie plunge into the press clippings and image galleries on the web to try and unravel all the traces this controversy has left in the digital sphere: archives of the Heathrow developments; governmental papers; press clippings covering the community and activists' protests, images, and videos. They are my Architecture students, and I am not a coach in the studio, but a lecturer in Humanities. They learn about the nature of dissent, they identify the actors, they stare at a complex timeline of the controversy that incorporates all the actors, and they follow the different events. Images and YouTube material inform us about the key actors and we can literally hear their voices: "voices from the remembrance service for the victims of climate change on the taxiway at Nottingham East airport held by the Baptist minister, Reverend Malcolm Carroll, held on 24th September 2006"; "Voices of protest from the 14th – 21st August annual climate change camp held at Sipson. Over 2,000 people attended"; "Voices of protests from 21st March when Plane Stupid activists do a banner drop near Edinburgh airport". And we can extend the list. Robert, Aisha, Joe and Sophie immerse themselves in the complex data sets that allow them to reflect not only on the design of the third runway and the sixth terminal to London's Heathrow airport, but on all those issues design is related to: How would the new terminal affect climate change? How many surrounding homes would the expanded airport destroy? How would the new design affect the residents of the village Sipson? Will the campaigns against Heathrow's expansion change any of the design plans? Thus, as my students collect data on the controversy and try to analyse and visualise it, they actively engage in a type of pragmatist enquiry called mapping the controversy.[1] Tracing the actors' trajectories, drawing their diagrams of relations and the timeline of the controversy while collecting the data, they do not simply deal with the sketch and the design coach, but rather interact with a much vaster and heterogeneous assembly of actors: the London Mayor Boris Johnson, greenhouse gas emissions in addition to nitrous oxide levels, Greenpeace, environmental impacts, the West Drayton Residents' health concerns, the activist group Plane Stupid, environmental, aviation and welfare groups, celebrities like Emma Thompson and Alastair McGowan supporting Greenpeace, airlines like Cooptravel and British Airways, British Airports Authority, and so forth, all become part of the complex ecology of the proposed airport expansion. When dealing with all these actors, Joe and his team do not learn what design is; they rather learn about *what design does* – what kind of effects it can trigger, how it can affect the observer, divide communities and provoke disagreements; they immerse themselves into the many consequences of design practice and gain an awareness of its various implications. So, if Joe, Robert, Aisha and Sophie were about to design a new terminal, especially after the controversial fame of the recent Terminal 5, would they still stay in the studio, absorbed in a meditative dialogue with the sketch, staring at a model and "engaging in a dialogue with materials and shapes", trying to solve the paradoxes of design? No, they would rather plunge into the design world outside the studio and face its complex ontology.

What kind of enquiry is this, and how does it differ from the studio type of reflection-in-action? (Schön, 1985) Would it still require the designers to engage in a meditative process of communicating with materials and shapes in search of the good airport design? Or, is it a meta-reflexive analysis of what could explain

design by situating it as much as possible into reflexive frameworks (that is, a critical theory-inspired view of architecture)? No, none of these can describe the mapping controversies exercise in which Joe and his friends engage. It is neither purely reflective nor a meta-reflexive enquiry. As compared to the studio reflection-in-action that deals with the uncertainty of design, taken in the specific materiality of cognition, the mapping is rather a self-exemplifying type of enquiry that deals with the consequences of the manoeuvres of all actors involved in situations of uncertainty, their implications, their changing positions and opinions. As Joe and his team search among the piles of articles in the library and navigate databases and image galleries on the Internet, they witness a web of moves composed of all the actors' stances involved in the controversy. This exercise is not about designing a building, and trying to fit it into a slot; but rather about weighing up the impacts a building could have, evaluating the consequences of design and its implications. The mapping does not advance by a subsequent reframing of the problem or by the sketching and re-sketching of different options and possible scenarios; it progresses rather by following all extending webs and multiplying their proliferation through the enquiry. In the first case, Petra and Quist try to understand what their building will look like and how to design it in a better way by solving all the problems of site, scale, materials, and shapes. While in the second case, Joe and his team try to comprehend the consequences of design and the web of shifting positions within the controversy.

In fact, you could argue that the two types of enquiry are not comparable at all. One occurs in the US during the 1980s, the other, in the UK in 2009; one involves a student and coach; the other, a group learning environment with a lecturer; one refers to a situation of learning *to* design; the other, implies situations of learning *about* design; one could be quickly called "design practice"; the other, "design theory"; one will take its inspiration from Technology; the other, from Humanities. And if we were to continue the list of comparisons, we would get deeper into the dualism of Technology and Aesthetics, Architecture and Society, Theory and Practice. Sceptical of the rationalism that distinguishes Art from Science, the mapping controversies method makes an attempt of endorsing and cultivating through teaching a specific attention to the performativity of design.

In this essay, I refer to Schön's study in order to shed light on the differences between a reflective enquiry, one that is bidirectional, with the self-exemplifying multidirectional type of enquiry implied by mapping controversies. In the former, the designer and the result of his design are affecting one another in a situation that renders both directions into a relation of cause and effect, where every design move "bends back on" and affects the entity instigating the action. There are many ways of comparing the design reflexivity of Petra and Quist described by Schön with what typically happens today in a studio's practice. Whatever the differences we could establish, the types of reflectivity accounted by Schön can still be found today. Moreover, there is a variety of other data that designers take into account when designing: they do not engage in solitary coach-and-student problem-solving with the help of a sketch; this dialogue with sketches and shapes is complemented rather by an intense search of data, design precedents, image retrieval, fresh actors' statements, archival materials, government papers, and data about the architects in charge. These new sources of design inspiration would imply a different mode of communication with materials and shapes, a different type of cognitive practice. The thinking about what they are doing while they are doing it makes the *drawing* design practitioners reflective, while the mapping designers are rather "*surfing* practitioners". You could object to this perhaps rash comparison, and say, "but many professionals today rely on browsing large amounts of data at the beginning of every enquiry". What is it that makes the surfing Joe a design practitioner? If design happens by surfing and drawing, how do designers today find their way within these various datasets – the digital masses of data on their computers and the heaps of drawings, paper cut-outs and physical models in the studios? How is it that this type of hybrid enquiry, with tracing paper and screen pixels, travels and generates a new type of design practice?

To answer these questions we will leave Petra and Quist for a while arguing over the sketch and reframing design problems, and focus on the mapping venture that Joe and his team are about to undertake. Why do they deal with controversies rather than simply with buildings and shapes? What is a controversy and how does this type of enquiry lead us to a different epistemology of practice and has different implications for design education?

8.2 What Is a Controversy? What Is Mapping Controversies?

The methodological and conceptual roots of this approach stem from the discipline of Science Studies with the writings of the French sociologist and philosopher Bruno Latour forming the primary source for its subsequent development. Latour first developed his ideas in relation to the analysis of scientific and technological controversies (Latour, 1987). According to the MACOSPOL project:[2] the word "controversy" refers to every bit of science and technology which is not yet stabilised, closed or "black-boxed"; it does not mean that there is a fierce dispute nor that it has been politicised; we use it as a general term to describe shared uncertainty. Controversy analysis is the educational application of Actor-Network Theory (ANT), a method of enquiry that questions the traditional epistemology of the social sciences (Latour, 2005; McLean & Hassard, 2004, 2007).

Following a decade of teaching and exploration of this methodology in relation to science and technology issues, it has been explored how this new approach could be extended to other disciplinary areas, such as design and architecture. This can be considered just a stage in the development and extension of this evolving inter-disciplinary area of design studies and ANT (Latour & Yaneva, 2008; Yaneva, 2009). Thus, drawing on controversy mapping theory and previous teaching experience in *École des Mines*, I engaged in a new mapping experiment in 2009. I asked my BA architecture students to use their advanced design skills to draw, map and visualise not an object (typically a building or a site) but a controversy, i.e. a complex ecology of connections of an architectural, cultural, economical, and political nature. They followed and mapped different controversies focussing on the dynamic

1) Mode of knowledge production characterised by its hybrid nature, non-linearity and reflexivity, transcending any academic disciplinary structure.
2) Tackles complexity in science and challenges knowledge fragmentation, dealing with research problems and organisations that are defined from complex and heterogeneous domains.
3) Accepts local contexts and uncertainty; it is a context-specific negotiation of knowledge.
4) Includes the practical reasoning of individuals with the constraining and affording nature of social, organisational and material contexts.
5) Requires close and continuous collaboration between actors during all phases of a research project, through "mediation space and time".
6) Often oriented toward action, making linkages not only across disciplinary boundaries but also between theoretical development and professional practice.
7) Frequently deals with real-world topics, generating knowledge that not only addresses societal problems but also contributes to their solutions.
8) Generally aims at understanding the actual world and at bridging the gap between knowledge derived from research and decision-making processes in society.

Fig. 3.1 Characteristics of transdisciplinary research according to Lawrence and Després (2004) © GIRBa

URBAN AND LANDSCAPE PERSPECTIVES

Isabelle Doucet · Nel Janssens (Eds.)

Transdisciplinary Knowledge Production in Architecture and Urbanism – Towards Hybrid Modes of Inquiry

The volume addresses the hybridisation of knowledge production in space-related research. In contrast with interdisciplinary knowledge, which is primarily located in scholarly environments, transdisciplinary knowledge production entails a fusion of academic and non-academic knowledge, theory and practice, discipline and profession. Architecture (and urbanism), operating as both a discipline and a profession, seems to form a particularly receptive ground for transdisciplinary research. However, this specificity has not yet been developed into a full-fledged, unique mode of knowledge production.
In order to dedicate specific attention to transdisciplinary knowledge production, this book aims to explore (new) hybrid modes of inquiry that allow many of architecture's longstanding schisms to be overcome: such as between theory / history and practice, critical theory and projective design, the adoption of an external viewpoint and a view-from-within (often under the guise of bottom-up vs. top-down). It therefore offers the reader a mix of contributions that elaborate on knowledge production that is situated in the (architectural and urban) profession or practice, and on practice-based approaches in theory.

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