

# **Design as Inquiry**

Prospects for a Material Philosophy

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Björn Franke, March 31, 2016



## Abstract

For many, design is the production of useful artefacts. Designing can however also provide a basis for exploration, speculation or critique. This thesis develops this conception further by providing a theoretical framework for conceiving designing and design objects as a mode of and media for philosophical inquiry. Design is regarded as a material philosophy that explores and reflects philosophical issues by situating them in the concrete and particular reality of human life rather than in a generalised and abstract realm.

Design objects are equipment and media that can be understood in terms of their contextual references and consequences as well as the way in which they mediate human action, thinking and existence, and thus in terms of the worlds that they open up. As media for reflection they allow one to gain an experiential understanding of these contexts and worlds. Design thus relates to philosophy in terms of ethics and concepts; that is, in terms of exploring possibilities of existence and new forms of thinking. Since design objects can create new experiences and interactions they can lead to new values and concepts. These objects can be used to reflect on philosophical issues and to thus see the world from a new perspective.

These new perspectives may be brought about through three approaches: First, through fictions that render possible worlds experienceable or show the existing world in a new way. Second, through models that serve as tools for understanding and mediation between the general and abstract and the concrete and particular. Third, through situations, simulations and re-enactments that facilitate a direct and bodily experience of a new perspective. These approaches can make abstract ideas experienceable, as they materialise these issues in concrete situations and thereby allow one to judge them in a real world context, including possible consequences. The activity of designing is accordingly considered an exploration of philosophical questions that uses design objects both as media for conducting an inquiry and communicating its outcome.





*But if there is a sense of reality, and no one will doubt that it has its justifications for existing, then there must also be something we can call a sense of possibility. Whoever has it does not say, for instance: Here this or that has happened, will happen, must happen; but he invents: Here this or that might, could, or ought to happen. If he is told that something is the way it is, he will think: Well, it could probably just as well be otherwise. So the sense of possibility could be defined outright as the ability to conceive of everything there might be just as well, and to attach no more importance to what is than to what is not.*

—Robert Musil<sup>1</sup>

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1. Robert Musil, *The Man Without Qualities*, trans. Sophie Wilkins and Burton Pike (London: Picador, 1995), 10–11.



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Table 1. Conceptions of Design and Philosophy

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## Introduction

There are not many theoretical investigations of the relationship between design and philosophy, and particularly not from the perspective of design.<sup>1</sup> One example, which provides a good starting point for understanding design as a philosophical inquiry, is the essay *Design and Philosophy* by Otl Aicher. In this essay, Aicher does not apply philosophical concepts to design in an attempt to gain a better understanding of what design is or how design works, but rather criticises the philosophical discourse for having for a long time ignored the importance of *making* and *using* to gain insight and understanding. Thereby he relates design, as a practice that is concerned with making and using, to the (later) philosophies of Immanuel Kant und Ludwig Wittgenstein.

For Aicher, design is not only an instrument of industrial production and thus mainly a form of marketing and styling, but rather a process of creating the fundamental conditions of human life. He therefore understands “design” less in terms of form (*Gestaltung*) but rather in terms of a sketch or concept (*Entwurf*).<sup>2</sup> According to Aicher, design can be understood as the intentional production of the artificial conditions of human life, that is, of the *designed* conditions of human life as opposed to *found* conditions. The production of these artificial conditions has unfolded exponentially since the rise of industrial production, whereby humans now largely live in an artificial world of their own making. Thereby design becomes less a question about the form of products, but rather a question about the forms of life resulting from this designed artificial world; it thus becomes an ethical as well as epistemological question.

According to Aicher, design is consequently not bound to the field of design anymore but enters the area of philosophy, as for philosophy the world is not only an object of investigation but also something that is made. Thus, the world cannot be comprehended by pure cognition alone but requires other approaches. For Aicher, this poses new questions for philosophy which was once “the search for the truth, for a plan behind the world, for its order as the order of a cosmos, an existence. Now the question arises: what determines its development, how should it be designed?”<sup>3</sup> Answers to this question, however, cannot rely on knowledge, as knowledge describes the existing. Instead, they must rely on imagination and projections, on desires and fears, and on judgement and usefulness. Furthermore, they cannot rely on abstraction and generalisation but must be grounded in the concrete conditions and situations of everyday reality. For Aicher, this requires an understanding through

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1. There are, of course, many philosophical reflections on “material culture” and in particular on “design,” for example, Vilém Flusser, *The Shape of Things: A Philosophy of Design* (London: Reaktion Books, 1999); P. E. Vermaas, P. Kroes, A. Light, and S. A. Moore, eds., *Philosophy and Design: From Engineering to Architecture* (Heidelberg: Springer, 2008); Peter-Paul Verbeek, *What Things Do: Philosophical Reflections on Technology, Agency, and Design* (University Park: Penn State University Press, 2005). Although some of these reflections are used in this thesis, my aim is not to “understand” design or “reflect” on design from the perspective of philosophy, but rather to construct a theoretical framework for conceiving design as philosophy.
  2. The German word *Entwurf* is a compound that may roughly be translated as “something that has been thrown (out into the world).” This conception makes it possible to see design less as a finished object, but rather as an idea and sketch, and thus designing more in terms of arranging something that may change, instead of styling or giving form to an assumed finished object (*Gestaltung*).
  3. Otl Aicher, “Design and Philosophy,” in *Analogous and Digital* (Berlin: Ernst & Sohn Verlag, 1994), 78.

making and using, as “it is no longer abstract, conceptual truth that is our problem, but correctness, the manufactured correct facts of the matter, living space that has been built. We must move over from thinking to making and learn to think again by making.”<sup>4</sup>

Aicher thus relates his conception of the relationship between design and philosophy on the one hand to Immanuel Kant’s conception of teleological judgement and usefulness (*Zweckmäßigkeit*) outlined in the *Critique of the Power of Judgement* and on the other hand to Ludwig Wittgenstein’s conception of meaning and use outlined in *Philosophical Investigations*. Here, the concrete and situational use of something determines how concepts are formed, rather than the use of something being a correct application of abstract concepts. According to Aicher, this gives rise to a new criterion for truth: use; whereby it is not logical reasoning that becomes a tool for philosophy, but listening and looking. For thinking, this “means that the mind is not above, in the heights, there is nothing higher, the mind is in the thing. Logic collapses, we have to return to the things of everyday life.”<sup>5</sup> For Aicher, it is thus use that “reveals the correctness of things that fit together. Use reveals fact. The constellation of what is correct is established by use.”<sup>6</sup> This leads him to claim that *using* and all the more *making* and *designing* become forms of thinking that turn sensory perceptions “into meaningful perspectives. To this end we develop perspective designs of the world that are weighed up by sensory perception and thus become experience-judgements. The world as design, life as design, directed by sensory perception of the concrete, that is a new philosophy.”<sup>7</sup>

In this essay, Aicher establishes an important twofold relationship between design and philosophy. On the one hand, design is related to ethics, as designing means making decisions about the quality of life and the form of society. On the other hand, design is related to epistemology, as designing establishes a world in the first place that then can become the setting and object for philosophical reflection.<sup>8</sup> Even more so, for Aicher, design and philosophy “follow a common path as well. They find out what should be from use. Philosophy and design are heading for the same point, philosophy in thinking, design in making. This point is that our world is in a condition of manufacturing itself. It is designed, it is made, we must see from use how good, how bad we are.”<sup>9</sup>

Although Aicher establishes an important connection between design and philosophy on the basis of using and making, it is more a claim than an argument for this relationship. It is particularly unclear whether design is supposed to replace philosophy, whether philosophy is a form of design, or whether design is a form of philosophy. In this thesis, I aim to disentangle these conceptions and argue for considering design as a *medium for*, as well as a *form of* philosophical inquiry and thus as a *material philosophy*.

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4. Ibid., 76.

5. Ibid., 87.

6. Ibid., 88.

7. Ibid., 80.

8. Cf. Hannah Arendt, *The Human Condition* (Chicago: University of Chicago Press, 1958), 95–96, 137.

9. Aicher, “Design and Philosophy,” 90.

### Context and Contribution

This thesis is rooted in my practice as a designer and is an attempt to conceive design as a form of philosophical inquiry. It sits primarily within the discourse of design rather than philosophy. The reason for undertaking this, is to establish a theoretical framework that makes it possible to understand design practice (including my own) as a philosophical inquiry, with the resulting design objects as manifestations and articulations of this inquiry.<sup>10</sup> Thereby, I understand design as medium to investigate the material condition of human life and thus as a material form of philosophy. I thus view design primarily as an intellectual activity and as a way to contemplate, question, articulate and understand the conditions of human life, rather than a form of marketing and problem-solving.

The desire to understand design as an intellectually rewarding activity is rooted in the very conception of design as *disegno*. Developed in the Renaissance by artists to distinguish themselves from mere craftsmen—with artists conceiving ideas and forms and craftsmen executing them—*disegno* is a concept that makes it possible to conceive design as a conceptual activity and as a mode of inquiry and understanding the world, and thus as a philosophical activity. The dominant contemporary understanding of design, however, does not seem to be rooted in these philosophical and intellectual aspects of design, but in the role that designers play in the process of production. Design seems to be understood mainly in terms of industrial production and formgiving, whereby designers develop concepts, systems and frameworks for the production of goods or services rather than producing these themselves.<sup>11</sup> Unlike in art and architecture, in design this conceptual activity is for the most part not seen as an independent mode of inquiry and understanding, but rather as a necessary condition for a divided process of production. Furthermore, designers have mainly understood themselves as the creators of commercial goods and commodities based on the necessities of clients and users rather than as intellectuals articulating a view on the world through producing cultural artefacts. However, including the intellectual aspects of the original conception *disegno* into the conception of design may permit conceiving design not only in terms of production and commerce, but also as a mode of investigating and understanding the world.

In this thesis, I furthermore conceive design not in terms of the products of a specific field but in terms of the process of designing and its outcome—that is, as designing and design objects. *Designing* is an activity that includes sketching, modelling, prototyping, drawing, describing, imagining or making in order to investigate, understand or produce something. *Design objects* are the results of this activity and thus include on the one hand

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10. Along these lines, this thesis is situated in the tradition of theories of artistic practice. Theories of artistic practice and art have provided some artists with powerful tools to test their work against their theories and vice versa. Examples are Bertolt Brecht's theory about theatre or Le Corbusier's theories about architecture. These are generally theories that do not aim to describe practice as it is but to lay a theoretical foundation for a new and different direction.

11. I think that this view on design is generally accurate, although this process does not necessarily apply to the design of digital artefacts that can be multiplied by merely copying data, or the design and production of material artefacts using processes of rapid prototyping. Designers producing one-off objects or small series are often treated more as artists than designers. Alex Coles, *DesignArt* (London: Tate Publishing, 2005); Alex Coles, ed., *Design and Art* (London: Whitechapel Gallery, 2007); Barbara Bloemink and Joseph Davey Cunningham, eds., *Design Does Not Equal Art: Functional Objects from Donald Judd to Rachel Whiteread* (New York: Merrel, 2004).

sketches, models, prototypes, drawings, descriptions, images, objects or situations and on the other hand objects produced according to the former. Design is thus not limited to a particular profession, but describes the conception and production of visual, material and immaterial artefacts. Moreover, I consider it the primary aim of designing to understand something rather than to produce something—at least in the sense of (mass-produced) consumer goods and commodities for commercial purposes. Designing is thus a way to understand something through producing design objects, that is, sketches, models, prototypes, drawings, descriptions, images, objects or situations. Thus both designing and design objects are considered as forms of philosophical inquiry, whereby the design objects are considered as the media for the philosophical inquiry.

This view of design, however, may seem at odds with much of current design practice and as a consequence one may be tempted to label it “critical design” or even exclude it from design altogether and place it in an artistic context.<sup>12</sup> Even though this thesis is rooted in a conception of design as a critical practice, the aim is not to critique design, generate social and political change, stir up debate or speculate about the future. The aim is rather to view design as a philosophical inquiry and mode of reflection and thus to understand design more in theoretical than in critical terms. Although some critical approaches to design view design as a way to explore, question and critique the world—and to some extent even as an intellectual, conceptual and philosophical activity—no substantial theoretical basis and conceptional framework has been developed to understand design as a philosophical inquiry (beyond the attribute of being “philosophical” when asking conceptual or ethical questions).<sup>13</sup> Furthermore, many design objects developed under the label “critical design” often remain illustrations of already existing ideas, concepts and philosophical or scientific theories. Thereby they reinforce existing ideas rather than produce new insights or open up new questions and areas of inquiry, and thus often fail to contribute substantially to a larger intellectual, let alone philosophical, societal or political discourse.<sup>14</sup> So far there is no analysis of how exactly design engages or could engage with philosophical questions and issues *philosophically* and thus beyond merely asking seemingly philosophical questions.

The aim of this thesis is therefore to conceptualise design as a mode of philosophical inquiry and to provide a framework that allows designers to practice design as a philosophical inquiry and to investigate *epistemological, conceptual, ethical and existential* ques-

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12. Anthony Dunne’s and Fiona Raby’s conception of critical design, for example, can be seen as an argument for taking the real world, and thus seemingly irrational desires, fears and interests of people seriously and thus in the tradition of Victor Papanek. Anthony Dunne and Fiona Raby, *Design Noir: The Secret Life of Electronic Objects* (Basel: Birkhäuser Verlag, 2001).

13. See pp. 38–47.

14. In the United Kingdom, for example, this form of design or art is often understood as “public engagement with science” or as “SciArt.” Here the designer’s or artist’s role is to engage with existing scientific discoveries or theories in order to engage a wider audience with science. This, however, seems to be very similar to the classical role of designers as mediators and communicators of ideas rather than as investigators of original questions. See, for example, James Wilsdon and Rebecca Willis, *See-through Science: Why Public Engagement Needs to Move Upstream* (London: Demos, 2004). Anthony Dunne and Fiona Raby see the task of designers not in the engagement of an audience with science, but to challenge scientific and technological assumptions by questioning ideas, facilitating debate and developing new forms of representing ideas and issues. Although the design objects that Dunne and Raby discuss deal with ethical and conceptual questions and problems, they mainly illustrate these rather than produce new insight into and understanding of these questions and problems. Anthony Dunne and Fiona Raby, *Speculative Everything: Design, Fiction, and Social Dreaming* (Cambridge, MA: MIT Press, 2013), chap. 4.

tions raised by the material and technological conditions of human life. The aim is not to facilitate a debate of philosophical issues, question or problems, but to *understand* them. Showing how designing and design objects can lead to understanding will thus form the basis for design to enter a larger intellectual and philosophical discourse, and thus designers to engage with other fields of inquiry more significantly.

Although I take a pluralistic attitude towards different practices of design and do not aim to change or speak for the entire field of design, I nevertheless aim to provide a framework that allows a reconceptualisation of design rather than the development of a new genre of design. A pluralistic view, however, also needs to include such an approach to design into the field of design rather than excluding it by placing it in an artistic context. Such a form of design can obviously not be understood in terms of the production of marketable products—although this is not necessarily incompatible—, but rather as an independent mode of cultural inquiry.

### Research Questions

In order to be able to consider design as a philosophical inquiry, several questions need to be addressed and answered. First, *how can designing and design objects be conceived as a mode of and media for philosophical inquiry?* In order to answer this question, it will be necessary to relate design to forms of philosophical inquiry, or in other words, to investigate the relationship between design and philosophy. The question is whether designing and design objects are (or can be) philosophical, and if design objects and designing are (or can be) media for a philosophical inquiry. I will approach this question from the perspective of design rather than philosophy; that is, the philosophical exploration takes place in the medium of designing and design objects, instead of written texts that are used predominantly for philosophical explorations. Furthermore, philosophy is here not only regarded as contemporary “academic” philosophy, that is, not only in terms of the questions and problems discussed in the academic philosophical discourse, but also include questions that relate more to the problems of everyday life. Philosophy is thus mainly considered as philosophising and not as Philosophy.

Second, *what kind of philosophical knowledge, insight or reflection is generated through designing and design objects and how is it created?* In order to answer this question, it is necessary to determine how knowledge and insight are embodied in artefacts, that is, how artefacts can facilitate thinking and reflection both as media for developing philosophical ideas through designing as well as communicating them to an audience. Design objects thereby need to be at the centre of the philosophical inquiry or exploration and not only be an illustration of a philosophical issue—in other words, they need to become media (or perhaps tools) for a philosophical exploration. It is furthermore necessary to determine how designing and design objects are qualitatively different as media for philosophical explorations compared to written philosophical treatises, as well as how the resulting knowledge and insights may be different.

Third, *is there a specific subject matter for design as philosophical inquiry?* This is to ask whether design can be a philosophical inquiry into anything or if there is (or could be) a

certain subject matter for design. As philosophy, or rather philosophising, does not seem to be bound to a certain topic, it can be concerned with almost anything. This is to ask, (1) if design can be seen as a special form of philosophical inquiry (in the sense of a “philosophy of x”), (2) if design can investigate subject matters that cannot be investigated by other means; (3) or if design is particularly suited for investigating a particular subject matter.

The purpose of these questions is to evaluate the extent to which design can be understood as a philosophical inquiry and what kind of knowledge and insight it can create. The aim is thus to investigate, what the potential of a philosophical inquiry *through* designing and design objects is, what the limitations are and what can be investigated.

### Methodology

In this thesis, I will address these questions theoretically using analysis, argumentation and interpretation. First, by positioning design as inquiry within the contemporary discourse of design as well as tracing the historical and etymological development of conceptions of design. A broad conception of design will permit me to include processes, practices and objects that often remain outside the contemporary design discourse into the conception of design as inquiry. Second, by analysing and interpreting artefacts and processes, which can inform the conception of design as philosophical inquiry. Thereby, the thesis provides a new interpretation of these objects and processes and shows how they can be utilised for an inquiry through design, in particular what the potentials and possibilities of such an inquiry are. Since this field of design only exists rudimentarily, this is to some extent speculative and draws extensively on objects and processes that often sit outside the contemporary discourse of design, such as art, architecture, literature, film, science and engineering. Many of these projects in these fields, however, epitomise how philosophical questions can be explored through material artefacts. Third, by building on philosophical positions and theories (in particular from epistemology, media theory, philosophy of technology and aesthetics), I construct a theoretical framework that makes it possible to *understand* design as a medium for and form of philosophical inquiry that consequently provides the means to *practice* and *discuss* design as philosophy.

To this extent, this thesis is a theoretical investigation that examines *conceptual* questions about design (rather than practical or applied questions) in order to establish a theoretical framework for “design as a philosophical inquiry” and thereby a theory for design as a material philosophy. It is a theoretical investigation of design that aims to show the possibilities for design as a medium for philosophical inquiry. In this sense, it is an *actional* theory (rather than phenomenal or causal theory) that aims to establish a new conception and practice of design and is thus also a somewhat *programmatic* investigation into the possibilities of design as a medium of philosophical inquiry.<sup>15</sup>

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15. Cf. Kurt Eberhard, *Einführung in die Erkenntnis- und Wissenschaftstheorie: Geschichte und Praxis der konkurrierenden Erkenntniswege* (Stuttgart: Verlag W. Kohlhammer, 1998), 15–19.

### Outline of the Argument

My main argument is that design can be seen as a *material philosophy* that can investigate philosophical questions within the concrete, material and everyday realm of human existence, rather than through an abstract and general analysis. It may thereby create a more immediate and consequential insight into philosophical questions by relating them to an everyday, material and embodied experience.

Design is concerned with the creation of material and immaterial artefacts, technologies and systems. In this thesis, the subject matter of design as philosophical inquiry is thus regarded as the mediating effects of the artificial and technological environment in which humans live—that is, the relationship between the artificial and technological landscape and the human condition in terms of the formation of *understanding, concepts, values* and *existence*. Design can be understood as a philosophical inquiry when it problematises this relationship in which design objects are not understood as solutions, but rather as problems and questions, and thereby as media for inquiry, exploration and reflection. Here, philosophy is not considered as finding some absolute truth or answering questions, but as a form of reflection, argumentation and problematising in order to see the world from a different perspective. However, whereas philosophy investigates these issues (usually) in an abstract and general realm, design can investigate them in the concrete, particular and everyday context of human life, and thus shows them in a more comprehensive and multifaceted way than abstract reasoning. Design as inquiry can thus reflect on the human relationship with design objects and their personal, social and political impact and consequences, whereby design objects are both the means and the outcome of the inquiry.

Design objects can make philosophical issues materially experienceable whereby they provide experienceable perspectives on philosophical questions. These perspectives can be seen as material arguments embodied in design objects that are equivalent to verbal arguments in philosophical texts, in that design objects are both the media for the perspectives and the arguments themselves. Design objects can thus be regarded as concrete theories about a particular situation rather than abstract theories about general situations. Since designers investigate philosophical questions and issues through the design of design objects, and since these objects are both the media and the results of the investigation, they embody the knowledge and insight that has been produced during the inquiry. Design objects thus present new perspectives and at the same time allow the audience to reflect on the experienced new perspectives and their adoption or rejection, whereby the audience can gain new knowledge.

The following three approaches can be used to produce and present these perspectives. First, *material thought experiments* are concrete settings that allow one to investigate philosophical questions in a fictional but tangible and consequential way and thus in a richer and more nuanced way than abstract thought experiments. Second, *thinking things* are models that allow one to investigate abstract and complex philosophical issues through material and visual analogies and metaphors and by using them to intervene in actual systems. Third, *staged situations* are settings such as confrontations, simulations and re-enact-

ments that allow one to gain bodily experienceable perspectives on philosophical issues and questions. These approaches allow designers to investigate complex and abstract philosophical issues by relating them to the tangible world of everyday life, whereby design objects can be used to create tangible, concrete or immediate insights into these issues. Certainly it is not a coincidence that one speaks in tangible terms when one “grasps” ideas or concepts, or when one “pictures” something. As Sherry Turkle has observed, evocative material objects may “bring philosophy down to earth. When we focus on objects, physicians and philosophers, psychologists and designers, artists and engineers are able to find common ground in everyday experience.”<sup>16</sup>

On the whole, this thesis conceptualises design as an inquiry that can investigate philosophical questions relating to an artificial and technological everyday reality through design objects. Design thereby becomes a self-reflective inquiry of the designed environment and of the role design objects play in creating the human world. It can produce a concrete and first-hand experience of the concepts and worlds that emerge from material objects and thereby a philosophical reflection and understanding through experience.

### Outline of the Chapters

The thesis is organised into seven chapters, with chapters one to three investigating the *foundation* for conceiving design as a philosophical inquiry and chapters four to seven investigating *approaches* for design as philosophical inquiry.

Chapter one traces the historical and etymological development of conceptions of design in order to place design as inquiry within the contemporary discourse of design. It outlines the distinctions between design as inquiry and design as critical practice as well as design research, and argues for understanding design as a humanistic inquiry into human existence and as a form of cultural expression. Chapter two explores the subject matter of design as philosophical inquiry, such as the mediating effects of material and technological artefacts. These artefacts, such as equipment, tools, media and technologies, are not neutral means but rather mediate human experience, actions and cognition, as well as morality, values and society. Therefore, design as inquiry can be seen as an investigation of the interactions and mediating effects produced by these artefacts and thus a form of questioning technology. Chapter three examines how designing and design objects can be regarded as forms of knowledge. Building on aesthetic and design theories, it argues that designing can be understood as formulating a concrete, material and tangible theory in form of a design object, in which the “argument” is presented as a perspective (view, position or standpoint) that the audience can “experience” and then adopt or reject. Design objects, however, not only present these perspectives, they are also the media through which these perspectives can be obtained in the first place.

Chapter four relates design to philosophy, or rather to philosophising, by showing how designing and design objects can be forms of inquiry into ethical, existential and conceptual questions. Thereby, philosophy is mainly conceived as a way of showing the world

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16. Sherry Turkle, ed., *Evocative Objects: Things We Think With* (Cambridge, MA: MIT Press, 2007), 8.



from a new point of view, and thus both an investigation of existing concepts and a production of new concepts. Chapter five investigates fictional and poetic design as a mode of philosophical inquiry that can render a possible world experienceable by asking: “What if ...?” As material thought experiments, design objects can show a perspective on a possible or alternative world and thus investigate possibilities of human existence, rather than showing a vision of a world to come. While fictional writing relies purely on the imagination of the reader, and film is clearly separated from reality, design can intervene in everyday life and blur the boundaries between fiction and reality, turning abstract ideas into tangible experiences and objects. Chapter six investigates models as media for philosophical inquiry. Models are tools to think with as they permit one to develop ideas by modelling them, to (re)present ideas by materialising them, and to further develop ideas by using the models. As heuristic fictions they occupy a peculiar place in the world as they are devices for both explaining and aspiring, and thus tools for reflecting on what might be real or might become real. Chapter seven investigates situations, simulations and re-enactments that not only make it possible to visualise or materialise philosophical issues, but also to experience them physically through a direct and bodily confrontation. A concrete situation requires someone who within this situation to make a decision about what to think or how to act. In simulations, situations can be staged that ask: “What is it like to ...?” “How does it feel to ...?” “What would it mean if ...?” In this way, staged situations can be understood as forms for philosophical inquiry through reflected experience.



## Chapter 1: Design as Inquiry

Design is often understood as an activity that is concerned with solving practical problems rather than a form of inquiry. Designers provide solutions to problems through design objects, whether material, immaterial, structural or even conceptual. Many design objects, however, do not seem to solve any problems but create new problems or shift them instead. A famous example of a complete failure of a design project to provide an adequate solution to a problem is the housing complex *Pruitt-Igoe* (1954–1976). The apartment complex was planned as a solution to the social housing problem of the city of St. Louis in Missouri, but was demolished after becoming virtually uninhabitable, due to crime, rubbish and destruction. Critics claim that it was the modernist architecture itself that had caused these problems.<sup>1</sup>

If design, however, is regarded as problem solving, inquiry in design would constitute a thorough investigation of the problem in order to devise useful solutions, for example by understanding people's needs and desires better, or by letting them participate in the design process. The outcome of the inquiry would then be the *right solution* to the problem and the end of the inquiry.<sup>2</sup> Important for any form of inquiry, however, is not only to solve a problem but also to understand what the problem actually is. In the case of *Pruitt-Igoe*, one could argue, the problem was not housing, but unemployment.<sup>3</sup> The right solution to the problem would thus not be architecture but the provision of jobs.

Design as problem-solving, however, often seems to understand problems *from the perspective of solutions* and holds the view that any problem can be solved by a design object. The solution to the problem—or answer to the question—is thus in some way already set from the outset: it will be a design object and depending on the type of designer asked, this could be a building, a product or a communication campaign. These solutions, however, may not be the right solutions and may even create new problems instead.<sup>4</sup> It is thus at least questionable to equate design with problem-solving. One may even argue that most of the problems that exist today—for example, those concerning the environment—are mainly problems caused by design and design objects.<sup>5</sup>

But what would a design activity look like that does not aim to solve problems? How could it be understood as a form of inquiry and what is its subject matter? The “problems of design” are in some sense problems of human life that cannot be solved ultimately

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1. The housing complex *Pruitt-Igoe* in St. Louis, Missouri, completed in 1954, consisted of 33 eleven-story apartment buildings with a total of 2,870 apartments to house over 10,000 people. It was constructed according to principles of modern architecture devised by Le Corbusier and the Congress of International Modern Architects (CIAM). For some, the failure of this design object marks the end of the entire modernist approach to design, that is, design as planning based on functionality and rationality. Charles Jencks, “The Death of Modern Architecture,” in *The Language of Post-Modern Architecture* (New York: Rizzoli, 1991), 23–24; William G. Ramroth, *Planning for Disaster: How Natural and Man-Made Disasters Shape the Built Environment* (New York: Kaplan Publishing, 2007), 163–172.
  2. In the sense of inquiry as understood by John Dewey, *Logic: The Theory of Inquiry* (New York: Henry Holt and Company, 1938), 104–105, 108.
  3. Katherine G. Bristol, “The Pruitt-Igoe Myth,” *Journal of Architectural Education* 44, no. 3 (1991): 163–171.
  4. Cf. Lucius Burckhardt, “Design ist unsichtbar,” in *Design = unsichtbar*, ed. Hans Höger (Stuttgart: Hatje Cantz Verlag, 1995), 20–21.
  5. Cf. Victor Papanek, *Design for the Real World: Human Ecology and Social Change* (London: Thames & Hudson, 1985; reprint, 2006), ix–xiv.

but at best temporarily. Arguably, no design object is ever a definitive solution to a problem, but always an experiment (or proposal) for a certain way of living, communicating or interacting. Thus design objects are not solutions for living but experiments in living. This notion shifts the focus from finding solutions to assumed problems towards exploring these problems or issues. When conceived in this way, design as inquiry would not investigate problems to find better *solutions*, but would investigate these issues in order to *understand* them better. Design as inquiry could thus explore questions regarding concepts, values, ethics or politics without the need to provide answers in the shape of design objects. It would rather show perspectives on these issues through design objects.

In this chapter, I will explore different conceptions of design and designing in order to place design as inquiry within the discourse of design. First, designing can be considered as a general human activity and thus as the activity of making the world more habitable to human needs or endeavours by organising or reshaping it. Designing is furthermore not only an activity of planning or organising, but also of imagining and projecting. Second, in a more narrow sense, design can be seen as a field of cultural production, profession, discipline or discourse. This field, however, has changed considerably throughout history and many contradictory views exist on what constitutes design and how it can be distinguished from other fields. Third, design can be conceived as a critical practice as opposed to a practice serving industry, whereby design claims autonomy over its processes and its subject matter and challenges internal and/or external assumptions. Fourth, design as inquiry should be understood in humanistic terms (providing perspectives on issues) rather than in scientific terms (providing answers to questions), and thus as inquiry rather than as research.

### Design as an Activity

A philosophical discussion of design inevitably runs into the problem of defining what design actually is. Apart from a historical or cultural change of the use of the term, the problem of defining design today also seems to be caused by the word itself, which denotes several things. As John A. Walker has observed, design “can refer to a process (the act or practice of designing); or to the result of that process (a design sketch, plan or model); or to the products manufactured with the aid of a design (designed goods); or to the look or overall pattern of a product (‘I like the design of that dress’).”<sup>6</sup> The ambiguity of the term “design” is possibly captured best in the sentence: “Design is to design a design to produce a design.”<sup>7</sup> Here, “design” can be understood as an *activity* and as *objects* developed both in the process of designing and as the result of this process.

The difference between design as process and design as object has also been noted by Vilém Flusser. For him, design “as a noun, [...] means—among other things—‘intention’, ‘plan’, ‘intent’, ‘aim’, ‘scheme’, ‘plot’, ‘motif’, ‘basic structure’, all these (and other meanings) being connected with ‘cunning’ and ‘deception’. As a verb (‘to design’), meanings include ‘to

6. John A. Walker, *Design History and the History of Design* (London: Pluto Press, 1989), 23.

7. John Heskett, *Toothpicks and Logos: Design in Everyday Life* (Oxford: Oxford University Press, 2003), 5.

concoct something’, ‘to simulate’, ‘to draft’, ‘to sketch’, ‘to fashion’, ‘to have designs on something.’<sup>8</sup> Following Flusser, design may be better understood in terms of processes and concepts than purchasable objects or products. In this sense, designing is the creation of the underlying structure of objects, rather than the production of the actual objects themselves (although this is not exclusive). Design (as a verb) is thus the mental formation, conception and planning of an object, action or situation, whereas design (as a noun) is the representation of this plan in form of a sketch, model, drawing or draft. Furthermore, design can include carrying out or executing the plan (object) whereby the initial representation (concept) needs to embody the main features of the realised object, action or situation.<sup>9</sup>

In an everyday context, however, the term “design” is nowadays used almost inflationary to describe all kinds of activities that previously may have been considered as making rather than designing—sometimes even the mere use of objects.<sup>10</sup> On the other hand, design has increasingly become an imperative: one has to design one’s home, holiday, business or life, whereby the term “designing” seems to replace terms like “making” and “doing.”<sup>11</sup> This development may be caused by the vagueness of the term that describes a range of both activities and objects, and that is not tied to a single discipline or profession. It may furthermore be the result of the attempt to “democratise” design and to empower people by giving them the ability to shape their environment without the need to consult professional designers and without being at the mercy of the limited range of products mass-produced by large companies. It may, however, also be the outcome of a shift towards an economy that places creativity, innovation and design at its centre.

Many argue that design is a human activity or faculty that is not bound to any specific discipline, field of study or profession.<sup>12</sup> Viktor Papanek, for example, made a bold claim stating that “all that we do, almost all the time, is design, for design is basic to all human activity.”<sup>13</sup> Design is thus not only the production of design objects in a narrow sense of a discipline; for Papanek, “design is composing an epic poem, executing a mural, painting a masterpiece, writing a concerto. But design is also cleaning and reorganising a desk drawer, pulling an impacted tooth, baking an apple pie, choosing sides for a backlot baseball game, and educating a child.”<sup>14</sup> Summarising this very broad and general conception of design, he defines design as “*the conscious and intuitive effort to impose meaningful order.*”<sup>15</sup> Although designing may require some training and practice—not unlike walking, swim-

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8. Flusser, *The Shape of Things*, 17.

9. John Simpson and Edmund Weiner, eds., *Oxford English Dictionary* 2nd ed., (Oxford: Oxford University Press, 1989), s.v. “design, n.” “design, v.”

10. For instance, the improvised use of everyday objects has been described as design by Uta Brandes, Sonja Stich, and Miriam Wender, *Design by Use: The Everyday Metamorphosis of Things* (Basel: Birkhäuser Verlag, 2008).

11. For example, Mieke Gerritzen and Geert Lovink, *Everyone is a Designer: Manifest for the Design Economy* (Amsterdam: Bis Publishers, 2010); Ellen Lupton, *D.I.Y.: Design It Yourself* (New York: Princeton Architectural Press, 2006).

12. For example Herbert A. Simon, *The Sciences of the Artificial*, 3rd ed. (Cambridge, MA: MIT Press, 1996), 111; Horst W. J. Rittel, *The Reasoning of Designers* (Stuttgart: Institut für Grundlagen der Planung, Universität Stuttgart, 1988), 1; John Christopher Jones, *Design Methods* (Chichester: John Wiley & Sons, 1992), 5; Gui Bonsiepe, *Interface: An Approach to Design*, ed. Dawn Barrett (Maastricht: Jan van Eyck Akademie, 1999), 34–35.

13. Papanek, *Design for the Real World*, 3.

14. *Ibid.*, 3.

15. *Ibid.*, 4.

ming or breathing—he regards it as the essential human faculty of *making, choosing* or *organising* something. For Papanek, design is the transformation of the human environment, which consequently transforms humans themselves.<sup>16</sup> Likewise, John Heskett has also described design in a very broad sense as “the human capacity to shape and make our environment in ways without precedent in nature, to serve our needs and give meaning to our lives.”<sup>17</sup> He even goes so far as to claim that the capacity to design, just as the capacity for language, is what defines one as being human.<sup>18</sup> Following his conception, design is what humans do in order to create a world in which they feel comfortable living. Thereby, design can be understood in terms of *technology*,<sup>19</sup> as it is through technologies that humans make the world inhabitable for themselves, as well as in terms of *artefacts*,<sup>20</sup> as these are the outcome of human productive activity. However, viewing design purely as an activity may lead to the conclusion that almost all human activities can be considered design activities. Furthermore, it makes it difficult to define what design objects actually are—if all human production is design, then almost all artefacts are design objects. But even if baking an apple pie or organising a desk drawer can be considered designing (to follow Papanek’s example), it seems to be more difficult to consider an apple pie or an organised desk drawer as a design object, let alone an object that is just used.

Particularly the conception of design in terms of artefacts has been influential in many attempts to define design. Victor Margolin, for example, defines design as the “conception and planning of the artificial.”<sup>21</sup> For John Christopher Jones, design is “to initiate change in man-made things.”<sup>22</sup> These conceptions are largely based on the difference

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16. Ibid., 28.

17. Heskett, *Toothpicks and Logos*, 7.

18. Ibid., 9.

19. Since the 17th c. the term “technology” (from gr. *technē*/τέχνη “art, craft” and *logos*/λόγος “discourse, study, reason” combined to *technologia*/τεχνολογία “systematic treatment”) denotes the area of study investigating the arts, and particularly the “mechanical arts.” Since the 19th c. the meaning of the term has narrowed to describe the “practical arts” or “applied science” based on the distinction between knowledge (science) and practical application (technology). Furthermore, technology has been understood as the product of the “practical arts” in terms of knowledge or know-how as well as concrete objects, such as machinery or equipment. Whereas technic or technique describes a particular method or a scientific procedure as well as the matters of practical construction, technology is understood as the systematic investigation of those methods and procedures (analogous to the distinction between method and methodology). The adjective “technical” refers to particular methods and procedures, in terms of language, application, skills or technique and the resulting products, for example, technical language or technical education. The adjective “technological” refers to technology as an area of study, for example, technological progress or technological advances. The distinction between “technology/technological” and “technic/technical” is often ambivalent. Simpson and Weiner, *OED*, s.vv. “technology, n.,” “technological, adj.,” “technic, adj. and n.,” “technical, adj.,” Raymond Williams, *Keywords: A Vocabulary of Culture and Society* (London: Fontana Press, 1988), s.v. “technology.” Technology, however, has also been understood in an anthropological sense as the totality of human (material) inventions and artefacts that enables individuals and societies to perform actions transcending biological faculties. Joachim Ritter, Karlfried Gründer, and Gottfried Gabriel, eds., *Historisches Wörterbuch der Philosophie* (Basel: Schwabe Verlag, 1971–2005), s.vv. “Technik,” “Technologie.” In summary most definitions use “the word ‘technology’ to refer to both ancient and modern, primitive and advanced making activities, or knowledge of how to make and use artifacts, or the artifacts themselves.” Carl Mitcham, *Thinking Through Technology: The Path Between Engineering and Philosophy* (Chicago: University of Chicago Press, 1994), 116. (See also for an extensive discussion of the various connotations of “technology.”)

20. The term “artefact” (from lat. *ars* “art,” and lat. *facere* “to make”) describes any object produced by humans by an intentional act of producing a specific object in opposition to natural objects not produced by humans. Cf. Simpson and Weiner, *OED*, s.v. “artefact, n.” A “technical artefact” is an artefact created for a specific purpose, that is, an object that is “for something.” It can furthermore denote (1) an artefact that is the outcome of a technical process, a scientific procedure or produced by technical means in general; (2) an artefact that requires special (technical) skills to be used; (3) an artefact that requires a specialised (technical) way to be used.

21. Victor Margolin, “The Politics of the Artificial,” *Leonardo* 28, no. 5 (1995): 349.

22. Jones, *Design Methods*, 4.

between the “natural” and the “artificial” sciences as laid out by Herbert Simon. For Simon, the former is concerned with natural, and the latter with artificial phenomena and objects.<sup>23</sup> According to Simon, the sciences of the artificial do not (only) aim to *understand* human creations—like the humanities—but to *create* artificial objects, or “the artificial.” For him, these sciences would not be concerned with how things “are” but with how they “ought to be” and would thus be concerned with normative descriptions and judgements. This, however, distinguishes them from the natural sciences, which are usually concerned with functional rather than normative descriptions. Furthermore, Simon considers the natural sciences as being concerned with analysis, whereas the artificial sciences are concerned with synthesis resulting in the design and production of artefacts.<sup>24</sup> Consequently, for him, a designer is someone “who devises courses of action aimed at changing existing situations into preferred ones. [...] Design, so construed, is the core of all professional training; it is the principal mark that distinguishes the professions from the sciences.”<sup>25</sup>

Following Simon, design is a special form of human activity, knowledge and understanding that is concerned with the production of “the artificial.” For him it does not seem to be a profession, but rather an underlying faculty. On the other hand, it seems difficult to consider design as a science, as the sciences (at least the natural sciences) are concerned with what exists. What should exist, however, cannot be defined by describing what exists, nor can it be a question of rational scientific investigation, but is often a matter of irrationality, dreams, hopes and fears.<sup>26</sup> Additionally, I think it is problematic to conceive design as the field of expertise (and thereby as a discipline) that knows what ought to be, and not only makes normative judgements about how one should live, but also produces objects which embody these descriptions.<sup>27</sup> Questions about how things ought to be or how one should live, should instead be the outcome of political discussion and individual choices rather than normative judgements by designers, scientists or philosophers—although knowledge produced in these disciplines can be useful to make those decisions. However, when design starts to shape environments and society it becomes political, and the question arises as to who determines this shaping? As the ability to determine one’s environment and actions is related to ideas of freedom and democracy, the ability to design may furthermore be a question of political participation in determining the shape of tools, artefacts, environments, systems and services.<sup>28</sup> While being almost too broad, given that all humans constantly seem to

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23. Simon, *The Sciences of the Artificial*, 3.

24. *Ibid.*, 4–5.

25. *Ibid.*, 111.

26. Furthermore, the “is-ought-problem” has prominently been articulated by David Hume, who stated that there are significant differences between describing and prescribing and that moral standards cannot be derived from describing how things are. David Hume, *A Treatise of Human Nature*, ed. L. A. Selby-Bigge (Oxford: Clarendon Press, 1888; reprint, 1965), 469 (bk. 3, pt. 1, sec. 1).

27. Simon, *The Sciences of the Artificial*, 3–5. Among designers, the question of “what ought to be” and “how things should be” was a question often asked by modernist designers. The relationship between design and ethics, or between design and the good life was an important topic especially in Germany in the early and mid twentieth century and was discussed by the Deutsche Werkbund, the Bauhaus and later the Hochschule für Gestaltung Ulm; cf. Paul Betts, *The Authority of Everyday Objects: A Cultural History of West German Industrial Design* (Berkeley: University of California Press, 2004); Gerda Breuer, ed., *Das gute Leben: Der Deutsche Werkbund nach 1945* (Tübingen: Wasmuth Verlag, 2007); Herbert Lindinger, ed., *Hochschule für Gestaltung Ulm: Die Moral der Gegenstände* (Berlin: Ernst & Sohn Verlag, 1991).

28. Cf. Walker, *Design History and the History of Design*, 53–54; Paul Atkinson, “Do It Yourself: Democracy and Design,”

think about preferred situations and plan and create things accordingly, Simon's conception of design at the same time does not seem to consider exploration, irrationality or doubt—the designer seems to know what should or must be done, but it is unclear on what this knowledge is based.

Another approach to define designing is to understand it in terms of *planning*, whereby, however, the term “planning” is often used as a mere substitute for the term “designing.” According to Jones, for example, the idea of forethought and planning is fundamental to design and a designer is consequently someone who devises a plan for something rather than just doing it.<sup>29</sup> Here, Jones uses the term planning to distinguish designing from mere making and doing, whereby design could be seen as a special activity. However, it seems questionable if anyone ever “just does” something without having a plan of what to do or an idea of what the consequences of such doing would be. Horst Rittel also conceives design in terms of planning, and claims that designers can be seen as planners whenever planning takes place in a professional context. What unites all designers, according to Rittel, is that designers as planners aim to avoid mistakes by thinking before acting, and aim to imagine a desirable state of the world. In this sense, design does not take place in the “real world” (such as making and doing, perhaps) but in an “imaginary world” and uses tools, such as models, both for imagining possible worlds and as preparations for interventions into the real, that is, for the realisation of the design.<sup>30</sup> Although planning and designing may be similar activities, the main difference is that planning is concerned with realising an idea and thus with organisation and execution, whereas designing involves imagination, interpretation and the development of concepts and ideas and is thus prior to organisation and execution.<sup>31</sup>

Design is then not simply an activity of doing, making or planning something, but it is an imaginary activity that devises images about possible worlds in form of design objects (*Entwürfe*). These objects are projections of the existence of individuals and societies into the future, whereby the images of that future serve as the means to render that future as either desirable or undesirable and thus as aids to decide whether a particular future should be realised.<sup>32</sup> This form of projecting is also a form of making sense of one's existence, as humans are “thrown into the world” (*geworfen*) without any immediate purpose apart from natural demands. Human life can thus be considered as a “life in projects,” whereby humans project or throw (*entwerfen*) themselves into the future by embarking on projects that reflect their wishes, dreams and desires.<sup>33</sup>

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*Journal of Design History* 19, no. 1 (2006): 1–10.

29. Jones, *Design Methods*, 11.

30. Rittel, *The Reasoning of Designers*, 1.

31. Kostas Terzidis, “The Etymology of Design: Pre-Socratic Perspective,” *Design Issues* 23, no. 4 (Autumn 2007): 69.

32. Cf. Frederik Lodewijk Polak, *The Image of the Future*, trans. Elise Boulding (Amsterdam: Elsevier, 1973); Bertrand de Jouvenel, *The Art of Conjecture* (London: Wiedenfeld & Nicolson, 1967); Jean-Pierre Boutinet, *Anthropologie du projet* (Paris: Presses Universitaires de France, 2004).

33. Jean-Paul Sartre, *Existentialism is a Humanism*, trans. Carol Macomber (New Haven: Yale University Press, 2007), 23, 37; cf. Jean-Paul Sartre, *Being and Nothingness*, trans. Hazel Barnes (London: Methuen & Co, 1969), xix. Following the notion of Martin Heidegger of the human being as being thrown (*geworfen*) into the world or in front of possibilities, one could even make a comparison to design (*entwerfen*) not only as sketching something out, but to reverse the situation of being thrown into the world in the sense of un-throwing (*ent-werfen*) by creating meaning, order and a plan in a seemingly chaotic and arbitrary situation. Oosterling, Henk. “Dasein as Design: Or, Must



### Design as a Field

The term “design,” however, is not only used to describe an activity or artefacts, but also to describe a profession, a field of cultural production and a discourse.<sup>34</sup> In this more narrow sense, the field of design is usually defined by the object of the specific design activity, that is, in terms of what is being designed (such as architectural design, industrial design, interaction design, service design, graphic design, fashion design and so on). As a field, design is furthermore differentiated from other closely related fields like “art,” “craft,” or “engineering,” although the boundaries between these are often diffuse and a matter of discourse and self-definition. In order to be able to understand the current differentiation of the field of design, I will briefly trace its conceptual origins.

Generally, design can be defined as an “art,” that is, as a body of knowledge and the application of that knowledge, for instance in the form of skills.<sup>35</sup> In the philosophical discourse from Classical Antiquity to the Middle Ages and to the Renaissance, the spectrum of human knowledge was divided into the *liberal arts* (*artes liberales*) and the *mechanical arts* (*artes mechanicae*). The mechanical arts were concerned with practical problems—that is, the production of practical and useful artefacts—and thus often involved manual work. The liberal arts, on the other hand, were foremost an intellectual activity concerned with philosophical topics. The liberal arts were thus the occupation for “free men” who did not need to work, whereas the mechanical arts were mainly the occupation of “unfree men” who needed to work in order to make a living.<sup>36</sup> Hence, the mechanical arts were also considered as lower in status than the liberal arts since Classical Antiquity, and to some extent are still today.

The ancient and medieval craftsmen were characterised by a unified complex of conception, production and distribution of the manufactured goods. Since the Renaissance, however, this complex was increasingly divided up and craftsmen came to be seen as merely executing the designs devised by artists and architects. Consequently, attempts were made to elevate the work of artists, such as painters, sculptors and architects, above that of mere craftsmen and to conceive it as an intellectual activity in status equivalent to the liberal arts based on the concept of *disegno*. The concept of *disegno* describes the general conception of an artefact that is developed in the form of drawings or sketches according to which artefacts (paintings, sculptures or architecture) can be produced, rather than the production of the artefacts themselves. For this reason, it refers to the conceptual phase of the production of artefacts that involves the intellectual capacity to devise the general design and the ability

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Design Save the World?” (lecture, Prensela Lecture 2009, Koninklijk Instituut voor de Tropen, Amsterdam, April 1, 2009), PDF, <http://www.prensela.org/sbeos/doc/file.php?nid=1673> (accessed July 19, 2012), 3; cf. Martin Heidegger, *Being and Time*, trans. Joan Stambaugh (Albany: State University of New York Press, 1996), §§ 29, 31.

34. See Sarah T. Owens, “Design is Ordinary: Lay Graphic Communication and Its Relation to Professional Graphic Design Practice” (PhD diss., University of Reading, 2012), 38–48.

35. For an overview of different connotations and usage of the term “art” see Williams, *Keywords*, s.v. “art.”

36. The liberal arts in Classical Antiquity consisted of Grammar, Rhetoric and Logic (*Trivium*) to which were added mathematics, geometry, astronomy and music (*Quadrivium*) in the Middle Ages, forming the seven liberal arts of the medieval university curriculum. In the Renaissance the curriculum was reshaped and called *studia humanitatis*, now excluding logic and including history, ethics and poetry. Ritter, Gründer, and Gabriel, *HWPh*, s.v. “Artes liberales/ artes mechanicae.”

to make drawings or sketches.<sup>37</sup> Thereby designing is separated from producing, a separation that still affects the design process today and, to some extent, became part of the self-conception of designers.

In the Renaissance, the concept of *disegno* furthermore marks a change from a mimetic understanding of art towards a creative understanding of art and thus, art objects as creations. Thereby, the models and drawings produced in the design phase were thought to embody ideas and concepts similar to the texts of poets. Artists—and particularly architects—were therefore often considered as god-like figures who are able to *create*. The consequence was that some mechanical arts could be conceived of as independent modes of understanding the world based on the concept of *disegno*.<sup>38</sup> For Leon Battista Alberti, for example, architectural design was not only a matter of constructing buildings, but also of machines, time pieces, vehicles and weaponry. According to Alberti, architectural design was an intellectual activity that was constitutive (and normative) for social and material life as well as for technological progress. Architecture was thus less a product of society but rather its foundation, as architecture materialises institutions, laws, society, families or states and localises them by giving them a space and material form.<sup>39</sup> Furthermore, Alberti saw architects as synthesisers of various disciplines and branches of knowledge into a coherent whole—as these separate forms of knowledge would come together in the design of a city, building, machinery or artefact, which not only need to function, but also had to make sense in a social and cultural context. As a result, architectural design was seen as a universal science—one that unites all the various forms of knowledge.<sup>40</sup>

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37. Walker, *Design History and the History of Design*, 22–23; Robert Williams, “Vasari’s Concept of *Disegno*,” in *Art, Theory, and Culture in Sixteenth-Century Italy: From Techne to Metatechne* (Cambridge: Cambridge University Press, 1997); Wolfgang Kemp, “Disegno: Beiträge zur Geschichte des Begriffs zwischen 1547 und 1607,” *Marburger Jahrbuch für Kunstwissenschaft* 19, (1974): 219–240; Hermann Schlimme, “Die frühe *Accademia et Compagnia dell’Arte del Disegno* in Florenz und die Architekturausbildung,” in *Entwerfen: Architekturausbildung in Europa von Virtuv bis Mitte des 20. Jahrhunderts: Geschichte – Theorie – Praxis*, ed. Ralph Johannes (Hamburg: Junius Verlag, 2009); cf. Erwin Panofsky, *Idea: Ein Beitrag zur Begriffsgeschichte der älteren Kunsttheorie* (Berlin: Verlag Volker Spiess, 1982), 26.
38. Nikolaus Pevsner, *Pioneers of Modern Design: From William Morris to Walter Gropius*, 4th ed. (New Haven: Yale University Press, 2005), 14; Giorgio Vasari, *Vasari on Technique: Being the Introduction to the Three Arts of Design, Architecture, Sculpture and Painting, Prefixed to the Lives of the Most Excellent Painters, Sculptors and Architects* (London: J. M. Dent & Company, 1907), §§ 74–75; Leon Battista Alberti, *On the Art of Building in Ten Books [De re aedificatoria]*, trans. Joseph Rykwert, Neil Leach, and Robert Taverner (Cambridge, MA: MIT Press, 1991), 3; Ritter, Gründer, and Gabriel, *HWPPh*, s.v. “Kunst, Kunstwerk;” Paul Oskar Kristeller, “The Modern System of the Arts: A Study in the History of Aesthetics (I),” *Journal of the History of Ideas* 12, no. 4 (1951): 496–527; Paul Oskar Kristeller, “The Modern System of the Arts: A Study in the History of Aesthetics (II),” *Journal of the History of Ideas* 13, no. 1 (1952): 17–46.
39. Alberti, *On the Art of Building in Ten Books [De re aedificatoria]*, 2–6; Françoise Choay, “*De re aedificatoria* als Metapher einer Disziplin,” in *Theorie der Praxis: Leon Battista Alberti als Humanist und Theoretiker der bildenden Künste*, ed. Kurt W. Forster and Hubert Locher (Berlin: Akademie Verlag, 1999). In the literal translation of *de re aedificatoria*, meaning “about building/construction” (from Latin *aedifico* “build, erect, construct, make; create; establish; improve; edify”), “architecture” can be understood in terms of “architectonic” and thereby as “design.” In the following, I will consider architecture in terms of architectural design and therefore as part of design.
40. Alberti, *On the Art of Building in Ten Books [De re aedificatoria]*, 2–6; cf. Gerd de Bruyn, *Die enzyklopädische Architektur: Zur Reformulierung einer Universalwissenschaft* (Bielefeld: Transcript Verlag, 2008), 108. In classical antiquity, Vitruvius already conceived architectural design not only as the construction of buildings but also the construction of time piece and machinery. Design is thus the construction/extension of the human sphere—a building as a construction/extension of space, machinery as the construction/extension of actions and time pieces as the construction/extension of time. Vitruvius, *The Ten Books on Architecture [De architectura]*, trans. Morris Hicky Morgan (New York: Dover Publications, 1960), bk. 1, chap. 3, sec. 1. For Vitruvius, design is thus not only a question of technical rationality but a philosophical enterprise of devising appropriate and meaningful—and thereby ethical—artefacts and environments which are integrated into a coherent social and cultural whole. Therefore, Vitruvius also demands an extensive and comprehensive educational system, one that includes many fields from music to medicine;

The concept of *disegno* also laid the root for the separation between the *fine arts* (*beaux arts*) and the *applied arts* since the 18th century. Whereas the fine arts, which included painting, sculpture, architecture, music, poetry, as well as drama and dancing, were considered as an intellectual activity concerned with the production of beautiful objects for cognitive stimulation and independent of any direct utility, the applied arts were considered in terms of crafting, designing and styling objects for everyday use and utility. The applied arts in turn were often not considered as a free, autonomous and intellectual activity as the outcome was determined not by the individual, but rather by the context of use. The degree of autonomy of the fine artist was thus greater than that of the applied artist, and in that way mirrored the distinction between the liberal arts and the mechanical arts. The subsequent conception of Art (with a capital “A”) is based on this distinction. Whereas Architecture (with a capital “A”) was considered part of the fine arts and thus as an intellectual activity, the design and production of objects for everyday use was understood in terms of craft, skill and manual labour.<sup>41</sup>

With the shift towards the industrial production of goods, however, design emerged as a distinct field in the 19th century in the form of *industrial design* (also called industrial art), although its origins can be traced back to the 18th century. The industrial production of goods was made possible through an increased division of labour that led to the production of standardised goods for a mass market. The role of designers, or modellers as they were also called, was to create forms, *dessins*, types and specifications, according to which goods could be produced by craftsmen and later factory workers. On the one hand,

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including philosophy as an inquiry into the good life. Hanno-Walter Kruft, *A History of Architectural Theory: From Vitruvius to the Present* (New York: Princeton Architectural Press, 1994), 24; Vitruvius, *The Ten Books on Architecture [De architectura]*, bk. 1, chap. 1. Vitruvius furthermore draws an analogy between architectural design and the universe—regarding the universe as architectural design. In the construction of machines and especially time pieces one could reveal the fundamental operations of the universe—for example, the gnomon, a sun dial that literally translates from the ancient Greek as “that which reveals.” In this regard, design—as the construction of such machines—reveals through them the fundamental structure of the universe. Although Vitruvius did not draw any conclusions from this conception, it became an influential conception that portrays god as an architect (*deus architectus mundi*) and the architect as a second god (*architectus secundus deus*). Kruft, *A History of Architectural Theory*, 24; Vitruvius, *The Ten Books on Architecture [De architectura]*, bk. 9, chap. 1, sec. 1, 2; cf. Robert Hahn, *Anaximander and the Architects: The Contributions of Egyptian and Greek Architectural Technologies to the Origins of Greek Philosophy* (New York: State University of New York, 2001); Indra Kagis McEwen, *Socrates’ Ancestor: An Essay on Architectural Beginnings* (Cambridge, MA: MIT Press, 1993). Consequently, the universe is considered as a piece of design, expressed in many religious and non-religious conceptions of the universe, as well as in Buckminster Fuller’s conception of earth as a designed spaceship. Richard Buckminster Fuller, *Operating Manual for Spaceship Earth* (Baden: Lars Müller, 2008), 58.

41. Kristeller, “The Modern System of the Arts (I)” Kristeller, “The Modern System of the Arts (II)” In the *Encyclopédie*, Jean-Baptiste Le Rond d’Alembert and Denis Diderot aimed to group all human knowledge into *memory*, *reason* and *imagination*, whereby the mechanical arts are grouped under memory, the sciences and philosophy under reason and the fine arts (*beaux arts*) under imagination. Whereas “practical architecture” was listed under memory along with tool-making, “architecture” was listed under imagination in the tree of knowledge called *Système figuré des Connaissances humaines [Figurative System of Human Knowledge]*. In the introduction to the *Encyclopédie*, d’Alembert distinguishes between the fine arts as methodological, non-regulated imagination and the mechanical arts as the sciences on the other side. Therefore, this arrangement also shows a kind of “progression” of knowledge—that is not to say that imagination requires memory and reason, but synthesises and surpasses them. Jean Le Rond d’Alembert, “Preliminary Discourse,” *The Encyclopedia of Diderot & d’Alembert Collaborative Translation Project*, translated by Richard N. Schwab and Walter E. Rex (Ann Arbor: MPublishing, University of Michigan Library, 2009), <http://hdl.handle.net/2027/spo.did2222.0001.083> (accessed August 11, 2012), pt. 1. Originally published as “Discourse Préliminaire,” *Encyclopédie ou Dictionnaire raisonné des sciences, des arts et des métiers*, 1:i-xxv (Paris, 1751). In the German tradition “art” was not divided into fine art and applied art, but rather according to the specific medium of expression, that is, music, literature, performing arts (*darstellende Kunst*) and plastic/visual arts (*bildende Kunst*). Achim Trebeß, ed., *Metzler Lexikon Ästhetik: Kunst, Medien, Design und Alltag* (Stuttgart: Verlag J. B. Metzler, 2006), s.v. “Bildende Kunst.”

this distinction is based on the technical requirements of process of production, on the other hand, this distinction is based on the concept of *disegno*, separating conception and execution. Design, in this tradition, can be regarded as *formgiving*, as the role of designers was initially to find appropriate forms for these new industrially produced goods for a mass market.<sup>42</sup> The (industrial) designer was more and more seen not as an “artist-designer” creating individual and original pieces and forms, but as an inventor of types that could be produced in large quantities for a wide and mainly anonymous audience.<sup>43</sup>

Design was thus seen as an *applied art*, in that sense, that it was art *applied* to industry to increase the aesthetic qualities of products and thus in opposition to art for its own sake.<sup>44</sup> This conception has been promoted by Walter Gropius in his educational concept of the Bauhaus that aimed to reunite art with the problems of daily life. For Gropius, design was not only a question of applying art to everyday problems and to overcome the separation between art and technology, his aim was to unify the separated strands of art into a new unity; one that does not look back to the pre-industrial forms of production as the Arts and Crafts Movement did, but one that embraces new technical possibilities and processes of production, or in other words, to combine art and technology and to create a new technological way of living.<sup>45</sup> Not unlike Alberti, Gropius understands design in architectural terms as managing, coordinating and structuring coherent total environments rather than the production of single and unrelated artefacts and consequently as total design.<sup>46</sup> Whereas Gropius’ concept of total design may be considered somewhat rigid, his colleague László Moholy-Nagy argued that, as managers and organisers, designers must also acknowledge the ethical dimension of design objects, that is their production and use as well as their consequences for individuals and societies. For Moholy-Nagy, design is thus not

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42. Walker, *Design History and the History of Design*, 23; Jonathan M. Woodham, *Twentieth-Century Design* (Oxford: Oxford University Press, 1997), chap. 1; Adrian Forty, *Objects of Desire: Design and Society since 1750* (London: Thames & Hudson, 1986; reprint, 2002), chap. 2; Catharina Berents, *Kleine Geschichte des Design: Von Gottfried Semper bis Philippe Starck* (München: Verlag C. H. Beck, 2011), 9–12.
43. The dispute of the role of the designer as producer of standardised types for industrial production (Herman Muthesius) or the designer as producer of individual and artistic objects (Henry van de Velde) dates back at least to the German Werkbund Exhibition of 1914; cf. Herman Muthesius and Henry van de Velde, “Werkbund Theses and Antitheses,” in *Programs and Manifestoes on 20th-Century Architecture*, ed. Ulrich Conrads (Cambridge, MA: MIT Press, 1970).
44. Walter Gropius, “Programme of the Staatliches Bauhaus in Weimar,” in *Programs and Manifestoes on 20th-Century Architecture*, ed. Ulrich Conrads (Cambridge, MA: MIT Press, 1970); Walter Gropius, “The Theory and Organization of the Bauhaus,” in *Art in Theory 1900–2000: An Anthology*, ed. Charles Harrison and Paul Wood (Oxford: Blackwell, 1999). See note 96 on page 46 for art for art’s sake (*L’art pour l’art*).
45. The slogan “Art and technology a new unity!” (*Kunst und Technik eine neue Einheit!*) was put forward by Walter Gropius in the manuscript “Brevier für Bauhäusler (Breviary for Bauhaus Members)” in 1924, Hans M. Wingler, *Das Bauhaus: Weimar, Dessau, Berlin und die Nachfolge in Chicago seit 1937*, 4th ed. (Köln: DuMont, 2002), 90.
46. Walter Gropius, *The New Architecture and the Bauhaus*, trans. P. Morton Shand (London: Faber and Faber, 1965), 89–99. Gropius took up the idea of total design and aimed to conceive the everyday environment as a total work of art and therefore a piece of total design, in which designers would design everything from buildings to furniture and tableware, an idea Gropius took from Richard Wagner’s approach to opera in which different artistic disciplines worked together in order to create a singular experience (*Gesamtkunstwerk*). Richard Wagner, *The Art-Work of the Future and Other Works*, trans. William Ashton Ellis (University of Nebraska Press, 1993), chap. 1, sec. 5. The idea of total design is guided by the fantasy of control and the organisation and coordination of entire environments and thereby the life of individuals and societies. For Gropius, total design was almost a spiritual mission; the total work of art should speak from even the smallest items of everyday life and thereby turn the designed environment into a cathedral for the future. Mark Wigley, “What Happened to Total Design?,” *Harvard Design Magazine* 5, 1998. This aims becomes particularly visible in a speech Gropius delivered to Bauhaus students in July 1919. Wingler, *Das Bauhaus*, 46; cf. Gropius, “Programme of the Staatliches Bauhaus in Weimar;” Gropius, “The Theory and Organization of the Bauhaus.” Gropius originally uses the term architecture rather than design, however, his use of both terms is not coherent.

only a question of applying technical knowledge or skills to problems of everyday life, but it becomes a task of self-development of designers in a humanistic tradition.<sup>47</sup>

Throughout the 20th century, however, design was not primarily conceived in humanistic terms but as a profession that supports industrial and economic development. Thereby, designers were seen, amongst others, as promoters of the national economy through styling (1950s); as part of product development teams considering the entire process from engineering to marketing (1960s); as experts for user in terms of ergonomics and product conception (1970s); as coordinators and managers creating strategies and roadmaps (1980s); as strategists for creating experiences and brands (1990s); and as innovators and visionaries (2000s).<sup>48</sup> Understood in these terms, design seems to be conceptually tied to the marketplace and seen as a service to industry to increase sales—especially in the form of industrial design.<sup>49</sup> Consequently, design cannot exist outside the (industrial) marketplace, and when it does, it is often considered as “art” rather than “design.”<sup>50</sup>

In contrast to design as an activity, as a field design is often understood in terms of design objects designed or produced by designers (and thus as Design with a capital “D”). However, what “designers” and “design objects” are is a matter of discourse similar to the discourse of what constitutes “art.”<sup>51</sup> However, to consider design solely in terms of “industry,” “the marketplace” or “professional design” would exclude design activities that take place outside the industrial context, as well as design by non-professionals. It would therefore be very limiting to equate design with the industrial- and mass-production of artefacts.<sup>52</sup> What is and what is not part of the design discourse—and thus considered as Design—can change and should be considered broader than the view of design as the mediation of (economic) interest between clients/producers and users/consumers.

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47. László Moholy-Nagy, *The New Vision and Abstract of an Artist*, trans. Daphne M. Hoffman (New York: Wittenborn, Schulz, 1947), 15; For Moholy-Nagy, design is thus less a profession but rather an attitude towards the world. László Moholy-Nagy, *Vision in Motion* (Chicago: Paul Theobald & Company, 1956), 42.

48. Berents, *Kleine Geschichte des Design: Von Gottfried Semper bis Philippe Starck*, 14–15.

49. As Papanek claimed: “There are professions more harmful than industrial design, but only a very few of them. And possibly only one profession is phonier. Advertising design, in persuading people to buy things they don’t need, with money they don’t have, in order to impress others who don’t care, is probably the phoniest field in existence today. Industrial design, by concocting the tawdry idiocies hawked by advertisers, comes a close second.” Papanek, *Design for the Real World*, ix.

50. A claim made by many designers, particularly in industrial design, for example, by Dieter Rams. *Objectified*, directed by Gary Hustwit, Swiss Dots, 2009. However, the fact that art is mainly located in the marketplace as well, is thereby often forgotten. The label “art” often seems to be merely used as a container for anything that is not immediately understood.

51. Arthur Danto and George Dickie have argued that the status of an artist or art object is to be defined by the art community, or alternatively, that everything an artist produces is an art object. Arthur C. Danto, “The Artworld,” *The Journal of Philosophy* 61, no. 19 (1964): 571–584; George Dickie, “Defining Art,” *American Philosophical Quarterly* 6, no. 3 (1969): 252–258. This conception was then able to include objects which previously were difficult to categorise as art objects, such as ready-mades such as Marcel Duchamp’s *Fountain* as well as Joseph Beuys’ *Social Sculptures*. However, to define and demarcate design seems to be similarly difficult as it is for art. See Cynthia Freeland, *But is it Art? An Introduction to Art Theory* (Oxford: Oxford University Press, 2001); Nina Felshin, *But is it Art? The Spirit of Art As Activism* (San Francisco: Bay Press, 1994); Benjamin R. Tilghman, *But Is It Art? The Value of Art and the Temptation of Theory* (Oxford: Basil Blackwell, 1984). Furthermore, there are also intentional overlaps between these fields, such as DesignArt. See Coles, *DesignArt*; Coles, *Design and Art*. The difference can thus not be in the object itself but only in the context it is placed in. As Ron Arad has observed, if one were to place Donald Judd’s *Chair* (1991) alongside the *Red and Blue Chair* (1918) by Gerrit Rietveld in a high street shop, passers-by would not necessarily make a distinction between them. Matthew Collings, *Ron Arad talks to Matthew Collings* (London: Phaidon Press, 2004), 16.

52. Walker, *Design History and the History of Design*, 29.

Design as a field, or special activity, can nevertheless be conceived in terms of the following aspects: First, design is concerned with issues that are relevant for everyday life, and may thus be understood as *applied (art)* similar to ethics as applied philosophy or engineering as applied science.<sup>53</sup> Second, design is characterised by the concept of *disegno* and thus the production of *concepts* and *ideas*, rather than the production the final products. Third, design is not only a profession or service but also a form of *cultural production*.

### Design as Critical Practice

There are, however, attempts to broaden the field of design by considering design as a *critical practice* that challenges limiting views, values and practices of design. It takes ideologies, contexts and consequences of the production of artefacts into account in order to form a critical view on design and its problems and questions, thus extending the field of design beyond narrow commercial interests.<sup>54</sup> Design is not only a question of appearance (aesthetics) or processes and functions (logic) but also of the designers ideologies and the forms of life resulting from design decisions (ethics).<sup>55</sup>

In this sense, design as critical practice can be seen as a form of design that is directed towards more socially valuable ends than selling consumer goods. In the 1960s, a growing number of designers were unsatisfied with their job as servants to industry and helping to sell, in their eyes, trivial and superfluous products. Ken Garland, for example, wrote the manifesto *First Things First* (1964) and called for a form of (communication) design that pursues more relevant social aims than helping to sell “cat food, stomach powders, detergent, hair restorer, striped toothpaste, aftershave lotion, before-shave lotion, slimming diets, fattening diets, deodorants, fizzy water, cigarettes, roll-ons, pull-ons and slip-ons.”<sup>56</sup> According to his critique, this narrow view of design as a branch of marketing, which is enforced by the media and educational institutions, is no longer acceptable as designers should contribute to society in more useful and lasting terms. Here, the neutral role of design is abolished, the impact of design on the quality of social and political life is questioned and designers are called to account for their actions.<sup>57</sup> Another powerful critique of the mainstream design establishment came from Victor Papanek in his book *Design for*

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53. See note 19 on page 30.

54. Design as critical practice would thus need to break out of the narrow boundaries of the market to explore alternative human needs outside the market. As Anthony Dunne stated, “if every thing is determined by the market, we will live in an impoverished, flattened world meeting only the lowest level of culture, need and desire. Banality will reign. Everything will be determined by popularity, instant impact, economics, accessibility. Design will be little more than a sugar coating helping us consume more things more easily. I think design has more potential than that, it can ensure that our experiences of everyday life are rich, intriguing and engaging. For now though, this kind of design needs to happen outside the existing market system which forces a very narrow role on design.” Katya García-Antón, Emily King, and Christian Brändle, eds., *Wouldn't it be Nice ...: Wishful Thinking in Art and Design* (Genève: Centre d'Art Contemporain, 2007), 165.

55. Alain Findeli and Rabah Bousbaci, “L'éclipse de l'objet dans les théories du projet en design [The Eclipse of the Object in Design Project Theories],” *The Design Journal* 8, no. 3 (2005): 35–49.

56. The manifesto was written and proclaimed at the Institute of Contemporary Arts on 29 November 1963 and published in 1964. Ken Garland, “First Things First: A Manifesto,” *The Guardian*, January 24, 1964. Of course, others have criticised design and the role of the designer before. Arguably, the first was William Morris, criticising the mainstream design of his time. William Morris, “Art and Its Producers,” in *Lectures on Art and Industry*, vol. 22 of *The Collected Works of William Morris* (London: Longmans Green and Company, 1914); cf. Forty, *Objects of Desire*, 60–61.

57. Cf. Rick Poyner, “First Things First Revisited,” *Emigre* 51, 1999.

*the Real World* (1971). He criticises the modern design paradigm that, for him, is inherently unsustainable and argues for a form of design that is socially, ecologically and morally responsible. This form of design would take real world problems into account, for example, those of children, the elderly, migrants, handicapped and the poor, and not only the “problems” of affluent consumers.<sup>58</sup> For Papanek, every designer not only has to take responsibility for the products entering the market, but also must bring “his social and moral judgement [...] into play long *before* he begins to design, since he has to make a judgement, an *a priori* judgement at that, as to whether the products he is asked to design or redesign merit his attention at all. In other words, will his design be on the side of the social good or not.”<sup>59</sup> Papanek’s approach to design has laid the foundation for what may be considered as *social design*, an approach to design that revolves around the question of the social good and aims to devise processes to change society for the better. Designers thus not use their skills primarily to create profit for some company but to transform society, which may include a critique of society, institutions and structures.<sup>60</sup>

These alternative conceptions of design attempt to conceive of design as a socially more relevant or morally better practice that produces more meaningful and relevant products, services and systems and thus as a form of solving problems. Design as critical practice, however, can also pursue not only socially but also intellectually more valuable and interesting ends. Such a form of design is less concerned with solving practical problems but with raising questions and exploring ideas and possibilities that may sometimes seem to lie outside the traditional field of design. Design objects are thereby not ends but rather means that can facilitate thinking and critical reflection in the form of subversive, provocative or critical artefacts.<sup>61</sup> In other words, conceptual, technological, social or political issues are explored and criticised *through* design objects whereby these objects become the *media* for investigation and communication. Among others, such a form of critical practice are: radical design, conceptual design, interrogative design, critical design, speculative design and adversarial design.

*Radical design* emerged during the late 1960s and is radical in terms of exploring new ways of living and forms of society and politics through fictional and utopian visualisations as well as texts. These aimed to challenge notions of what design is and to critique the ideologies of “normal” design. Whereas conventional design produces objects that maintain the social and political status quo, radical design aims to challenge people’s values and concepts, rather than producing objects that blend into the existing social landscape. Thus, rad-

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58. Papanek, *Design for the Real World*.

59. *Ibid.*, 55.

60. Some advocates for this form of design that is concerned with social, sustainable and activist/political issues are, for example, Ezio Manzini, “Prometheus of the Everyday: The Ecology of the Artificial and the Designer’s Responsibility,” *Design Issues* 9, no. 1 (1992): 5–20; Ezio Manzini, “Design, Environment and Social Quality: From ‘Existenzminimum’ to ‘Quality Maximum,’” *Design Issues* 10, no. 1 (1994): 37–43; Ezio Manzini, “A Cosmopolitan Localism: Prospects for a Sustainable Local Development and the Possible Role of Design,” in *Design Studies: A Reader*, ed. Hazel Clark and David Brody (Oxford: Berg, 2009); William McDonough and Michael Baungart, *Cradle to Cradle: Remaking the Way We Make Things* (New York: North Point Press, 2002); Alastair Fuad-Luke, *Design Activism: Beautiful Strangeness for a Sustainable World* (London: Earthscan, 2009); Bruce Mau, *Massive Change: A Manifesto for the Future Global Design Culture* (London: Phaidon Press, 2004).

61. Cf. Daniel Fallman, “The Interaction Design Research Triangle of Design Practice, Design Studies, and Design Exploration,” *Design Issues* 24, no. 3 (2008): 4–18.

ical designers do not see themselves as (re)producers but as creators of new meaning and concepts.<sup>62</sup>

The architectural design group Superstudio, for example, has investigated topics that may be considered far beyond what would normally count as architecture. Their project *Five Fundamental Acts: Life, Education, Ceremony, Love and Death* (1972–1973) explores these acts through visualisations, stories and films. Instead of devising architectural designs based on a common understanding and practice of these acts, they devised scenarios for alternative ways of understanding them through the design of objects and environments. *Life/Supersurface* (see figures 1–2), for example, is a scenario that explores the possibility of living without material objects.<sup>63</sup> An energy grid that covers the entire planet is proposed; it is to serve as a kind of “magic surface” or “material virtual reality” that renders all material objects superfluous. The surface instantly fulfils any need at any location on the surface, through which the inhabitants are freed from work, become permanent nomads and are able to create temporary communities instead of houses and cities with subsequent material objects. Although the need for material objects is eliminated in the scenario, some people are nevertheless portrayed on “happy islands” and are surrounded by material objects pursuing seemingly “useless” activities such as cleaning up or doing laundry. Through this twist, the project does not portray a visionary scenario for a perfect future but a narrative, in which the human condition and the longing for a “simpler life” and “irrational activities” is revealed. All five scenarios are fictional and not meant as proposals for a particular future, but are explorations of ideas and concepts through architectural design. The design of the environment therefore does not impose meaning on people but is developed from meaningful activities. Superstudio does not use architecture as a prop or stage for human existence, but aims to investigate the human condition through architectural design for these activities.

Although radical design is a term that describes a historic movement within the design discourse, it is nevertheless an important conception of design as it introduces radical thinking into design. This thinking may allow one to challenge notions about the process and subject matter of design and to investigate topics that conventionally lie outside of the disciplinary boundaries of design.

*Conceptual design* focuses on conceptual rather than practical problems of design, whereby the conceptual and intellectual aspects of design objects often become more important than their material aspects. This conception is somewhat derived from conceptual art, which places a stronger emphasis on the development of ideas than on the perceptual qualities of art objects. In some sense, conceptual art objects are merely the materialisation or execution of an idea. Thus when evaluating them, the presented idea should be in the

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62. John A. Walker, *Glossary of Art, Architecture, and Design since 1945*, 3rd ed. (Boston, MA: Hall, 1992), s.v. “Radical Design;” Andrea Branzi, “Radical Architecture: Refusing the Disciplinary Rôle,” *Casabella* 386, 1974, 46. Radical design is often used in combination with anti-design or counter-design, which, however, often seems to be a more formalistic criticism of modernist and functional approaches to design, and later evolved into post-modernist design. Alessandro Mendini, “Radical Design,” *Casabella* 367, 1972, 5.

63. Peter Lang and William Menking, *Superstudio: Life Without Objects* (Milano: Skira, 2003), 175–209.



focus and not their perceptual and material qualities.<sup>64</sup> However, it is difficult to conceive conceptual design analogue to conceptual art for several reasons. First, following the concept of *disegno*, all design is in some sense conceptual as conception and execution are separated. Furthermore, any design idea is always the imagination of a design object that has some aesthetic qualities. Second, conceptual art draws a sharp distinction between percepts and concepts. The presented ideas, however, are not necessarily evaluated logically (rationally) but rather aesthetically (emotionally).<sup>65</sup> Furthermore, for both conceptual art and design objects the perceptual qualities can actually not be separated from the conceptual qualities, as it is *through* the material objects that the idea is understood. In this sense, the objects themselves are materialised ideas and not just illustrations of ideas that could be illustrated or described in some other form. The form is thus not just an arbitrary or secondary quality but is essential to the conceptual design object. It is precisely through the perception of design objects that new concepts and ideas are formed and the emphasis should thus be on the aesthetic qualities these objects must have in order to achieve this aim. Third, unlike conceptual art, conceptual design cannot define any object as a design object as design is always related to a context of use (even if the use is fictional or conceptual). In other words, the conceptual designer is not completely free to define what a design object is.<sup>66</sup>

Nevertheless, conceptual design focuses on ideas and concepts, rather than practical or functional questions. The separation is thus not between ideas and execution but between ideas and the necessities of practical use, economical constraints and requirements for mass-production. The results are design objects in the form of models, drawings or non-functional prototypes. In some sense, conceptual design arose from an admiration for the autonomy and freedom of artists to investigate ideas outside economical and functional constraints.<sup>67</sup> The *Do Hit Chair* (see fig. 3) by Marijn van der Poll, for example, is not a chair in practical terms, but rather in conceptual terms. The chair consists of a stainless steel cube and a sledgehammer and one can use the hammer to form the chair into the desired shape.<sup>68</sup> Although one could probably sit on the resulting chair, it is unlikely to be very comfortable or practical—it is the idea that is in the foreground. Poll asks the audience to consider shap-

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64. Sol LeWitt, "Paragraphs on Conceptual Art," in *Conceptual Art: A Critical Anthology*, ed. Alexander Alberro and Blake Stimson (Cambridge, MA: MIT Press, 1999).

65. Cf. Elisabeth Schellekens, "The Aesthetic Value of Ideas," in *Philosophy and Conceptual Art*, ed. Peter Goldie and Elisabeth Schellekens (Oxford: Clarendon Press, 2007).

66. Peter Eisenman, "Notes on Conceptual Architecture: Toward a Definition," in *Eisenman Inside Out: Selected Writings, 1963-1988* (New Haven: Yale University Press, 2004), 15–17. It is difficult to see how a design object could change the definition of "design" and a "design object" in such radical (and perhaps arbitrary) way as Marcel Duchamp's *Fountain* has changed what can be considered "art" and an "art object." Making an art object then becomes the act of defining what art actually is, whereby making art moves from appearance to conception; cf. Joseph Kosuth, "Art After Philosophy," in *Art After Philosophy and After: Collected Writings, 1966-90* (Cambridge, MA: MIT Press, 1991).

67. Cf. Renny Ramakers, "Between Art and Function: Conceptual Design," *Dutch Art + Architecture Today* 21, 1987. For a general overview of conceptual approaches in design see Dunne and Raby, *Speculative Everything*, chap. 2. Many design objects that are labelled as "conceptual," however, seem to be conceptual in so far as they are nonfunctional models for something. Any of these models present an idea for something (e.g. a different form of living, communicating, moving, etc.), such as a "concept car," but is thereby not automatically conceptual, as it is not necessarily understood in conceptual terms but in terms of use.

68. The chair is actually in production and can be bought in two versions: shaped by the designer (€ 7,930) and unshaped (€ 4,890). <http://www.droog.com/webshop/furniture/do-hit-chair---hit-by-van-der-poll> (accessed August 15, 2014).

ing the chair themselves—whereby the production of the chair has destructive characteristics—and to question the concepts “chair” and “production.” The object, however, is not just a presentation of a chair or the idea of a chair. The object itself is the idea, which becomes understandable by shaping the chair, although one actually does not have to use the hammer in order to get the idea.<sup>69</sup>

Exemplary for understanding conceptual design is perhaps Peter Eisenman’s both theoretical and practical exploration of conceptual approaches to architectural design. Eisenman tries to understand the possibilities of conceptual architecture by regarding architecture as a language and by translating Noam Chomsky’s structural approach to language into architecture. Eisenman thus distinguishes between deep (*conceptual*) and surface (*perceptual*) structures of architecture. This conception is based on the distinction between *pragmatics* (use and function), *semantics* (meaning) and *syntactics* (composition and structure). For Eisenman, conceptual architecture is a form of syntactical architecture whereby, “the conceptual aspect is defined by an intention to shift the primary focus from the sensual aspects of objects to the universal aspects of objects.”<sup>70</sup> Conceptual architecture thus aims “to investigate the nature of what has been called formal universals which are inherent in any form or formal construct.”<sup>71</sup> The search for the universals of architecture leads Eisenman to abandon any concerns of practical use and to purely focus on formal/structural aspects. For him, conceptual design does not mean that the design object is the idea nor that the design object is the materialisation of an idea (whereby the idea is more important than the physical object), but that the design object *itself* is conceptual.<sup>72</sup> He explored these ideas by devising a compositional programme for developing a series of houses (see figures 4–5) that were designed and partly built. Since Eisenman did not design the houses based on function and use but from a purely formal and structural point of view, some of the houses have questionable functional qualities. Walls, windows and columns divide rooms in ways that require new ways of furnishing or living in them and at points seem uninhabitable.<sup>73</sup> Whereas the first nine houses are designed based on a compositional grid or matrix and thus exhibit some form of unity, the compositional structure of the last house in the series, *House X* (see fig. 6), is not only abandoned but de-composed. Its design is based on a three-dimensional axonometric model whereby the unity of the house is broken down—it actually appears only as a unit from one point of view (the two-dimensional axonometric plane) and thus not as a coherent whole.<sup>74</sup> Eisenman’s houses appear alien and the occupants must find a way of inhabiting them, as they are not based on the functions that houses usually have—

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69. Cf. Schellekens, “The Aesthetic Value of Ideas”

70. Eisenman, “Notes on Conceptual Architecture: Toward a Definition” 23.

71. *Ibid.*, 23.

72. *Ibid.*, 15, 17.

73. *House VI*, for example, had a slot in the bedroom that forced the inhabitants to sleep in separate beds. A column set people apart at the dinner table, the only bathroom is accessible through the bedroom, and kitchen cabinets cannot comfortably be reached. The house was furthermore of poor quality with a leaky roof so that the owners had to reconstruct it substantially (with a different architect than Eisenman). Despite the poor quality and functional problems the owners still like to live in what they call a poetic environment. Suzanne Frank, *Peter Eisenman’s House VI: The Client’s Response* (New York: Whitney Library of Design, 1994).

74. Mario Gandelsonas, “From Structure to Subject: The Foundations of an Architectural Language,” in *House X*, ed. Peter Eisenman (New York: Rizzoli, 1982).

the occupants almost enter the buildings as intruders aiming to gain possession of them. The houses do not impose a pre-conceived idea of function or meaning but stimulate the occupant to create these.<sup>75</sup> Eisenman breaks down the structure of the buildings and recombines the elements in new and unfamiliar ways, using a strategy of de-familiarisation (or estrangement) and thereby eliminating the usual architectural experience.<sup>76</sup> The houses are not illustrations or executions of ideas, but they make conceptual features of architecture visible and experienceable. The perceptual qualities of the buildings are carefully selected in order to focus on the conceptual questions asked. They are not just arbitrarily chosen but essential to the conceptual qualities of the houses. Thereby, the design object becomes a medium through which possibilities of living and use can be interrogated, which may lead to new concepts of what may be considered as a house.

*Interrogative design* is a term used by Krzysztof Wodiczko to describe a form of design that “takes a risk, explores, articulates, and responds to the questionable conditions of life in today’s world, and does so in a questioning manner.”<sup>77</sup> Wodiczko’s inquiry questions the world by using design as a form of critique. Wodiczko’s object *Vehicle* (see figures 7–8) can serve as an illustration for his conception of interrogative design. The object consists of a long wooden box with four bicycle wheels. On the top is a tilting platform on which the artist can walk up and down. Energy is produced through a seesaw movement and propels the vehicle in one direction only. The object was not intended for any other user than the artist himself. With the project, Wodiczko aimed to criticise the cultural situation in Poland during that time, which sought to integrate artists and intellectuals into the overarching political ideology of communism and rational progress. According to Wodiczko “the subject who operates the vehicle was in fact an object, a part of this machine. And yet there was, in this vehicle, a certain illusion of freedom, moving back and forth and seeing the world independently, in peripatetic fashion. And for all that the independence was limited by the dimensions of the machine and the manner in which one moved upon it [...]”<sup>78</sup> Wodiczko describes this object as a metaphorical vehicle—the system does not permit one to escape, to change direction, or to turn backwards.<sup>79</sup> The already limited possibility of moving seesaw-like in two directions is revealed as an illusion, since the whole system moves steadily in one direction only. One could read this as an ironic comment on the situation, but I think that through the object’s metaphorical dimension it reveals the intricate mechanisms of a social and political situation. Apart from the metaphorical dimension, the object is also a critical object since it criticises the relationship of power between the artist and the state. Wodiczko does not visualise this relationship, but materialises it through a functional object through which the audience can imagine to be in his position, that is, to imagine how it may feel like. The situation is understood functionally, and the function of the object is to be a metaphor for the function of society, rather than an illustration of it.

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75. Peter Eisenman, *Eisenman Architects: Selected and Current Works* (Mulgrave: Images Publishing Group, 1995), 30.

76. Cf. K. Michael Hays, *Architecture’s Desire: Reading the Late Avant-garde* (Cambridge, MA: MIT Press, 2010), 52–55.

77. Krzysztof Wodiczko, *Critical Vehicles: Writings, Projects, Interviews* (Cambridge, MA: MIT Press, 1999), 16.

78. *Ibid.*, 76.

79. *Ibid.*, 78.

*Critical design* is a term used by Anthony Dunne and Fiona Raby to describe a form of design that asks questions, makes one think and facilitates debate and discussions, through “conceptual design proposals offering a critique of the present through the material embodiment of functions derived from alternative value systems.”<sup>80</sup> Their aim is to use design objects as media to trigger a discussion or debate around the issues that the design objects broach. Accordingly, the aim is not to design objects for (practical) use but for debate, discussion or criticism of political and social situations, in which design objects serve as a “material critical theory.”<sup>81</sup> Dunne calls these objects “para-functional,” that is, they encourage the user to reflect on the functionality and the conditioning power of the object.<sup>82</sup> This liberation from functional purpose “allows design to be a form of discourse, resulting in poetic inventions that, by challenging laws (physical, social or political) rather than affirming them, take on a critical function.”<sup>83</sup> Dunne’s *Faraday Chair* (see fig. 9), for example, shows this critical function of design objects. The object consists of a steel frame with a yellow tinted acrylic glass box that is coated with conductive ink. The resulting faraday cage shields the person inside from the invisible electromagnetic waves outside of the box. The box creates an outside and an inside, whereby the electromagnetic space becomes visible, thus drawing attention to the existence of the invisible electromagnetic waves and their potential dangers. Although the object does not resemble a typical chair or a comfortable resting bed, it can nevertheless be viewed as something furniture-like since it is called “chair” and someone is using it.<sup>84</sup> Its functions and origin, however, remain obscure and could perhaps be an object used in a medical, scientific or military context. It is an ambiguous object, since it can be seen as a fictional piece of furniture that aims to draw attention to the electromagnetic space and its consequences for humans; at the same time it can be regarded as a product proposal for the electromagnetic environment. Since other and more practical solutions would be possible, there is no functional need for this particular kind of object. It thus materialises the danger and fear of electromagnetic space and could thus be understood as a metaphor for the shrinking of space that is free of electromagnetic waves. Dunne and Raby regard critical design as an attitude of not taking anything for granted and not accepting the status quo as given. For this reason, any design that explores the larger context of design and translates this exploration into a material form can be considered as critical design.<sup>85</sup>

*Speculative design* is a term that highlights the fictional qualities of design and the ability to render possible worlds experienceable. These possible worlds may or may not be concerned with possible future developments of society and technology, however, they are not visions of the future or proposals for a particular future to be realised. Dunne and Raby,

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80. Anthony Dunne, *Hertzian Tales: Electronic Products, Aesthetic Experience and Critical Design* (London: RCA Computer Related Design Research, 1999), 13; cf. Dunne and Raby, *Design Noir*, 58; cf. Anthony Dunne and Fiona Raby, “Critical Design FAQ,” <http://www.dunneandraby.co.uk/content/bydandr/13/0> (accessed August 18, 2009).

81. Anthony Dunne and Alex Seago, “New Methodologies in Art and Design Research: The Object as Discourse,” *Design Issues* 15, no. 2 (1999): 16.

82. Dunne, *Hertzian Tales*, 44.

83. *Ibid.*, 42.

84. *Ibid.*, 104–105.

85. Dunne and Raby, *Speculative Everything*, 35.

for example, consider speculative design to be closer to speculative fiction than to science fiction. For them, speculative design is not concerned with predicting the future but is a tool for speculating and imagining how the world could be. Design objects thereby become media for communication, discussion and debate about possible worlds and desirable futures. They are thus more interested in the implications of design decisions and objects for everyday life rather than the applications of design objects in functional terms.<sup>86</sup> For Dunne and Raby, speculative design can thus “give form to the multiverse of worlds our world could be. Whereas it is accepted that the present is caused by the past it is also possible to think of it being shaped by the future, by our hopes and dreams for tomorrow.”<sup>87</sup> They define speculative design as future directed, mainly concerned with understanding possible implications of technological development. Speculative design, however, can also be conceived in terms of fiction and thus in more poetic terms.<sup>88</sup> Especially valuable is their investigation of the aesthetics of speculative design. In order not to be misunderstood as proposals for a particular future or as ironic or parodic commentaries on technological developments, speculative design objects need to be both strange and sit within a plausible context of material everyday life—similar to props in fictional films that render a story convincing.<sup>89</sup>

As an example for speculative design, Dunne and Raby recognise Rem Koolhaas’ contribution to the *Roadmap 2050* project by the European Climate Foundation (see figures 10–11). The project is a proposal for a new form of energy production and distribution in Europe through a new energy grid. In order to render this future experienceable, Koolhaas developed a series of visualisations, such as a map that depicts Europe divided not by national boundaries but by the type of energy produced in a particular region, a visualisation of possible landscapes of these regions, a “tube map” connecting these areas, and a new passport for the European Union that uses the energy grid instead of the circle of stars as a symbol. Although it seems unlikely that the Europeans will abandon nation states in the near future, these visualisations are media through which a discussion of a new type of energy production can be facilitated and communicated. The project, however, is not a presentation of a blueprint for such a grid, but rather a suggestion that aims to open up the debate about the possibility of constructing such a grid. Thus the publication of the project ends with the sentence: “If you thought the European Energy Grid was just a dream ... think again.”<sup>90</sup> Although this and other projects are speculative in the sense that they portray a possible world or future, it is often unclear how the audience can enter into the proposed

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86. Ibid., 2, 6, 49, 51. Cf. James Auger, “Alternative Presents and Speculative Futures: Designing Fictions through the Extrapolation and Evasion of Product Lineages,” *Sixth Swiss Design Network Conference, Negotiating Futures – Design Fiction* (2010): 42–57.

87. Dunne and Raby, *Speculative Everything*, 160.

88. Björn Franke, “Design Fiction is Not Necessarily About the Future,” *Negotiating Futures – Design Fiction: Sixth Swiss Design Network Conference, October 28–30, 2010* (2010): 80–90. Speculative design is often used synonymously with design fiction. I think that the term “fiction” may be the defining criterion here when understood in terms of “literature” or “poetics” and not in terms of “future.” See chap. 5.

89. Dunne and Raby, *Speculative Everything*, chap. 7.

90. The Office for Metropolitan Architecture and the ECF, *Volume 3: Graphic Narrative*, *Roadmap 2050: A Practical Guide to a Prosperous, Low Carbon Europe*, European Climate Foundation (ECF), [http://roadmap2050.eu/attachments/files/Volume3\\_FullBook.pdf](http://roadmap2050.eu/attachments/files/Volume3_FullBook.pdf) (accessed December 9, 2010).

dialogue, debate and imagination and not just remain a passive audience presented with an option for a possible world.

*Adversarial design* is a term that has been used by Carl DiSalvo to describe an activity that uses “designerly means and forms” and “evokes and engages political issues” in an antagonising way.<sup>91</sup> For DiSalvo, it is an activity that uses “the practices and products of design to shape and contribute to public discourse and civic life.”<sup>92</sup> However, it is not design understood as politics but rather the political use of design objects in order to “represent and enact the political conditions of contemporary society and function as contestational objects that challenge and offer alternatives to dominant practices and agendas.”<sup>93</sup> Although this is again a conception of design that aims to challenge the status quo, its aim is to expose hidden political agendas and issues and to make them experienceable through design objects rather than proposing alternative worlds or values. Therefore it is not only (re)presentational but also activist, aiming to change a status quo directly. DiSalvo furthermore defines this form of design not only as a critical practice but also as a form of inquiry into these issues, as designing is also always an attempt to understand a particular situation or issue.<sup>94</sup> As an example for adversarial design, DiSalvo identifies the project *Feral Robotic Dogs* (see fig. 12) by Natalie Jeremijenko. For the project, Jeremijenko ran workshops in which participants could use robotic toy dogs, hack and modify them, and equip them with sensors to discover environmental hazards, such as chemical or radioactive contamination. Released on public sites, the dogs could sniff the contamination and follow the concentration of the substance, thus making the problem visible. The project aims to lead to discussions and ideally action. The robotic dogs are used as platforms that can be adapted to particular situations and thereby show how technology can be appropriated and modified for other social ends.<sup>95</sup> Adversarial design is a useful concept as it emphasises both the conceptual and the activist aspects of design as critical practice that may have a direct social and political impact.

These six conceptions of design as critical practice have some themes in common. They consider design as: (1) *critical* and questioning the status quo; (2) *antagonistic* in terms of making issues experienceable and noticeable; (3) proposing *radical* alternative worlds to the present; (4) *speculative*, since proposals are not presented as truths but as suggestions; (5) aiming for *debate*, discussion and reflection. In other words, they all shift design from production towards *exploration* and claim independence and *autonomy* for design in view of the economical demands of the consumer market. This form of autonomy, however, is not conceived in terms of the autonomy of art, but rather in terms of academic freedom, that is, as autonomy over the subject matter of design and independence with regard to political and commercial interests, rather than a detachment from social and political issues.<sup>96</sup> Design

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91. Carl DiSalvo, *Adversarial Design* (Cambridge, MA: MIT Press, 2010), 2.

92. *Ibid.*, 12.

93. *Ibid.*, 115.

94. *Ibid.*, 115–120.

95. Natalie Jeremijenko, *Feral Robotic Dogs*, <http://www.nyu.edu/projects/xdesign/feralrobots> (accessed August 17, 2014).

96. Since the renaissance and especially in the 18th and 19th century art (fine arts) has claimed its autonomy from

as critical practice furthermore takes a self-reflective and self-critical approach to design and often challenges conventional assumption, ideologies and boundaries of the field and discourse. It is a form of design that uses design objects to ask conceptual, ethical, social and political questions and aims to engage a public audience in these issues.

### Design as Inquiry

Although forms of design exist that are more concerned with exploration and asking questions than production and solutions, it is not clear how they can be regarded as a form of *inquiry*. Inquiry is often activity associated with academic disciplines (the sciences and humanities) that aim to understand aspects about the world. Design on the other hand seems to be concerned not so much with *what exists* but also with *what could exist*. Thus there is a fundamental difference between the sciences and design. As Gui Bonsiepe has observed, “the sciences approach reality from the perspective of cognition, of what can be known, while design disciplines approach reality from the perspective of ‘projectability,’ of what can be designed.”<sup>97</sup> Furthermore, the western tradition has mainly focussed on the abstract instead of the material character of knowledge. The question is thus how design explorations can be understood as a form of inquiry. That is, how making, imagining and projecting can be acknowledged as forms of understanding and knowledge.

A way to consider design as a form of inquiry would be to consider design as a form of *research*. Christopher Frayling, for example, has developed a very influential approach for conceiving design as research, whereby he distinguishes between three different frameworks of inquiry: research *into*, *through* and *for* (art and) design. According to Frayling, *research into design* is theoretical research *about* design and is concerned, for example, with social, economic, political, ethical, cultural or historical questions (fields such as design history, material culture, visual culture, etc.). *Research through design* is research *through designing*, as a form of action research within a design project, which can deal, for example, with questions of the use of materials or technologies. Although Frayling, writing more from the perspective of art than design, seems to focus solely on the artefacts themselves, this framework of research necessarily includes research about the users and the implications of these artefacts for them. The third framework is *research for design*. This is research in which the produced artefact can be seen as the embodiment or materialisation of the research process and the thoughts and ideas of the designer that lead to its existence. It is a form of research that advances the fields “Art” and “Design” (both with capital first let-

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bourgeois, aristocratic or clerical clients and institutions, from society and social demands as well as from any utilitarian end. Art was to be appreciated for its own sake, which is expressed in the term “art for art’s sake” (*l’art pour l’art*), which led to an increasing detachment of art from society. Michael Kelly, ed., *Encyclopedia of Aesthetics* (Oxford: Oxford University Press, 1998), s.v. “Autonomy;” Michael Müller, “Künstlerische und materielle Produktion: Zur Autonomie der Kunst in der italienischen Renaissance,” in *Autonomie der Kunst: Zur Genese und Kritik einer bürgerlichen Kategorie* (Frankfurt am Main: Suhrkamp Verlag, 1972); Philip Paul Wiener, ed., *Dictionary of the History of Ideas: Studies of Selected Pivotal Ideas* (New York: Scribner, 1973–1974), s.v. “Art for Art’s Sake;” Peter Bürger, “Zum Problem der Autonomie der Kunst in der bürgerlichen Gesellschaft,” in *Theorie der Avantgarde* (Frankfurt am Main: Suhrkamp Verlag, 1974); Pierre Bourdieu, “The Conquest of Autonomy: The Critical Phase in the Emergence of the Field,” in *The Rules of Art: Genesis and Structure of the Literary Field* (Stanford, CA: Stanford University Press, 1996).

97. Gui Bonsiepe, “Design and Democracy,” *Design Issues* 22, no. 2 (2006): 28.

ters) through the production of outstanding artefacts.<sup>98</sup> Although Frayling understands research mainly in terms of *recherché*, that is, in terms of inspiration for the production of artefacts, the last framework may also allow one to regard the artefacts themselves as the communication of the research results. In my opinion, this is the most interesting part—to understand design objects themselves as the outcome of the process of inquiry and thus not only as embodying but as conveying the research (as opposed to an explanatory text that describes the process of development or the artefact itself). Whereas the first framework describes established forms of inquiry in the humanities, the later two frameworks describe design itself as a form of inquiry—both *designing* as a process of inquiring as well as *design objects* as the result of inquiry and its communication. However, the question how this process and the resulting artefacts can be regarded as knowledge remains unanswered.

The contemporary discussion about “design research,” however, often seems to follow a similar model proposed by Bruce Archer. He approaches the question from the perspective of design practice with an emphasis on the process of reflection and methods. He distinguishes between *research about (design) practice*, which is research that investigates design practice usually within fields such as history or sociology, but also investigates methods of designing; *research for the purpose of (design) practice*, which is research that contributes to the designer’s activity and practice; and *research through (the medium of design) practice*, which is research through designing or constructing something. This can be regarded as a form of action research, which is specific to a situation and project. It is therefore not possible to generalise the findings of a specific project and to apply it to a different one.<sup>99</sup>

Archer’s focus on design practice (from an engineering perspective), however, bears the risk of evaluating research in design only according to its usefulness for design practice. “Design research” in this tradition mainly seems to be concerned with investigating methods and processes of designing, or to design according to certain methods. Archer himself, however, notices that the focus on methods and the reflective component of research may be a direct outcome of research degrees and an attempt to compare the outcome of design research to the research outcomes of other disciplines. For design practice outside the educational context, however, methods and reflective processes do not seem to play such an important role.<sup>100</sup> Nevertheless, the aim seems to be to model research in design on research in the sciences with their transparent and traceable research process that makes it possible for the scientific community to evaluate, discuss, reproduce or improve the results. This is the very basis of scientific research and progress. The outcomes of design,

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98. Christopher Frayling, *Research in Art and Design*, Royal College of Art Research Papers, vol. 1 (London: Royal College of Art, 1993). The last framework, however, could lead to view art and design research in terms of “art for art’s sake,” which, in my opinion, is not useful for design as inquiry as it may lead to a self-referential form of design. See note 96 on page 46.

99. Bruce Archer, “The Nature of Research,” *Co-design* (January 1995): 6–13. Archer’s conception of “design research” has inspired many alternative approaches to conceive design as research, for example, Alain Findeli, “Die projektgeleitete Forschung: Eine Methode der Designforschung,” *Erstes Design Forschungssymposium, Swiss Design Network, May 13–14, 2004* (2004): 40–42.

100. Archer, “The Nature of Research” Cf. Timothy Emlyn Jones, “A Method of Search for Reality: Research and Research Degrees in Art and Design,” in *Thinking Through Art: Reflections on Art as Research*, ed. Katy Macleod and Lin Holdridge (London: Routledge, 2010); Henk Borgdorff, “The Debate on Research in the Arts,” in *The Conflict of the Faculties: Perspectives on Artistic Research and Academia* (Amsterdam: Leiden University Press, 2012).



however, are usually design objects that are evaluated by how well they work (function, communicate, surprise, challenge or irritate). They are usually not evaluated in terms of being right, of being designed using a rigorous process or by being reproduced. Even if the process is the main focus of an investigation in design, the results are nevertheless communicated through design objects and are thereby inseparable from the design object that is presented. Design objects themselves are thus the medium for both communicating and evaluating the inquiry. A design object that does not work (function, communicate, surprise, challenge or irritate) has “failed.”<sup>101</sup>

The attempts to “scientify” design thus seem to be counterproductive as the aim of design seems to be different to the sciences. It is perhaps more fruitful to consider the *humanities* rather than the sciences as a frame of reference for design as inquiry, particularly when conceptualising design as a *philosophical* inquiry. Although the humanities (or liberal arts) comprise various and very different fields, according to Adam Roberts, they all “explore what it means to be human: the words, ideas, narratives and the art and artefacts that help us make sense of our lives and the world we live in; how we have created it, and are created by it.”<sup>102</sup> The humanities are academic fields, such as history, literature, languages, law, philosophy and arts (only as an object of study and not as a practice), that are different from the sciences in terms of subject matter and in terms of approach. Whereas the sciences approach the object of inquiry with the aim to *discover objectifiable knowledge*, the humanities approach it with the aim to *create understanding*. Thus the term “research” may not be the best description for the process by which the humanities approach their subject matter, as knowledge is not something that can be found “out there” but it is something that needs to be constructed. Whereas the sciences furthermore seem to differentiate between research and the communication of research results, this separation cannot be made as clearly in the humanities, as the “object of research” is often formed in the process of communication (writing), whereby “communication” and “research” is one and the same. Understanding is thus not achieved by transmitting knowledge in the form of propositional statements, but by judging and recognising the qualities of the presented perspectives and arguments. These perspectives and arguments are, however, bound to the individual view and understanding of the author and depend on his or her experience and reflection.<sup>103</sup>

The relationship between design and the humanities has previously been addressed in design, for example by Moholy-Nagy, who understood design as a form of self-development, as well as Richard Buchanan. For Buchanan, design should become an integrative discipline, a liberal art for the increasingly complex artificial and technological world. By conceiving design as a liberal art, Buchanan aims to reunite the increasingly diverging fields of

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101. Cf. William H. Gaver, Ben Hooker, and Anthony Dunne, *The Presence Project* (London: RCA Computer Related Design Research, 2001), 202–203. In writing a novel, for example, the author’s inquiry and research is embodied or synthesised in the novel itself and it should not be necessary to add additional information about the “research process” in order to evaluate it. Whereas background information may be interesting to other authors or literature critics, it is not (or at least should not be) necessary for the evaluation of the work. It is the novel that is evaluated and not the process of its development.

102. Adam Roberts, introduction to *Past, Present and Future: The Public Value of Humanities and Social Sciences* (London: British Academy, 2010), 2.

103. Stefan Collini, “The Character of the Humanities,” in *What Are Universities For?* (London: Penguin Books, 2012).

knowledge in bringing them together in their implications for human existence and everyday life.<sup>104</sup> Although I agree that design can investigate the implications or technologies within an everyday context and this in a more direct and concrete way, I am not sure if the idea of replacing the liberal arts by design is helpful or reasonable. Rather, designing as a form of inquiry could be a valuable addition to the liberal arts or humanities and their attempt to understand the human condition, particularly since humans can only fully understand those things that they have made themselves.<sup>105</sup> Naturally, such a form of inquiry cannot be determined by commercial or economic interests but needs to be free to establish its own subject matter.

Design as inquiry conceived within the framework of the humanities—not in terms of research about design, but designing as a form of inquiry—would mean that designing is a form of understanding and that the created design objects are perspectives and arguments that can be recognised and judged by others. Designers would then not design artefacts in order to “solve” the human condition but rather to explore it, based on experience and reflection. Following this conception, designing would be an inquiry that does not aim to provide answers to the world but rather perspectives on the world. Design as inquiry would thus not only criticise the status quo or speculate about possible worlds, but rather try to gain an understanding of the complex relationships between humans, artefacts and technologies. I think that design as inquiry can create what Bruno Latour has called “visualisation tools that allow the contradictory and controversial nature of matters of concern to be represented.”<sup>106</sup> Design objects can be used to explore what is considered as real, whereby this exploration becomes an ontological inquiry into the relationship between humans and artefacts and the ways of being that these artefacts give rise to. Design as inquiry could thus explore the nature of subject-object relationships in a way similar to many other forms of philosophical inquiry.<sup>107</sup> However, for design to be regarded as a philosophical inquiry, designing and design objects need to be conceived as forms of understanding and knowledge.

## Conclusion

Design is not bound to industry as a service discipline in order to increase sales, nor is designing only a matter of organising, planning or problem-solving. As a form of imagining and projecting oneself into a possible world, design is concerned with ethical, social and

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104. Richard Buchanan, “Wicked Problems in Design Thinking,” *Design Issues* 8, no. 2 (1992): 5–21.

105. Giambattista Vico has argued in his *verum-factum* principle that humans can only understand what they have actually made themselves, such as history, language and culture. Giambattista Vico, *On the Most Ancient Wisdom of the Italians: Unearthed From the Origins of the Latin Language*, trans. Lucia M. Palmer (Ithaca, NY: Cornell University Press, 1988), 45–46; Giambattista Vico, *The New Science*, trans. Thomas Goddard and Max Harold Frsch (Ithaca, NY: Cornell University Press, 1948), 85 (§ 331); Cf. Sigrid Weigel, “Das Gedankenexperiment: Nagelprobe auf die facultas fingendi in Wissenschaft und Literatur,” in *Science & Fiction: Über Gedankenexperimente in Wissenschaft, Philosophie und Literatur*, ed. Thomas Macho and Annette Wunschel (Frankfurt am Main: Fischer Taschenbuch Verlag, 2004), 185; Marcel Danesi, ed., *Giambattista Vico and Anglo-American Science: Philosophy and Writing* (Berlin: Walter de Gruyter, 1995), 26.

106. Bruno Latour, “A Cautious Prometheus? A Few Steps Toward a Philosophy of Design (with Special Attention to Peter Sloterdijk),” *Proceedings of the 2008 Annual International Conference of the Design History Society (UK), University College Falmouth, September 3–6 (2009)*: 9.

107. Hays, *Architecture's Desire*, 1–2.

political questions. As a field, it is not only a profession based on a set of skills, but is also a critical practice that challenges the status quo, asks questions instead of providing answers and can be considered as a form of cultural production. Based on the humanities as a frame of reference, design as inquiry aims for understanding and reflection and presents its results as perspectives and arguments in the form of design objects. Although this form of design has audiences instead of users, the aim is not to produce entertaining objects but the results of an inquiry that is first and foremost interesting for the person who does the investigation.

This form of design can thus be better understood in terms of *inquiry* rather than *research*, as design research is concerned with methods that improve the design process or make designers more accountable by making the design process transparent. For the same reason, the process of design as inquiry can be understood better in terms of *approaches* than *methods*, as this is a more open concept of how the object of inquiry may be handled. After all, as Walter Gropius as argued, design should be considered as a *search for something* rather than a *research of something*.<sup>108</sup> The concept of “design as inquiry” will give the necessary openness for this search, in which design is not only the *object of inquiry* but also the *medium for inquiry*.

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108. Walter Gropius, *Scope of Total Architecture* (London: George Allen & Unwin, 1956), 65.



## Chapter 2: Mediating Technologies

Humans not only build their environment or make tools, they are also made by their tools and their environments in return.<sup>1</sup> Hannah Arendt, for example, sees human existence essentially as a conditioned existence, which is both conditioned by the natural environment as well as by the artificial environment, that is, the world that humans create. Thus, humans create their own conditioning environment through the creation of things—they are both shapers of things and shaped by things.<sup>2</sup>

The invention of the mechanical clock, for example, has radically transformed human life. According to Lewis Mumford, clocks initially helped regulate the strict daily routine of monks in medieval European monasteries. For him, the clock is more than an instrument for keeping track of time but rather a device that synchronises human actions according to “the regular collective beat and rhythm of the machine.”<sup>3</sup> Thus, when spreading outside the monasteries, clocks facilitated the regulation of work in terms of serving, accounting or rationing time; and, for Mumford, it was therefore the clock, rather than the steam engine that made the industrial revolution possible. Clocks made it possible to dissociate time from the human experience of time. Whereas human time is largely regulated by human experience and the human body, and thus passes differently in different situations and in different moods, the time produced by the clock is linear with uniform intervals. This leads to an orderly and punctual life that is not natural to humans. The time produced by the clock, however, is experienced almost as it were natural and has thereby become a “second nature” to humans. According to Mumford, the clock thus not only changed human life directly in terms of daily routine but also led to (and almost required) the invention of an entire new world of artefacts. This new experience of time and the disassociation of time from the natural daily routine regulated by the sun, led humans invent “wicks, chimneys, lamps, gaslights, electric lamps, so as to use all the hours belonging to the day.”<sup>4</sup> Moreover, if time is not understood in terms of experience, but in terms of a calculable sequence of uniform intervals, time can be expanded or saved through machines and instruments to save labour. According to Mumford, abstract time thus became a form of existence that even regulated organic functions as “one ate, not upon feeling hungry, but when prompted by the clock: one slept, not when one was tired, but when the clock sanctioned it.”<sup>5</sup>

Technological artefacts not only ameliorate everyday situations, but also can reconfigure and influence human life fundamentally and thus have a conditioning force on humans. As a result, technical artefacts such as clocks are not just neutral tools because they cannot be used without transforming the one using them. The design of technologies thus cannot be conceived in terms of the formal aspects, appearances and interfaces of a technical artefact alone but includes the experiences, behaviours and qualities of life that emerge

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1. These statements are commonly attributed to Winston Churchill and Marshall McLuhan.

2. Arendt, *The Human Condition*, 9.

3. Lewis Mumford, *Technics and Civilization* (New York: Harcourt, Brace and Company, 1934), 14.

4. *Ibid.*, 17.

5. *Ibid.*, 17.

from them. This necessitates that the political, social and psychological effects of technology assume a more prominent position within the discourse surrounding design.<sup>6</sup>

In this chapter, I will outline the general subject matter of design as inquiry by exploring different philosophical perspectives on the material and technological conditions of human life, that is, on the nature, implications and mediating effects of design objects. First, instead of being seen as singular entities, design objects may be better comprehended as networks and relationships of objects, that is, in terms of the context that they both create and are embedded in. They are thus not only objects to be used but create the context for human life. Second, technologies may be considered not only in terms of the technical artefact itself but also in terms of the behaviours and cultures to which they give or could give rise. Third, technologies are thus not neutral but have mediating effects on how humans experience and perceive the world, on possible actions and interactions and ultimately on how humans understand themselves. Fourth, the subject matter of design as philosophical inquiry is thus to investigate and question the mediated relationship with technologies and artefacts; it is not the (design of) artefacts or technologies themselves but rather the mediating effects of technologies, that is, the environments, forms of life and modes of existence they create.

### Equipment and Context

Design objects are essentially objects that can be used; and in the context of use design objects are not independent objects but relate to other objects. Furthermore, they can be conceived as useful things, or what Martin Heidegger has called equipment (*Zeug*) or “in order to objects,” that is, objects that do not rest in themselves but are used in order to do something with them.<sup>7</sup> According to Heidegger, equipment needs to serve some purpose and needs to be able to be used for something in order to be understood *as* equipment. For this reason, equipment does not exist in itself but only when it can be used and is helpful, usable or handy. It only *becomes* equipment in the context of use, and thus Heidegger understands equipment not as singular unrelated objects but as things that are part of a complex network of things. For him, a piece of equipment always contains a reference to other equipment and thus *belongs* to other equipment and exists only in terms of this belonging or reference. Writing equipment, for example, exist in terms of pen, ink, paper, desk blotter, table, lamp, furniture, windows, doors, room and so on. For Heidegger, a pen is always encountered in this totality of equipment and not as a singular unrelated item. Without this context of equipment a pen could not be understood as a pen—as equipment. The house can be understood as living equipment and only in this context furniture exist as equipment in reference to the house.<sup>8</sup>

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6. See Björn Franke, “The Stuff Between Us: Designing Interactions Beyond the Object,” Symposium Abstract, Zurich University of the Arts, October 4–5, 2013.

7. *Zeug* is usually translated with “useful things” or “equipment.” Other meanings of *Zeug* include device, utensil, tool but also armour or weapon. In the German language, *Zeug* indicates the action character of an artefact, for example *Werkzeug* translates as “tool” but literally means “a thing to work with.”

8. Heidegger, *Being and Time*, 64 (§ 15). An automobile, for example, only exist as an “automobile” in relation to other entities such as petrol, petrol stations, refineries, streets, mechanics, manufacturers and so on. To refer to an automobile only makes sense when also referring to the entire network in which the automobile can exist. Verbeek,

Heidegger elaborates this idea most famously with his example of a hammer. A hammer is only useful if I want to hammer something and only in this context it can serve its function and thus become equipment. At the same time, equipment also always refers to something else—it refers to what it is for. On the one hand, a hammer refers to the “material” that it transforms, for example, wood and nails, and on the other hand it refers to the aims and ends of its use or its “product,” such as a piece of furniture. As a result, equipment is never an end in itself.<sup>9</sup> Striking in this analysis is that equipment is never useful by itself. It is only useful in the context in which it can be used. Since equipment references context, it can, according to Heidegger, be seen as media for disclosing or revealing the world in three ways. First, it discloses nature as useful in the sense that “the forest is a forest of timber, the mountain a quarry of rock, the river is water power, the wind is wind ‘in the sails.’ As the ‘surrounding world’ is discovered, ‘nature’ thus discovered is encountered along with it.”<sup>10</sup> Second, it discloses the ends to which it is used as well as the future user, since using equipment is to project oneself into the future, or in Heidegger’s words, one “‘is’ there as the work emerges.”<sup>11</sup> Third, it discloses the world through the reference structure, which takes the references into account. In the use of equipment this reference structure is revealed—hence, for example, a roof refers to bad weather and electric light refers to the darkness caused by the position of the sun. Clocks, furthermore, refer to this position as well, as the hourly division of time is based on this cosmical constellation. Thus, for Heidegger, “the surrounding world of nature is also at hand in the usage of clock equipment which is at first inconspicuously at hand.”<sup>12</sup> In summary, the use of equipment discloses the world through the relationship between source material, future use and relation to other things.<sup>13</sup> This disclosure, however, is not limited to nature but can also be extended to the cultural and technological sphere, thus giving rise to the question of how design objects can become objects for reflective world disclosure.

For Heidegger, equipment is sometimes also hard to notice, as it tends to “disappear” when it is used. When I first use some equipment it may require some training, but when I am skilled in its use, it virtually disappears, whereas the task for which I am using the equipment is in the foreground of my attention. According to Heidegger, equipment becomes handy or ready-to-hand (*zuhanden*) when it is used and when it works well for the task at hand. In these moments I do not pay attention to the equipment itself. Only when I focus my attention on the equipment or when it breaks down it becomes visible as such or unhandy. For Heidegger the equipment then becomes objectively present or present-at-hand (*vorhanden*) and suddenly emerges from the context of use. A hammer, for example, is handy while hammering—that is, I am not aware of the hammer, but focus on the task and aims at hand, for example, the production of a piece of furniture or hanging a picture on the wall. If, however, the hammer breaks or is not appropriate for the task at hand, I become

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*What Things Do*, 149–150.

9. Heidegger, *Being and Time*, 65–66 (§ 15).

10. *Ibid.*, 66 (§ 15).

11. *Ibid.*, 66 (§ 15).

12. *Ibid.*, 67 (§ 15).

13. Verbeek, *What Things Do*, 79.

aware of the hammer as an object. When it breaks or is inappropriate for the task, the hammer moves from ready-to-hand to present-at-hand.<sup>14</sup> The invisibility of equipment occurs in many situations. Heidegger investigates this further on the basis of the proximity of equipment, that is, the difference between mental and spatial proximity. Something that is mentally near does not need to be spatially near and vice versa. When I wear glasses, for example, I (usually) do not see the glasses, but rather the object that I am looking at through the glasses. For Heidegger, the object that I am looking at is thus mentally nearer than the glasses I am wearing, although they are physically nearer. Similarly, the destination towards which I am walking may be mentally nearer to me than the street that I am walking on.<sup>15</sup>

This observation also holds up to modern technology. When using a word processor, for example, my attention is directed towards the words appearing on the screen and not to the typing of the words. But if I am not skilled in typing, my attention may be mainly on the keyboard and less on the screen. My attention, however, is in both cases directed towards writing ideas down and not towards the computer itself. It is used as equipment for writing and disappears as equipment when functioning well. Only when the machine breaks down or stops working properly, is my attention directed towards the computer (or the software) itself, as it stands in the way of my action. This insight has had a profound influence on the design of the interfaces of technical artefacts, as the equipment itself needs to remain in the background, transparent and unnoticeable in order to use it for the task at hand. If a computer would be present all the time, I would focus on the machine instead of writing a text.<sup>16</sup>

Following these observations, it may sometimes be difficult to “see” the equipment by which one is surrounded as it is merely useful and blends into the routine of everyday life. Only if one pays attention to it, that is, if one forces oneself to see or experience it, does one become aware of these things and the contexts they create. On the other hand, it is often hard to “see” the context of equipment when one thinks of these objects as singular entities and not as components of a network of things.<sup>17</sup>

For design as philosophical inquiry it may be a strategy to use design objects to make these contexts and the issues involved visible and accordingly, not to make design objects transparent but visible. Anthony Dunne, for example, argues that strategies of defa-

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14. Heidegger, *Being and Time*, 64–65, 68 (§§ 15–16). The terms *zuhanden* and *vorhanden* are translated as “handy” and “objectively present” by Joan Stambaugh, and as “ready-to-hand” and “present-at-hand” by John Macquarrie and Edward Robinson. Another—and maybe more appropriate—translation would be “available” for *zuhanden* and “occurrent” for *vorhanden*. Cf. Hubert L. Dreyfus, *Being-in-the-World: A Commentary on Heidegger’s Being and Time, Division I* (Cambridge, MA: MIT Press, 1991).
  15. Heidegger, *Being and Time*, 99 (§ 23). This relationship has also been observed by others. Michael Polanyi, for example, makes a distinction between *subsidiary awareness* and *focal awareness*. When driving in a nail with a hammer, I focus on driving in the nail, but not on the nail itself or the way I am holding the hammer—at least if I am somewhat skilled in this activity. Michael Polanyi, *Personal Knowledge: Towards a Post-critical Philosophy* (Chicago: University of Chicago Press, 1974), 55.
  16. Donald A. Norman, *The Design of Everyday Things* (New York: Basic Books, 1988); Donald A. Norman, *Things That Make Us Smart: Defending Human Attributes in the Age of the Machine* (New York: Perseus Books, 1994); Bonsiepe, *Interface*, 26–36.
  17. When searching for information on websites such as Google or Wikipedia these website as well as the technical system that is required become transparent when working well. The information is in the foreground. On January 18, 2012, however, the English Wikipedia website was closed down as a protest to anti-copyright laws in the United States (SOPA/PIPA). During this (created) breakdown the system itself becomes visible, as does the dependency on the system.



miliarisation can be used to estrange users from products in order to counteract the disappearance of objects—especially of electronic consumer objects—in transparent user-friendliness.<sup>18</sup> Here, design objects can create disturbances when they do not blend into the habitual fabric of reality but rather disrupt this reality. By creating disrupting objects within the reality of everyday life, situations for reflection can be created, as these objects appear *as* objects, which also includes exposing their contextual issues.

For Heidegger, however, humans not only understand the world through (useful) things, rather, these things create the world. By pointing to the etymological root of the word “thing,” Heidegger depicts things as gatherings. Through its contextual structure, a thing gathers the various elements of the world and thereby creates a world. For Heidegger, “the thing things. Thinging gathers. [...] The thing things world.”<sup>19</sup> In other words, through things a world emerges for humans, as things gather the various connected entities in them and at the same create them as things. According to Heidegger, a bridge crossing a river, for example, is not just connecting two river banks; it creates these river banks through the connecting bridge. The bridge thus “brings stream and bank and land into each other’s neighborhood. The bridge *gathers* the earth as landscape around the stream.”<sup>20</sup> Understanding things as gatherings or assemblies also has a political dimension as the word “thing” denoted the general assembly in the Germanic languages—and is still used today, for example, for the Icelandic parliament, which is called Althing (*Alþingi*).<sup>21</sup> The thing is not only something that gathers or that connects, it is thereby also something that matters. Heidegger’s claim that the “thing things” can then also be understood in the sense that “things matter.” A thing has a political dimension as that what matters is materialised as things—they are of political concern or rather the political concern becomes present in them. They are forms of political representation in which matters of concern are articulated, or what Bruno Latour has called *Dingpolitik* (as opposed to *Realpolitik*). According to Latour “each object gathers around itself a different assembly of relevant parties. Each object triggers new occasions to passionately differ and dispute. Each object may also offer new ways of achieving closure without having to agree on much else.”<sup>22</sup> Here, things become a form of materialising matters of concern and mapping out political issues differently than traditional politics. Latour conceives *Dingpolitik* as the things through which the complex world comes together and thus assembles. It is through the things through which one can understand the complexity of the world—not in the abstract but in the concrete and in material reality.

For design as philosophical inquiry, this could mean making things matter in the form of material objects, as it is the (concrete) thing that matters politically more than abstract ideas—the political is materialised and assembled and thus becomes visible in

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18. Dunne, *Hertzian Tales*, 38–42.

19. Martin Heidegger, “The Thing,” in *Poetry, Language, Thought* (New York: Harper Perennial, 2001), 171–172, 178.

20. Martin Heidegger, “Building, Dwelling, Thinking,” in *Poetry, Language, Thought* (New York: Harper Perennial, 2001), 150.

21. *Ding* or thing is thus similar to the Latin *res* as in *res publica* (state).

22. Bruno Latour, “From Realpolitik to Dingpolitik: Or How to Make Things Public,” in *Making Things Public: Atmospheres of Democracy*, ed. Bruno Latour and Peter Weibel (Cambridge, MA: MIT Press, 2005), 15.

things. Design objects could be seen as gatherings for political and philosophical issues by making them appear (in Heidegger's terminology) as things that matter.<sup>23</sup>

Eduardo Kac's project *GFP Bunny* (see fig. 13), for example, is a project that materialises issues of genetic engineering and thus turns abstract discussions about these issues into matters of concern in the form of a genetically engineered rabbit called Alba. GFP refers to a gene of a green fluorescent jellyfish, which was inserted into the genome of the albino rabbit, thus making its fur glow green when illuminated with blue light of a specific wave length. For Kac, the project consists not only of "the creation of a green fluorescent rabbit," but also of "the public dialogue generated by the project, and the social integration of the rabbit."<sup>24</sup> It is thus not only a project consisting of an art object—the rabbit—but also the debate about the status of genetic engineering of living beings. The image of the green glowing rabbit became an iconic picture used by the media for depicting what genetic engineering could look like. It became an image used to argue for the possibilities or the dangers of genetic engineering and thus fostered the public debate about this technology. Kac documented the publication of the image in newspapers in the form of photographs of people reading the newspaper in an everyday setting (see fig. 14). The images show how the discussion about genetic engineering materialises in an everyday setting through the rabbit as a matter of concern. The rabbit thus becomes a thing that gathers the debate about limits and possibilities of this technology, including social and ethical issues.

### Media and Messages

Design objects can furthermore be understood as media. In the broadest sense a medium can be regarded as a means or vehicle for transmitting matter or content from one place to another—or from a producer to a recipient. Consequently, the function of a medium is mediation. Media can be natural and artificial, for example, the transmission of sound can take place by means of water, air or electronic circuits.<sup>25</sup> A medium connects to different and distanced entities and can thus be considered as something that is in-between things. In a narrower sense, media are human-made, technical artefacts for the communication or the distribution and saving of information. Usually technical artefacts, such as television or the telephone, are seen as media for the transport of information from a sender to a receiver. Since information is a broad concept, almost anything can become a medium when it is used as a medium, that is, as a transmission device for information. Media, however, not only transport information, they also determine what information is available and how one uses this information. Consequently, media determine the horizon of one's world, perception and knowledge.<sup>26</sup>

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23. Bruno Latour and Peter Weibel have explored such things in form of design objects and art objects as curators of the exhibition *Making Things Public: Atmospheres of Democracy*, ZKM Museum for Contemporary Art, March 20 – October 10, 2005.

24. Eduardo Kac, "GFP Bunny," in *Telepresence and Bio Art: Networking Humans, Rabbits, and Robots* (Ann Arbor, MI: University of Michigan Press, 2005), 264.

25. David Davis, "Medium in Art" in *The Oxford Handbook of Aesthetics*, ed. Jerrold Levinson (Oxford: Oxford University Press, 2003), 181.

26. Stefan Münker, "Was ist ein Medium? Ein philosophischer Beitrag zu einer medientheoretischen Debatte," in *Was ist ein Medium?*, ed. Stefan Münker and Alexander Roesler (Frankfurt am Main: Suhrkamp Verlag, 2008).

According to Marshall McLuhan, media are not neutral carriers of information but also messages in themselves. Thereby, McLuhan has a slightly unconventional way of understanding both “media” and “message.” He sees technologies as media and the consequences of technologies as the messages they carry. For McLuhan, a technology (medium) is not only the specific technological artefact but the consequences it has and the environments it creates (message). Thus the medium *is* the message. In other words, McLuhan understands technologies (media) not by looking at the specific technologies themselves (technological artefacts) but by looking at the environment (message) they cause or require. For him, this environment is the “message” of the medium. It follows that a technology is its consequences and thus medium and message are one and the same. Furthermore, McLuhan understands this relationship as a relationship between figure (technology/medium) and ground (message/environment).<sup>27</sup>

“Cars,” for instance, are not just the vehicles themselves but rather the highways, factories or oil companies (messages) that cars (media) require and in which they can exist *as* cars. According to McLuhan, to understand what cars are, one needs to look at the environments that emerge around cars. What cars “are,” are thus the consequences of cars, and at the same time, cars are the figures on the ground of services related to cars. The medium *is* the environment that cars create or require; and it is this environment, the message, that changes people and society and not the technology, that is the car itself. To be able to view media and technologies in this way, McLuhan sees “messages” not in terms of “content” but in terms of “consequences.” For this reason, he can regard technologies, which at the outset do not seem to transmit any messages or have content, *as* media. By considering technologies as media and the association of media with messages, he can point to the “messages” that technologies have and thus claim that “the ‘message’ of any medium or technology is the change of scale or pace or pattern that it introduces into human affairs.”<sup>28</sup> Railways or cars did not only make new forms of transportation available, they “accelerated and enlarged the scale of previous human functions, creating totally new kinds of cities and new kinds of work and leisure.”<sup>29</sup> In this sense, new cities, work and leisure are the consequences and thus messages of these technologies. Similarly, electric light can be used for various activities, but at the same time, the activities that are enabled by electric light are the message and thus the “content” of electric light, since these activities would not be possible without this technology.<sup>30</sup>

According to McLuhan artefacts are not just passive objects but create environments (they “environ”) and change the view on the environment as well as the environment itself. Artefacts determine the environment as a background in which one lives and thereby establish a new environment in addition to the natural one. For this reason, every human artefact can be understood as a “communication” medium that carries messages, which are

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27. Marshall McLuhan, *Understanding Media: The Extensions of Man* (London: Routledge, 2001), chap. 1; Marshall McLuhan and Eric McLuhan, *Laws of Media: The New Science* (Toronto: University of Toronto Press, 1992).

28. McLuhan, *Understanding Media*, 8.

29. *Ibid.*, 8.

30. *Ibid.*, 8–9.

its unintended positive and negative effects and consequences.<sup>31</sup> For McLuhan, technologies are thus not only passive means of transporting information but active changers, whose messages can be seen in the changing of human actions and interactions. Consequently, technologies themselves are transformative and can create new worlds—they “massage” the human condition.<sup>32</sup>

McLuhan’s conception of message/content also relates to understanding artworks. In many paintings, for example, “the message, it seemed, was the ‘content,’ as people used to ask what a painting was about. Yet they never thought to ask what a melody was about, nor what a house or a dress was about.”<sup>33</sup> The latter objects, which may be considered design objects, usually do not raise questions about their content or messages. They are understood in terms of use and (intended or unintended) consequences and thus do not seem to possess a “content” themselves. However, following McLuhan, design objects as media could be seen as carriers of messages and thus as messages themselves by looking at the world (actions or situations) that they create or could create. Along these lines, a design object can be understood as a *medium for an idea* (as an illustration or representation of an idea), or it can be understood *as an idea* (as a materialisation of an idea including the consequences, situations and behaviour it causes). As media for ideas, they are objects for communication, such as sketches, models or prototypes, and as ideas, they are objects for use. Thereby, the idea cannot be separated from the object and thus they are presentations rather than representations of ideas. A wedding ring, for example, can show that someone is married, but it also makes someone a married man or woman by reminding the wearer of the given promise. The ring thus influences the actions and behaviour of both the wearer and possible encounters. These objects are then less signs or representations, but rather objects of definition and self-definition. Thereby the object plays an active role in creating a person. A new dress, for example, can make a woman feel attractive or a new car can make a teenager feel free. Thereby things are not only used to express who one is, they also change who one is.<sup>34</sup>

Following McLuhan, technologies are able to change humans and societies in profound ways. But what is the actual nature of these technological environments? What is their message? And how do these environments change humans? The nature of these environments may sometimes be difficult to notice as they become second nature to humans. Just as fish that are unable to perceive the water in which they swim, humans may be unable to

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31. Oliver Lerone Schulz, “Marshall McLuhan: Medien als Infrastrukturen und Archetypen,” in *Medientheorien: Eine philosophische Einführung*, ed. Alice Lagaay and David Lauer (Frankfurt am Main: Campus Verlag, 2004), 35, 47.

32. Marshall McLuhan, Quentin Fiore, and Jerome Agel, *The Medium is the Massage* (Corte Madera: Gingko Press, 2001).

33. McLuhan, *Understanding Media*, 14. The question, if medium and content can be separated is also a question of the role of media in art. That is, an idea (message) depends on the particular expression in a specific medium. Some conceptual artists, for example, have aimed to separate the idea from a specific medium. Cf. Davis, “Medium in Art.” Furthermore, the question arises if only the primary messages—the ideas or messages of an artwork intended by its author—should be considered as the “messages” of the artwork, or if the secondary messages should be included as well—the messages that arise through the use of an artwork, for example, a painting hanging on the wall of someone’s living room. In the second case, the messages of artworks are similar to the messages of McLuhan’s media since the messages arise as effects and consequences; cf. David Novitz, “Messages ‘In’ and Messages ‘Through’ Art,” *Australasian Journal of Philosophy* 73, no. 2 (1995): 199–203.

34. Mihaly Csikszentmihalyi and Eugene Rochberg-Halton, *The Meaning of Things: Domestic Symbols and the Self* (Cambridge: Cambridge University Press, 1981), 20, 28.

perceive this environment, as they lack the knowledge of an appropriate anti-environment.<sup>35</sup> However, humans not only dwell in this technological environment; their perception and way of understanding is also determined and mediated by this environment. Technologies create the ground or environment for human existence. When functioning well, the nature of the technological environment is hardly questioned—this, however, changes radically in a moment of crisis or breakdown.

The technological environment has become a “second nature” that determines actions and comprehensions and thus leads to an adaptation of the human to the technological environment. As Langdon Winner has pointed out, in a technical system, options are mainly considered from the perspective of what is technically available or possible. He has called this process “reverse adaptation,” by which he means the “the adjustment of human ends to match the character of the available means.”<sup>36</sup> General and abstract human ends are redefined in terms of available technologies, they are projected and translated into technologies, and humans see these ends in terms of technologies. Thus, “the desire to move about becomes the desire to possess an automobile; the need to communicate becomes a need of having telephone service; the need to eat becomes a need for a refrigerator, stove, and convenient supermarket.”<sup>37</sup> For Winner, the construction of technologies is not only the construction of a singular technical artefact, it is the construction of an entire environment that changes human relationships, thoughts and behaviour: “We do indeed ‘use’ telephones, automobiles, electric lights, and computers in the conventional sense of picking them up and putting them down. But our world soon becomes one in which telephony, automobility, electric lighting, and computing are forms of life in the most powerful sense: life would scarcely be thinkable without them.”<sup>38</sup> Here, “second nature” is not only considered as opposed to or different from “nature;” moreover, it is that thinking through technologies becomes “second nature” in terms of thinking and behaviour. It is almost impossible to distinguish between the natural and the artificial world when “technological activities,” such as going shopping, making telephone calls or driving cars, are perceived as “natural activities” and become indistinguishable from activities such as walking or breathing. As a result, technologies can be considered equivalent to natural objects such as flowers or stones, as it is often the case that one does not “see” the technological environment.

According to Theodor Adorno, the construction of technologies is then also a form of technisation (*Technisierung*) of humans, as new forms of behaviour and thinking emerge from the interaction with these technologies. For him, human behaviour can therefore not be understood without the technological environment and the things humans interact with, as technologies determine human behaviour and the possible courses of actions. For Adorno, modern technologies make human behaviour and gestures more precise and bru-

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35. Marshall McLuhan, Quentin Fiore, and Jerome Agel, *War and Peace in the Global Village* (Corte Madera: Gingko Press, 2001), 175.

36. Langdon Winner, *Autonomous Technology: Technics-out-of-control as a Theme for Political Thought* (Cambridge, MA: MIT Press, 1977), 229.

37. *Ibid.*, 233–234.

38. Langdon Winner, *The Whale and the Reactor: A Search for Limits in an Age of High Technology* (Chicago: University of Chicago Press, 1986), 11.

tal, as it makes hesitation and cautiousness impossible. This is due to “the fact that things, under the law of pure functionality, assume a form that limits contact with them to mere operation, and tolerates no surplus, either in freedom of conduct or in autonomy of things, which would survive as the core of experience, because it is not consumed by the moment of action.”<sup>39</sup>

These characterisations of the effects of technologies are in line with the characterisation of technology laid out by Heidegger. For Heidegger technology is nothing technical, that is, technical devices or specific technologies, but rather a framework (*Ge-stell*) for comprehending nature and the world—how nature and the world is revealed (*ent-borgen*), either as tilled (*be-stellt*) or as challenged (*ge-stellt*). In this sense, he understands technology more as an attitude than as a technical device.<sup>40</sup> However, he makes a distinction between premodern technologies and modern technologies on the basis of how nature and the world is understood through them. Whereas premodern technologies work with nature, modern technologies turn nature into a resource (*Bestand*) and make its resources available at any time and thereby more flexibly available. The difference can be characterised as the difference between a sailing boat and a motor boat, the first requires the wind to blow to be operational, the latter is operational at any time, as the energy for transport is available independent of the particular circumstances. Energy is available in the form of petrol and can be made available through a combustion engine at any time. According to Heidegger, this leads to a technological view of the world: wind, woods, rivers, oil and so on become resources of energy rather than things in themselves. However, not only “nature” is seen in this way, rather the entire world is seen as a resource for something else, as

everywhere everything is ordered to stand by, to be immediately at hand, indeed to stand there just so that it may be on call for a further ordering. Whatever is ordered about in this way has its own standing. We call it the standing-reserve [*Bestand*]. [...] Whatever stands by in the sense of standing-reserve no longer stands over against us as object. Yet an airliner that stands on the runway is surely an object. Certainly. We can represent the machine so. But then it conceals itself as to what and how it is. Revealed, it stands on the taxi strip only as standing-reserve, inasmuch as it is ordered to ensure the possibility of transportation. For this it must be in its whole structure and in every one of its constituent parts, on call for duty, i.e., ready for takeoff.”<sup>41</sup>

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39. Theodor W. Adorno, *Minima Moralia: Reflections on a Damaged Life*, trans. E. F. N. Jephcott (London: Verso, 2005), 40 (§19); cf. Helmut Schelsky, “Der Mensch in der wissenschaftlichen Zivilisation,” in *Auf der Suche nach der Wirklichkeit: Gesammelte Aufsätze* (Düsseldorf: Eugen Diederichs Verlag, 1965), 456.

40. Cf. Mitcham, *Thinking Through Technology*, 49–55. Hubert Dreyfuss has suggested understanding what Heidegger means by *technology* as *technicity*, in order to distinguish it clearly from technology as technical artefacts or technical procedures. Heidegger does not discuss certain technologies but “technology” (*die Technik*) as such. Hubert L. Dreyfus, “‘Being and Power’ Revisited,” in *Foucault And Heidegger: Critical Encounters*, ed. Alan Milchman and Alan Rosenberg (Minneapolis, MN: University of Minnesota Press, 2003). This conception of technology may also be grasped in terms of the technology-science-industry complex and a technological understanding of the world. Cf. Hans Lenk, *Philosophie im technologischen Zeitalter* (Stuttgart: Verlag W. Kohlhammer, 1971), 7. See note 19 on page 30.

41. Martin Heidegger, “The Question Concerning Technology,” in *The Question Concerning Technology: And Other Essays* (New York: Garland Publishing, 1977), 17. “Standing-reserve” may be better understood as “resource.” Heidegger develops his view on technology (as distinct from equipment) mainly in this essay. See note 19 on page 30.

The technological view of the world reveals things as resources rather than things in themselves. An airliner, for example, is not only an “airliner,” but a resource and part of a transportation system. Therefore, “the essence of modern technology shows itself in what we call Enframing [*Gestell*]. [...] It is nothing technological, nothing on the order of a machine. It is the way in which the real reveals itself as standing-reserve.”<sup>42</sup>

According to Heidegger, technology means understanding the world technologically, that is, as a technical system made up of resources. These resources are the operating parts of the system and everything in the system is a resource for something—in other words, everything is turned into a means rather than an end. Even humans—human resources—may be regarded as resources in this system, for example, as resource for the tourist industry operating the airliner, with the holiday being a resource for recreation in order to function in the workplace. In order to function, the system requires flexibility and standardisation of its operating parts (resources) and optimises these in order to become more efficient. Inefficient practices and ways of doing are ruled out or seen as antiquated.<sup>43</sup> For Heidegger, the danger of technology is not the use of technical devices but rather the technological view of the world and the belief contained therein, “that man, by the peaceful release, transformation, storage, and channeling of the energies of physical nature, could render the human condition, man’s being, tolerable for everybody and happy in all respects.”<sup>44</sup> In this sense, technology is the framework as total organisation and total design put everything in place as a resource.<sup>45</sup> As a countermeasure to the technological view of the world and as a form of reflection on technology, Heidegger suggests two alternatives. First, that humans develop a certain releasement or dispassionateness towards technology and technical devices in order to be able to let go of them at any time. Thereby a more meaningful relationship with technical devices beyond technical rationality could be achieved.<sup>46</sup> Second, technology can be questioned and confronted through art, as art itself, understood as *technē* (τέχνη), is a form of revealing.<sup>47</sup>

Technology is then not only a matter of designing technological artefacts but a matter of creating a technological form of thinking encouraged by a technological artefact or system. The challenge to investigate technology would then be to reveal the relationship between technological artefacts and forms of thinking, and the structure of society. This may be achieved one the one hand by designing alternative forms of technology and thus alternative forms of revealing the world, and on the other hand by making the messages of technology more explicit. In both cases technology is investigated through the design of

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42. Ibid., 23. “Enframing” may be better understood as “framework.”

43. Dreyfus, “Being and Power’ Revisited;” Cf. *Being in the World*, directed by Tao Ruspoli, Mangusta Productions, 2010, chap. 12.

44. Martin Heidegger, “What Are Poets For?,” in *Poetry, Language, Thought* (New York: Harper Perennial, 2001), 114.

45. Cf. Martin Heidegger, “The Origin of the Work of Art,” in *Poetry, Language, Thought* (New York: Harper Perennial, 2001), 84n.

46. Martin Heidegger, “Discourse on Thinking,” in *Philosophical and Political Writings*, ed. Manfred Stassen (New York: Continuum, 2003), 93–95.

47. Heidegger, “The Question Concerning Technology,” 35.

technology—or in the medium of technology. Technology itself is therefore not a technical question but becomes a form of philosophy.<sup>48</sup>

### Technological Mediation

The human condition, however, is not easily separable—if at all—from technologies, as technologies mediate the human condition. The human condition is fundamentally shaped by technologies as these have mediating and conditioning effects. There is no (technologically) unmediated relationship possible with the world since technologies—tools, technical artefacts, equipment, writing and so on—are the foundations of the human world. Therefore, it is not a question of whether to use technologies or not—as not using is not even possible—but rather to investigate how technologies mediate the human condition and how different technologies lead to a different views of the world. From a post-humanist perspective, the distinction between humans and technology breaks down as humans experience the world through television, kill with weapons, remember by means of photographs and thus *experience, act* and *think* with or through technology and thereby perhaps even become technology.

Don Ihde has systematised these technologically mediated experiences of the world into a system of *embodied, hermeneutic, alterity* and *background* relationships with technology. In an *embodied* relationship humans use technological artefacts to experience the world in a different way. Therefore the artefact needs to be transparent, as otherwise the artefacts themselves would be experienced. An example would be the glasses I am wearing, through which I can see the world. Thereby, the technology becomes part of me experiencing the world, as does the cane of a blind person, the hearing aid of a person with hearing impairment, the telephone when telephoning, or a tool when in use. As a result, I am unaware of the tool but focus on the activity. For Ihde, however, technologies furthermore lead both to an extension and reduction of experience. The telephone, for example, extends the range of communication, but at the same time reduces the density of information that can be communicated in a face-to-face conversation, such as facial expression, gestures, and so on. Similarly, a telescope allows one to see, for example, details of the moon, but at the same time the moon is taken out of the context of the night's sky. In a *hermeneutic* relationship the world is experienced via a technology, whereby the technology is not transparent but rather presents aspects of the world. Measuring devices such as a thermometer, for example, represent the temperature of the environment by translating it into a number. Rather than interpreting the temperature of the environment itself, its representation on the thermometer is interpreted. The world is thus not perceived through the artefact but by means of the artefact. Temperature is not comprehended as a sensual experience but as a number that is displayed; similarly, thinking is increasingly being understood as the colour-coded representation of brain activity rather than the experience of thinking itself. In the

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48. Christian Wolff, for example, proposed that technology could be conceived as the philosophy of art (*technē/τέχνη*). Rolf Elberfeld, ed., *Was ist Philosophie? Programmatische Texte von Platon bis Derrida* (Stuttgart: Philipp Reclam jun., 2006), 141–142. See note 19 on page 30.



hermeneutic relation, numbers are seen as if they were temperature, and colours as if they were thoughts. In an *alterity* relationship the technological artefact appears as an other or quasi-other. Here, the technology is anthropomorphised and the person has a relationship with the technology itself, similar to a relationship with another human. The technology appears as the world or as reality. The relationship can be with toys, electronic devices such as mobile phones or cars, but mainly with technologies that seem “intelligent” or “autonomous” and are “interactive,” such as computers, robots or automata. Thereby, technologies are no longer means but ends in themselves. In a *background* relationship the technology does not appear as an artefact or medium at all. Instead the experience is completely shaped by the technology. Automatic and self-regulating devices and technologies such as refrigerators or central heating systems usually remain in the background as ambient technologies that switch themselves on and off and are thereby hardly noticeable. What is experienced is not the technology, but the experience the technology creates—a technologically mediated experience of the world in which technologies blend into the background and do not require any operation or engagement. For Ihde, however, the mediating role of technical artefacts and technologies is not neutral but changes humans, that is, a human experience and view of the world. Humans with technology are different beings than without it. Therefore, technology is not a neutral medium, which can be regarded as being “in-between” humans and the world as pure means, but it is rather that humans and technologies form a new entity.<sup>49</sup>

The role of engagement in technological mediation has also been investigated by Albert Borgmann. For him, modern technology essentially creates an availability of commodities—such as warmth, music, food and so on—without requiring an engagement in their production. He calls this pattern of technology the “device paradigm.” In his analysis of the human relationship with technologies, Borgmann distinguishes between *devices* and *things*. For Borgmann, a *thing* requires engagement. A hearth, for example, requires me to get involved in producing warmth—getting wood, chopping it, lighting it up and so on. This engagement, however, involves not only one individual but also extends to an entire community or household. The thing—for example, the hearth as the traditional centre of a house—thus gathers the household around itself, whereby the thing becomes the focus. Through the engagement with the thing, the world to which the thing is connected becomes visible—the resources, the usage and the disposal of the different parts. Thus engaging in the hearth is to engage in the world of the hearth—that is, the context and components of the production of warmth. A thing thus creates a world around itself, whereby all required components of the thing are visible and understandable.<sup>50</sup> A *device*, on the other hand is a very different kind of object. Devices are essentially technologies that make something available without requiring the engagement of the user, for example warmth created by central heat-

49. Don Ihde, *Technology and the Lifeworld: From Garden to Earth* (Bloomington, IN: Indiana University Press, 1990), 72–112. Ihde represents these relationships between humans and technology in the following way: embodied relation: (*I-technology*) → *world*; hermeneutic relation: *I* → (*technology-world*); alterity relation: *I* → *technology* (*-world*); background relation: *I* (*-technology/world*). Cf. Verbeek, *What Things Do*, 123–131.

50. Albert Borgmann, *Technology and the Character of Contemporary Life: A Philosophical Inquiry* (Chicago: University of Chicago Press, 1984), 40–42. Cf. Heidegger, “The Thing”

ing and music played from a stereo. In order to listen to music, I do not need to play a musical instrument or attend a concert, I just need to press the button of a technical device. Likewise, in order to heat up a room, I do not need to prepare wood and light a fire in a hearth, I just need to turn on the central heating—or the heating even turns itself on automatically. On first sight this may seem as a liberation from a burden. However, according to Borgmann, devices also conceal their machinery and the context to which they relate. They do not require engagement or skill but only the push of a button. Devices are essentially black-boxes, which produce commodities such as warmth or music by concealing their machinery. The successful concealment of machinery is often described in terms of user-friendliness—a term which indicates how far the user is removed from the machinery of the device or its world. Devices are therefore described by their function—in terms of their ends or what they are for. In a device, the means by which the ends are produced—its machinery—can be changed without changing the function of the device. A clock, for example, has the same ends whether it is controlled by a microprocessor or a spring; television can use cathode ray tubes or plasma displays. A device separates means and ends, and in contrast to things, the machinery of devices is essentially unfamiliar, although one can generally fathom that ends require certain means (or machinery). For Borgmann, anything can become a device—from apparatuses and machines to food and clothing, when it produces a commodity without engagement, that is, when it is removed from a context.<sup>51</sup> When devices prevent engagement with the artefact, devices also remove humans from the consequences of the device, for example, in the case of modern warfare, drone pilots are completely removed from the consequences the device produces, and thus from the messy reality of warfare, so to speak.

For Borgmann, devices essentially produce commodities. Therefore, the devices themselves form the background of technology while the commodities form the foreground of technology, since it is the commodities that are experienced and consumed and not the devices themselves. The middle ground is the infrastructure that devices require, such as transportation or communication systems.<sup>52</sup> Although devices are in the background they determine how humans encounter the world, as the world is increasingly understood from the frame of reference of devices—the device paradigm or pattern of technology. According to Borgmann, reality is understood as a set of commodities as “all of reality is patterned after the paradigm, and in this sense we can say that the paradigm has acquired an ontological dimension. [...] When the pattern is so firmly established, it also tends to become invisible. There are fewer and fewer contrasts against which it is set off.”<sup>53</sup> Here, technology takes on an existential dimension and mediates not only one’s experience of the world but also one’s existence.

Since technology has this existential dimension, Borgmann argues for a type of technology that facilitates engagement. He describes these as *focal things* and *focal practices*,

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51. Borgmann, *Technology and the Character of Contemporary Life*, 42–44, 47–48.

52. *Ibid.*, 48–56.

53. *Ibid.*, 104.

as they focus human activity and thus make it possible to reconnect means and ends. Through this, they facilitate a new form of engagement, gathering, orientation and meaning. Examples of such practices are the preparation of food instead of heating up pre-prepared food, running in nature instead of running on treadmills and so on. According to Borgmann, the rule of technology can only be challenged by comprehending the world through engagement and focussing. The aim is then to restrain the pattern of technology and the device paradigm and to reorientate the relationship between means and ends, with focal things and practices as ends in themselves.<sup>54</sup>

But are non-technological actions possible at all? This would mean somehow stepping outside of technology and the technological “ruling” of the world. The technological environment, however, seems to structure life in an almost total and often invisible manner. Winner illustrates this situation very clearly with the following anecdote:

Picture two men traveling in the same direction along a street on a peaceful, sunny day, one of them afoot and the other driving an automobile. The pedestrian has a certain flexibility of movement: he can pause to look in a shop window, speak to passersby, and reach out to pick a flower from a sidewalk garden. The driver, although he has the potential to move much faster, is constrained by the enclosed space of the automobile, the physical dimensions of the highway, and the rules of the road. His realm is spatially structured by his intended destination, by a periphery of more-or-less irrelevant objects (scenes for occasional side glances), and by more important objects of various kinds—moving and parked cars, bicycles, pedestrians, street signs, etc., that stand in his way. Since the first rule of good driving is to avoid hitting things, the immediate environment of the motorist becomes a field of obstacles. Imagine a situation in which the two persons are next-door neighbors. The man in the automobile observes his friend strolling along the street and wishes to say hello. He slows down, honks his horn, rolls down the window, sticks out his head, and shouts across the street. More likely than not the pedestrian will be startled or annoyed by the sound of the horn. He looks around to see what’s the matter and tries to recognize who can be yelling at him across the way. “Can you come to dinner Saturday night?” the driver calls out over the street noise. “What?” the pedestrian replies, straining to understand. At that moment another car to the rear begins honking to break up the temporary traffic jam. Unable to say anything more, the driver moves on.<sup>55</sup>

Not only is the driver constrained by the laws of the road, it is also impossible for him to establish a communication with the passer-by as a member of a different transportation system. In this sense, technology and the resulting possibilities and limitations cannot be summed up by describing a single car, but by describing the entire transportation-world that is related to cars. For Winner technologies are therefore “forms of life” as they give rise to a particular world including the actions and behaviour of humans as participants in this

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54. Ibid., 196–210, 220. Focus conveniently meaning “hearth” or “fireplace” in Latin and “converging point” or “gathering” in optics.

55. Winner, *The Whale and the Reactor*, 8.

world. Here, Winner points to the inherently political dimension of technologies in terms of enabling or disabling actions and interactions.<sup>56</sup>

This political, or rather moral dimension of technologies has also been investigated by Bruno Latour, for whom technical artefacts not only restrict or permit actions but can become moral agents themselves. According to Latour, humans and technical artefacts can be considered as equal actors from the point of view of the system or network in which they sit, as they both take on similar roles. In this view, technical artefacts can act, however, they are not autonomous agents but only emerge as actants in networks and contexts, that is, they derive their meaning from their role of actors within networks. Thereby, technical artefacts are not neutral entities but transform human action and interaction. Latour illustrates the role of technical artefacts with the example of guns. The controversy of weapon control usually moves around whether “guns kill people” or “people kill people.” In the first case, the gun itself is responsible for the shooting, as it changes human actions and transforms the human—a person, who would not kill someone without a weapon—into a potential killer. In the second case, the gun is treated as a neutral artefact that does not interfere with human action and agency. However, neither the gun nor the person would be able to shoot without the other. Consequently, neither the gun nor the person kills people, but rather a new hybrid entity composed of a human and a gun: the “gunman”—obviously involving more objects such as bullets, weapon manufactures, and so on.<sup>57</sup>

For Latour, technical artefacts essentially mediate human action in three ways. First, through *translating* of the possible actions of a person. The possession of a gun can change the action of the person and translate it into a new one—from just being angry into harming and possibly defeating someone. This would not be possible without the weapon and thus the gun—or the possession of the gun—mediates the actions a person can make in such a situation by expanding them. Second, this leads to the *composition* of a new entity, the gunman, as neither the human nor the gun can be considered as the sole actors in the situation. The agency for shooting is distributed across the system “gun-man.” Technical mediation is not only the translation of actions but also the composition of new actors by forming hybrids instead of humans separated from their objects. It is, for example, not entirely true, to say that humans can fly, as it is rather a composition of various objects that can fly—humans, airplanes, kerosine, etc. It is difficult to see the mediating role of technical artefacts because of this joint cause of actions. Third, technical artefacts can be used to change or influence human behaviour. The changing impulse is thereby *delegated* to the artefact. Speed bumps, for example, cause drivers to slow down as they have the reduction of speed *inscribed* into them. The task of the police of controlling the speed of drivers is thus delegated to the artefact, which, as an actor, takes on the role of the police. Human agency and morality are inscribed into the artefact that takes on the role of a moral agent. In this sense, technical artefacts do not only mediate human actions, but also morality within soci-

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56. Ibid., chaps. 1–2.

57. Bruno Latour, *Pandora's Hope: Essays on the Reality of Science Studies* (Cambridge, MA: Harvard University Press, 1999), 176–177; cf. Csikszentmihalyi and Rochberg-Halton, *The Meaning of Things*, 16.

ety, as on the one hand morality is inscribed into them and on the other hand they enforce certain behaviours on humans.<sup>58</sup>

For Latour, however, technical artefacts largely conceal their relationship to the larger context within they sit and the other artefacts and actants they are connected to. The larger network of surrounding artefacts is thus *blackboxed* and they only become visible when reflected upon or when they break down. All these other entities that emerge in such an event are somewhat already contained in the artefact and thus hidden.<sup>59</sup>

Technologies, however, do not only mediate human behaviour or action, they also are fundamentally intertwined with human cognition, and one could argue that they mediate how humans think. Humans living today, for example, do not seem to be smarter than their prehistoric ancestors in a biological sense, they have just created a smarter environment.<sup>60</sup> According to André Leroi-Gourhan, human memory is essentially a product of externalisation of individual memory into the environment. He draws a distinction between species-related memory (biological memory of the individual), social memory (biological memory of members of a group that is shared by language) and mechanical memory (technical memory such as writing). Especially mechanical memory, or inscription technologies, have helped humans expand their memory exponentially, as the externalisation of memory permits an extension of the individual (species-specific) memory of the brain. He argues that the externalisation of memory happened in four stages: oral, written, index cards and electronic transmission. *Oral* transmission is necessary to keep a group together and is a precondition for its material and social survival. Memory is sometimes stored in special members of the group, such as elders, bards or priests. *Written* transmission was invented to keep track of things, for example, for taxation. Written text facilitated the transmission and storage of information independently from individual memory, whereby memory was made more permanent and enduring. Encyclopaedias, indexes and contents of documents and books furthermore made external memory searchable. This was increased by the invention of *index cards*, which made it possible to search documents according to various criteria such as author, title or subject. This was furthermore enlarged by the development of *electronic* storage of information, in the form of punch cards and later computers, which provided the means to process vast amounts of information.<sup>61</sup> Furthermore, as Merlin Donald argues, the modern mind is essentially a hybrid created by the human brain interacting with symbolic external storage, that is, all external storage of information. This memory system shared by many humans, however, requires some form of literacy to be able to interact

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58. Latour, *Pandoras' Hope*, 178–193; Bruno Latour, “Where are the Missing Masses? The Sociology of a Few Mundane Artifacts,” in *Shaping Technology / Building Society*, ed. Wiebe E. Bijker and John Law (Cambridge, MA: MIT Press, 1992). Technologies are also increasingly used for the moral management of electronic media as they permit one to block, filter, sanitise or clean the content. Raiford Guins, *Edited Clean Version: Technology and the Culture of Control* (Minneapolis, MN: University of Minnesota Press, 2009). This may lead to people living in their individual filtered world with their own moral standards and control. Eli Pariser, *The Filter Bubble: What the Internet Is Hiding from You* (London: Penguin Books, 2012).

59. Latour, *Pandoras' Hope*, 183–185. Latour's account of breakdown and occurrence of entities is somewhat similar to that of Heidegger.

60. N. Katherine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, & Information* (Chicago: University of Chicago Press, 1999), 289.

61. André Leroi-Gourhan, *Gesture and Speech*, trans. Anna Bostock Berger (Cambridge, MA: MIT Press, 1993), 257–266.

with the system. Thereby, literacy becomes somewhat like an interface for accessing information. This cultural technology, however, is hardly noticed as hardware—as a physical object or artefact—, as humans seem to flow freely through the external memory made up of all sorts of memory devices such as books, photographs, sculptures, architecture and so on. For Donald, each time an individual (brain) interacts with symbolic external storage, the cognition and memory of the individual is changed. In this process, the objects the person interacts with become part of the cognitive process.<sup>62</sup> This reliance on external memory for individual cognitive processes, however, is often not noticeable and only seems to become visible and experienceable when the external memory storage is cut off.

But not only memory is externalised; thought processes are as well. Since humans interact with the physical world, this world forms part of their cognitive processes, for example, as sources for information or as reminders.<sup>63</sup> Andy Clark has even argued that thinking itself takes place literally “outside” of the mind through an interaction with objects. For example, when trying to solve a puzzle I do not initially rotate the puzzle pieces mentally and then in the physical environment, but rotate them directly with my hand in order to find out which one fits. In the same way, a painter thinks on the canvas or a writer on the paper.<sup>64</sup> Since the cognitive process does not take place in the mind alone, Clark argues (together with David Chalmers), that the mind can be conceived as extending into the environment and the environment is literally part of the mind. In this sense, possibly not only the mind is extended but also the self. In some sense humans are, as Clark puts it in the title of his book, *Naturally Born Cyborgs*.<sup>65</sup>

Humans cannot really be separated from the artefacts they are surrounded by, as these artefacts are not just tools or environments but conditioners of human experience, action and existence. Hence, the design of artefacts or environments is at the same time the design of the person that interacts with them. It therefore seems necessary not only to design these technologies, but also to investigate what kind of humans are produced by the various technologies or, in other words, to question these technologies and thereby determine their design.<sup>66</sup>

### Questioning Technology

Design as philosophical inquiry can thus be regarded as a way of questioning technologies, that is, as questioning, investigating and criticising the worlds and persons emerging from this mediated relationship with technology. Technologies are the intentional and unintentional

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62. Merlin Donald, *Origins of the Modern Mind: Three Stages in the Evolution of Culture and Cognition* (Cambridge, MA: Harvard University Press, 1991), 311–312.

63. Norman, *Things That Make Us Smart*, 146–147.

64. Andy Clark, *Being There: Putting Brain, Body and World Together Again* (Cambridge, MA: MIT Press, 1998), chap. 3.

65. Andy Clark and David John Chalmers, “The Extended Mind,” *Analysis* 58, no. 1 (1998): 7–19; cf. Andy Clark, *Natural-Born Cyborgs: Minds, Technologies, and the Future of Human Intelligence* (Oxford: Oxford University Press, 2003), chaps. 1–2; Andy Clark, *Supersizing the Mind: Embodiment, Action, and Cognitive Extension* (Oxford: Oxford University Press, 2008), chap. 4. Artefacts, however, can become part of the mind also in a physical ways if they are integrated into the brain structure, as shown for example in the rubber hand illusion. V. S. Ramachandran and Sandra Blakeslee, *Phantoms in the Brain: Human Nature and the Architecture of the Mind* (London: Harper Perennial, 2005), chap. 3; Cf. Norman Doidge, *The Brain that Changes Itself: Stories of Personal Triumph from the Frontiers of Brain Science* (London: Penguin Books, 2007), chap. 7.

66. Cf. Csikszentmihalyi and Rochberg-Halton, *The Meaning of Things*, 13–17.

tional materialisation of ideas about the human character and the constitution of society. They therefore have a political and ethical dimension. As Andrew Feenberg has argued, “at the highest level, public life involves choices about what it means to be human. Today these choices are increasingly mediated by technical decisions. What human beings are and will become is decided in the shape of our tools no less than in the action of statesmen and political movements. The design of technology is thus an ontological decision fraught with political consequences.”<sup>67</sup> However, instead of careful negotiation and debate about the direction society and human development should take, the artificial world is rather the outcome of market-forces than of philosophical exploration. Furthermore, it seems fair to ask if this technological world still serves human ends or if humans serve technological ends. The focus of design as philosophical inquiry should therefore not be on the interaction *with* technologies but rather the interaction created *through* technologies, that is, an investigation of the people and societies that emerge from these interactions.

This technological world, however, is rarely questioned in society, perhaps because it is largely invisible due to its mediating effects. As Langdon Winner has pointed out, it seems as if humans live in this world like “technological somnambulists wandering through an extended dream”<sup>68</sup> instead of emancipated citizens being able to direct technological development and guide it into desired directions. According to Winner, however, this is not only true for the “consumers” of this world but also for the “producers” of it, as an investigation of the effects of technology does not seem to have any influence on its development. The main question for Winner is therefore, “do our enduring, useful artifacts enhance or frustrate the possibilities of free, meaningful activity within human communities?”<sup>69</sup> According to him, these questions should be discussed before they have been inscribed into the technological reality, and they should be discussed before real-world technological choices are made. The design of technologies should be guided by speculation about implications and alternatives before decisions on the direction of technological development have hardened and are thus difficult to change.<sup>70</sup> It would allow one to explore alternatives, options and choice in technology, which from a purely functional and economic point of view often do not seem to exist—and it is furthermore a goal to see the implications that these choices, alternatives and options have in practice. However, as Winner notes, “there is as yet no well-developed discipline or well-focused tradition of thought and practice that tries to do this, to specify which patterns of material, instrumental systems are well suited to different kinds of political conditions, especially ones worth sustaining. Which avenues of inquiry could help open this topic?”<sup>71</sup>

For Winner, the main reason for this problem and the lack of inquiry in this area is rooted in the division between philosophy and design—between thinking and making, between concepts and their implementation and therefore between theory and practice in

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67. Andrew Feenberg, *Transforming Technology: A Critical Theory Revisited* (Oxford: Oxford University Press, 2002), 3.

68. Winner, *The Whale and the Reactor*, 169.

69. Langdon Winner, “Political Ergonomics,” in *Discovering Design: Explorations in Design Studies*, ed. Richard Buchanan and Victor Margolin (Chicago: University of Chicago Press, 1995), 151.

70. *Ibid.*, 151.

71. *Ibid.*, 151.

general. The problem, however, is not only that design is detached from philosophy, but also that philosophy is detached from design. Winner argues that, on the one hand, there are philosophers who do not investigate how their proposals are translated into practice and what impact they may have in an everyday context when realised; and it seems as if they are mainly concerned with the early stages of political design, such as economical, social or ethical systems, and with developing general arguments, rather than with the concrete implementation of these principles. Winner speculates that this is caused by the fact that many philosophers assume that it is mainly a question of clarifying the fundamental principles from which the material implementation will follow automatically, and thereby seem to forget the importance of making and testing these proposals and their practical implications in the “real world.”<sup>72</sup> On the other hand, Winner sees the problem in design, as design seems to lack critical reflection and doubt concerning the nature of what is produced or should be produced. Whereas designers focus on the immediate and practical solutions and tasks, philosophers focus on abstract speculation, and it almost seems as if design is most successful when philosophy is absent, as this seem to be a prerequisite for finding robust practical solutions. Reflection or self-reflection about the meaning and larger context of the work does not seem to play a major part in design, as many designers accept the context of their works as given.<sup>73</sup> Winner concludes, that the discipline or field of inquiry that aims to overcome these problems would need to interrogate technical artefacts and technologies according to their social and political implications. It would need to ask what contribution a particular artefact makes or would make to the quality of political and social life. In design, however, the impact of artefacts is still mainly investigated with regard to their performance rather than their moral or social impact.<sup>74</sup>

What seems to be missing is a dialogue between philosophy and design, which may be a result of designers and philosophers ignoring each other’s importance. Design as philosophical inquiry could overcome the lack of dialogue between design and philosophy and investigate technologies and their social implications by investigating possible worlds arising from the various technologies. It could investigate the consequences and possibilities of technological changes and the effects these may have for social and political life as well as for the human condition in general.<sup>75</sup>

For Karl Jaspers, the origin of this gap between design and philosophy lies in the historic lack of academic investigation and production of artefacts and technology. According to him, technology has been omitted from an academic discourse for so long that the technological development took place outside the university and was only driven by crafts-

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72. Ibid., 152–154.

73. Ibid., 160.

74. Ibid., 162–163.

75. As I am writing from the perspective of design, I would like to see the impulse for this form of inquiry coming from design. However, the impulse could also come from philosophy, that is, philosophy could investigate issues through designing and making—and thus be understood as “philosophy as design inquiry.” See pp. 109–113. Furthermore, as discussed in chap. 1, there are some attempts in design to focus on the consequences of technologies and to use speculative approaches to investigate these consequences. Similar attempts can be seen in engineering, for example, Julian Oliver, Gordan Savičić and Danja Vasiliev, *Critical Engineering Manifesto*, October 2011, <http://www.criticalengineering.org> (accessed April 16, 2013).



men, technicians or the marketplace. For a long time, the material world was not considered to be a valid object for academic investigation, let alone its production. The result of this, according to Jaspers, was that the humanities—and the university in general—were cut off from technological developments and vice versa.<sup>76</sup> Even today, the academic engagement with technology and the material world in the humanities is largely—with some exceptions—a matter of observing the production and use of artefacts and technologies rather than a production of them (for example, in anthropology, material culture, science and technology studies or the philosophy of technology). Investigations often seem to be detached from production and the production is left to technological and scientific rationality combined with market forces. For Jaspers, however, the world should not be understood as an assembly of artefacts that are designed based on technical and scientific rationality, but should rather be understood as a decision made concerning a certain form of existence (*Daseinsform*).<sup>77</sup> Therefore, the design of technological reality cannot be guided by scientific developments and scientific principles alone, but rather needs the humanities in order to become meaningful—or, in the words of Hans Blumenberg, “no language was available for the approaching technical world, and the people who gathered here were certainly not the ones who could have created one. Since the technical sphere has become primarily ‘socially acceptable,’ this has led to the now crassly striking situation, that the people who most profoundly shape the face of the world know and can say least about what they are doing.”<sup>78</sup> For these reasons, Jaspers envisions a technological faculty or school of technology (*technische Fakultät*), in which the technological condition would not only be investigated but also be produced. With the humanities and the technological disciplines coming together—so his dream—a deeper understanding of the nature of the artificial world and the creation of more meaningful technologies and artefacts would be possible.<sup>79</sup>

Following Jaspers idea (or ideal), such a form of inquiry would not only produce artefacts and technologies in terms of their commercial exploitability but also investigate them with regard to their consequences for the human condition. Such a form of inquiry would need to take the morality and ideologies of artefacts and technology seriously, since artefacts are not only important for human life on a physical and political but also on a psychological level. Inquiry in design should therefore not only be concerned with the impact artefacts and technologies have on environmental or political systems but also with the impact these have or may have on a psychological level. In this sense, the lack of reflection on technology has not only ecological or political consequences, it also has psychological consequences.<sup>80</sup>

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76. Cf. Karl Jaspers, “Die Idee der Universität,” in *Die Idee der Universität: Für die Gegenwartige Situation*, ed. Karl Jaspers and Kurt Rossmann (Berlin: Springer-Verlag, 1961), 107–110. Of course, Jaspers writes in the context of the German academic tradition, but I think that his claims are universally valid.

77. *Ibid.*, 110.

78. Hans Blumenberg, “‘Nachamung der Natur:’ Zur Vorgeschichte der Idee des schöpferischen Menschen,” in *Wirklichkeiten in denen wir leben: Aufsätze und eine Rede* (Stuttgart: Philipp Reclam jun., 1986), 60 (my translation).

79. Jaspers, “Die Idee der Universität,” 110–112.

80. The impact of the environment on humans on a psychological level has traditionally been asserted in the psychological school of behaviourism but is increasingly supported by neuroscientific developments. Cf. Doidge, *The Brain that Changes Itself*.

The production of artefacts is therefore not only an activity of producing more or less culturally valuable things, but it is the production of human reality, as it is through artefacts through which one understands the world and oneself. Making and producing artefacts becomes a fundamental investigation of the human condition, as humans inscribe their dreams and fantasies into material objects and thereby materialise them. According to Richard Buchanan, design can be seen as an “inquiry and experimentation in the activity of making, since making is the way that human beings provide for themselves what nature provides only by accident. There is a deep reflexive relation between human character and the character of the human made: character influences the formation of products and products influence the formation of character in individuals, institutions, and society.”<sup>81</sup> Here, making and the production of artefacts becomes an inquiry into the human condition, that is, an inquiry into the relationship between making and being human. This inquiry, however, focuses not only on actions but on material actions. It focuses on how human actions and intentions are materialised and how humans act with and through material artefacts. Making, which the ancient Greeks called *poiēsis* (ποίησις), was originally not subdivided into specialist disciplines based on what it is that is made, but rather was understood as an activity of producing anything artificial. The differentiation of making into separate disciplines can generally be regarded as an outcome of the Renaissance, which sharply distinguished between the various “arts.”<sup>82</sup> For Buchanan the outcome of this separation was that “making” was increasingly separated and fragmented into various forms. Thus on the one hand left the practical arts (including design) without an intellectual foundation and on the other hand the sciences without a practical foundation that could relate scientific and technological developments to the practical effect on people and society.<sup>83</sup>

When design, however, is considered as a philosophical inquiry it would be able to develop this intellectual foundation for making—a (re)combination of making and reflection, not with the aim to “improve” making, but to conceive making as a form of understanding the world and as a form of philosophical reflection. This form of inquiry would take the material condition of human life seriously as a critical inquiry into human relationships with things—their production, prerequisites for productions and their use. It would be an inquiry that not only aims to understand but also to produce—that aims to understand through the production of artefacts and thus become a material philosophy, as it were, through the production of design objects. The outcome of such a design inquiry would be design objects not for practical use but for reflecting on the material and technological condition of human life.<sup>84</sup>

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81. Richard Buchanan, “Rhetoric, Humanism, and Design,” in *Discovering Design: Explorations in Design Studies*, ed. Richard Buchanan and Victor Margolin (Chicago: University of Chicago Press, 1995), 30.

82. See pp. 33–38.

83. *Ibid.*, 34.

84. Cf. Richard Sennett, *The Craftsman* (New Haven: Yale University Press, 2009), 7.

## Conclusion

Design objects conceived as equipment are not just singular or isolated objects; they are connected in networks of relations and thus always refer to something else—something outside themselves. Through this referential structure, they have the ability to reveal what they are referring to and accordingly to gather this context in the individual artefact. As things, they thereby establish the world for humans, which would not exist without them. Artefacts and technologies are furthermore not neutral things but have mediating effects. They create environments and these environments change the ones who live in them. Humans have a mediated relationship with artefacts, as artefacts and technologies as well as systems mediate how humans *experience, act* and *think*. As a result, the question is not what kinds of artefacts to produce or not, but rather what kind of humans to produce, or what forms of engagements these artefacts and environments may offer.

Design as philosophical inquiry would thus inquire and question what types of *mediation* and *interaction* existing or possible technologies enable or disable; that is, forms of interactions *through* technologies rather than *with* technologies. Since making can be seen as a form of understanding and reflecting, making is at the core of design as a philosophical inquiry. The resulting design objects can then be understood *as media* for inquiry and communication and therefore, first as disclosers of certain types of realities (visualising or materialising the invisible relationship with technology); second as gatherers of matters of concern; and third as messages in themselves—as the consequences they have or could have. Design as inquiry can then be considered as an investigation of the human relationship with technology in the medium of technology. In this sense, design as inquiry is both an investigation and exploration of “being-with/through-technology” and can be thus be understood as a material form of philosophy, a concept that I will discuss in more detail in the following chapters.



## Chapter 3: Design's Knowledge

For design to be considered as a form of inquiry, it needs to produce some form of “knowledge,” which, however, may be regarded more in terms of understanding and insight than in terms of facts or truth. As designing is the activity of producing design objects, the following questions arise: How does designing produce knowledge, what kind of knowledge does it produce and how is this knowledge communicated through design objects? Since design as inquiry aims to investigate issues through the production of design objects, the knowledge produced needs to be knowledge about the *these issues* and not about the design objects; in other words, design objects are the *media for inquiry*. Therefore, design objects, which serves both as the medium of inquiry and the communication of it, need to *embody* the knowledge being produced.

There is, however, a continuing dispute about whether art (or design) objects can be seen as forms of knowledge. Early in Greek philosophy two directions were laid out. With regard to poetry, for example, Plato argued that art aims to provide knowledge but produces mere deceptive appearances of knowledge. Aristotle, on the other hand, argued that poetry can provide knowledge about universals, such as the human condition, in terms of pain, sorrow, pleasure, anxiety or the absurdity of life, rather than history, which only deals with particular events.<sup>1</sup> The question, however, is not only how art objects may be bearers of knowledge, but how an inquiry leading to knowledge is possible at all. Plato even presents the search for knowledge as somewhat paradoxical and in some sense impossible, as searching for knowledge implies that one already knows what to look for. One cannot start searching without having an idea about what to search for, and furthermore cannot determine when the search is over.<sup>2</sup> This epistemological problem was (perhaps involuntarily) summed up by Donald Rumsfeld: “There are known knowns; there are things we know we know. We also know there are known unknowns; that is to say we know there are some things we do not know. But there are also unknown unknowns—the ones we don’t know we don’t know.”<sup>3</sup>

In this chapter, I will argue: First, that design is less concerned with producing propositional knowledge, but more with producing experiential and perhaps even practical knowledge. Furthermore, design does not only investigate what is but also what could be. It articulates these possible worlds in form of experiences. Second, that design produces particular rather than universal knowledge, that is, knowledge about a specific thing or specific situation. In a dialogue with a specific situation that situation is questioned and imagined differently—designing thus means designing a (specific) situation. Knowledge is thereby developed through designing a specific (imaginary) situation or for a specific (imaginary)

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1. Plato, *Republic*, trans. G. M. A. Grube, *Complete Works*, ed. John M. Cooper (Indianapolis, IN: Hackett Publishing, 1997), 595a–608b (bk. 10); Aristotle, *De Poetica*, trans. Ingram Bywater, vol. 11 of *The Works of Aristotle*, ed. David Ross (Oxford: Clarendon Press, 1959), 1451a–1451b (sec. 9).
  2. Plato, *Meno*, trans. G. M. A. Grube, *Complete Works*, ed. John M. Cooper (Indianapolis, IN: Hackett Publishing, 1997), 80d.
  3. DoD News Briefing – Secretary Rumsfeld and Gen. Myers, February 12, 2002, <http://www.defense.gov/transcripts/transcript.aspx?transcriptid=2636> (accessed August 23, 2012).

situation. By clarifying views about a possible situation through designing a design object, the design object can be considered as a *concrete theory* about a situation, for example, about desirable or undesirable forms of living. Third, that producing “knowledge” does not necessarily imply the provision of answers but also the asking of questions. Fourth, based aesthetic theories, that design objects are forms of knowledge not in the form of “arguments” for something, but rather in the form of “perspectives” on something. Design objects are thereby the media for experiencing a perspective; the “knowledge” embedded in the object is then the perspective that the audience adopts or rejects by experiencing the perspective.

### Forms of Knowledge

In order to view design as inquiry and as a production of knowledge and understanding, I will briefly investigate various forms of knowledge and thereby lay out a basis upon which designing and design objects can be regarded as forms of knowledge. Generally, knowledge cannot be separated from what it is *about*, that is, the content of knowledge.<sup>4</sup> The conception of knowledge is thus not necessarily a matter of knowing something for sure—or the “truth” about something—but rather a matter of how knowledge and understanding about something are acquired.

The forms of knowledge differentiated by Aristotle had a great influence on many subsequent thinkers. He views the different forms of knowing and knowledge as virtues of knowledge: art (*technē/τέχνη*), practical wisdom (*phronēsis/φρόνησις*), scientific knowledge (*epistēmē/ἐπιστήμη*), intuitive reason (*nous/νοῦς*) and philosophic wisdom (*sophia/σοφία*), the latter of which for him is the unity of scientific knowledge and intuitive reason.<sup>5</sup> He furthermore adds forms of acquiring knowledge, which, for him, cannot produce knowledge by themselves, as they are not part of the thought/reasoning process: sensation or perception (*aisthēsis/αἴσθησις*), memory (*mnēmē/μνήμη*), experience (*empeiria/ἐμπειρία*).<sup>6</sup> Since Aristotle views knowledge mainly in terms of having the *right* knowledge about something, these forms cannot count as knowledge as they cannot be right or wrong, but are rather prerequisites for acquiring knowledge; likewise he regards imagination (*phantasia/φαντασία*) as another form or rather prerequisite of knowledge, but is even more sceptical about this form as it cannot be judged in the light of reality.<sup>7</sup>

Generally, however, Aristotle’s conception of knowledge can be divided into three forms: First, *theoretical knowledge*, which is scientific knowledge (*epistēmē/ἐπιστήμη*) without any practical purpose but rather a form of contemplation (*theōria/θεωρία*) seeking understanding and knowledge for its own sake. The aim thereby is to gain knowledge itself and not the possible practical application of this knowledge. Second, *productive knowledge* is knowledge about how to make something (*poiēsis/ποίησις*), such as technical knowledge in

4. Herbert Schnädelback, *Erkenntnistheorie zur Einführung* (Hamburg: Junius Verlag, 2002), 152.

5. Aristotle, *Ethica Nicomachea*, trans. W. D. Ross, vol. 9 of *The Works of Aristotle*, ed. David Ross (Oxford: Clarendon Press, 1925), 1139b–1141b (bk. 6. sec. 3–7).

6. Aristotle, *Metaphysica*, trans. W. D. Ross, vol. 8 of *The Works of Aristotle*, 2nd ed., ed. David Ross (Oxford: Clarendon Press, 1928), 980a–981b (bk. A, sec. 1).

7. Aristotle, *De Anima*, trans. J. A. Smith, vol. 3 of *The Works of Aristotle*, ed. David Ross (Oxford: Clarendon Press, 1931; reprint, 1952), 428a (bk. 3, sec. 3).

craft, art or medicine (*technē/τέχνη*). This form of knowledge is always knowledge for the production of something and not an end in itself. Productive knowledge shows itself in the outcome of making, such as a pair of shoes. The third form of knowledge is *practical knowledge*, such as the ability to make good decisions (*phronēsis/φρόνησις*) and to act (*praxis/πράξις*) the right way and thereby produce good results. The good or right way of acting, however, is an aim/end in itself and should not be understood in an utilitarian sense. Practical knowledge is knowledge about doing the *right* thing in a concrete situation, as well as more generally leading a good life. For Aristotle, the later two forms of knowledge are guided by forms of thinking that aim to produce certain results—an action, an artwork or a situation. Neither an artist nor an acting person thinks merely in order to understand something, but for the purpose of action or production. Therefore, both are concerned with understanding only insofar as it is useful for the resulting actions. Both productive and practical knowledge thus differ from theoretical knowledge, as they are dependent on certain practical results, whereas theoretical knowledge is an aim and end in itself.<sup>8</sup> According to Aristotle, the aim of philosophy (and “pure” science) is to gain knowledge and understanding itself without the aim of any practical or technical application. Consequently, he distinguishes between philosophising and reflecting on one hand and making and acting on the other. Although such a distinction is unlikely to be clear cut—and has to be seen against the background of hierarchies within ancient Greek society—it had a profound influence on the subsequent distinction between these domains.<sup>9</sup> For design as inquiry this clear cut distinction is somewhat problematic as making is considered as a form of reflection and because design objects are considered as objects for reflection beyond practical use.

This distinction nevertheless had a great influence and there has been a long-standing tradition (in philosophy) to separate clearly between these various types of knowing, whereby *theoretical knowledge* is considered as the highest form. Furthermore, the distinction Aristotle makes between perceiving and thinking/reasoning has had a great influence on the subsequent view of knowledge—at least in epistemological terms. The separation between perception and thinking/reasoning, already made by Plato, who claimed that perceptions are mere images or shadows of eternal ideas (or the essence of things), found its most prominent expression in the thoughts of René Descartes, who mistrusted sensory perception to the degree that he claimed that the only thing he can be certain of, and therefore know, is that he thinks.<sup>10</sup> Thinking/reasoning conceived in this way, however, seems to operate completely independently from sensory perception and therefore from the environment in which humans live. This view on knowledge came to be known as rationalism as opposed to empiricism, which claims that all knowledge comes from sensory perception alone.

8. Aristotle, *Metaphysica*, 1025b (bk. E, sec. 1); Aristotle, *Ethica Nicomachea*, 1139b–1141b (bk. 6, sec. 3–7); cf. Peter Precht and Franz-Peter Burkard, eds., *Metzler Lexikon Philosophie: Begriffe und Definitionen* 3rd ed., (Stuttgart: Verlag J. B. Metzler, 2008), s.vv. “Episteme,” “Praxis,” “Theorie/Praxis.”

9. See pp. 33–38.

10. Plato, *Republic*, 514a–520a (bk. 7, Allegory of the Cave). Descartes reaches this conclusion at the end of the second meditation. René Descartes, *Meditations on First Philosophy*, trans. John Cottingham, Robert Stoothoff, and Duglad Murdoch, vol. 2 of *The Philosophical Writings of Descartes* (Cambridge: Cambridge University Press, 1984; reprint, 1999; original publication, 1641).

Immanuel Kant aimed to transcend this difference by showing the impossibility of acquiring knowledge both from either pure reasoning or pure perception. Rather, he claimed, cognition is always a combination of perception and reason, as “without sensibility [*Sinnlichkeit*] no object would be given to us, and without understanding [*Verstand*] none would be thought. Thoughts without content are empty, intuitions [*Anschauungen*] without concepts are blind.”<sup>11</sup> For Kant, concepts are not just abstract ideas but need to have some sensory object connected to them; these intuitions (perceptions of the mind), however, need to be guided by concepts as they would otherwise not be understandable. Hence, these two faculties—intuition/perception and understanding/reason—cannot be separated and it is only when they are combined that cognition can arise. Although Kant maintains the view that perception is not a form of thinking by itself, perception, for him, is necessary in order to form concepts, and concepts are necessary to perceive something *as* something, as perception would otherwise only consist of a diffuse stream of experiences.

The question, however, remains how these concepts are formed in the first place and how new concepts can be formed on the basis of perception? For Kant the basis for this is judgement, which is “the faculty for thinking of the particular as contained under the universal.”<sup>12</sup> Thereby, he makes a distinction between *determinative* judgement and *reflective* judgement; judgement is determinative when it subsumes a particular under a universal—a given general rule, principle or law—and it is reflective when only a particular is given and a universal has to be found. In the first instance, I am judging objects determinatively, that is, I categorise them according to the right categories (e.g. natural laws), in the second instance, however, I am judging my reflections on the objects that I perceive, that is, I am interpreting what I am perceiving and accordingly form new concepts. Since Kant maintains that the concepts of nature (or laws of nature) can only be cognised and not produced, for him reflective judgement is the faculty of cognition that is related to human creations—and especially art as the source of new concepts.<sup>13</sup>

Theoretical knowledge, however, is often viewed as *propositional knowledge*, that is, as making “true” statements about objects, which usually has the structure: “I know that ...” Theoretical knowledge is thus usually codified in form of statements, sentences or rules *about* something. In the sciences, for example, it leads to an accumulation of knowledge about all the things that can possibly be known. This accumulation, however, requires that knowledge is separated both from the knowing subject and the object of knowledge in order

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11. Immanuel Kant, *Critique of Pure Reason*, ed. Paul Guyer and Allen W. Wood, trans. Paul Guyer and Allen W. Wood, The Cambridge Edition of the Works of Immanuel Kant (Cambridge: Cambridge University Press, 1998), 193–194 (AA, B 75). Intuition may be a misleading translation for *Anschauung* as it relates metaphorically to vision and means literally “mode of view,” as, for example, in *Weltanschauung* (world-view). In this sense, it is a conceptual preattunement for how the world is perceived and understood (that is, any perspective on the world is already conceptually influenced or biased). It is furthermore the ability to picture/visualise something (*Vorstellung*) and in particular something different than an intuitive or immediate understanding of something. Cf. Precht and Burkard, *Metzler Lexikon Philosophie*, s.vv. “Anschauung,” “Intuition.”
  12. Immanuel Kant, *Critique of the Power of Judgement*, ed. Paul Guyer and Allen W. Wood, trans. Paul Guyer and Eric Matthews, The Cambridge Edition of the Works of Immanuel Kant (Cambridge: Cambridge University Press, 2002), 66–67 (AA, 179).
  13. *Ibid.*, 66–67, 70–71, 80–83 (AA, 179, 183–184, 195–198); cf. Clive Cazeaux, “Art and Knowledge in Kant’s Aesthetics,” *Working Papers in Art and Design* 2, 2002, [http://sitem.herts.ac.uk/artdes\\_research/papers/wpades/vol2/cazeaux.html](http://sitem.herts.ac.uk/artdes_research/papers/wpades/vol2/cazeaux.html) (accessed August 17, 2012).



to be intersubjectively transmittable. Propositional knowledge is thus *objectified* knowledge, as the knowledge itself (the proposition) can be treated as an object. Propositional knowledge requires that knowledge can be formulated in the form of sentences, that is, it requires someone who claims to know something to articulate this knowledge in the form of sentences. Hence, one could argue, the main aim of philosophy (and science) is to transform problems into propositional problems, which can subsequently be analysed and presented as arguments. Knowledge is thus something that I can write down; every proposition, however, reduces the object of inquiry to those aspects about which I can talk about in propositions.<sup>14</sup> And one could even say that what cannot be written down, or what cannot be talked about in propositional terms, cannot be counted as knowledge; or, in the words of Ludwig Wittgenstein, “whereof one cannot speak, thereof one must be silent.”<sup>15</sup> This, however, could also mean that this kind of knowledge cannot be articulated in propositional terms or that other forms of expressing such knowledge are necessary.

Whereas propositional knowledge can be characterised in terms of right or wrong, non-propositional forms of knowledge, such as *experiential knowledge*, can only be described in terms of being *present* or *absent*. They are thus not (truth) claims *about* something. Skills, competence, proficiency, ability, faculty of judgement or experience all count as types of experiential knowledge. Although these types of knowledge can be described in the form of sentences, the knowledge itself, the “content” of knowledge, cannot be presented as statements or claims. An experience, for example, is something I need to *make* in order to *have* it and thus the knowledge cannot be separated from me who has it. I also cannot distance myself from an experience I have made, whereby the experience becomes part of me. Although I can write about the experience, it cannot be intersubjectively transmitted in form of propositions, as someone else would need to have the experience in order to be able to understand the propositions. For this reason, these forms of knowledge cannot be separated from the person *whose* knowledge it is—they cannot be objectified. It seems that most human knowledge has the form of non-propositional knowledge rather than the truth claims of propositional knowledge—at least for an everyday rather than a scientific view on the world.<sup>16</sup>

According to Gilbert Ryle, the distinction between propositional and non-propositional knowledge can be characterised in terms of “knowing-that” and “knowing-how,” that is, having knowledge *about* something and knowing *how to do* something (or *how* something *feels like*). For Ryle, however, understanding is a combination of both types as one cannot exist without the other—that is, “knowing how” includes “knowing that” and vice versa. Knowing how to do something requires having knowledge about something; knowing how to play a musical instrument, for example, requires me to have knowledge about certain principles of playing it. However, playing the instrument (well) requires more than the pure

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14. Wolfgang Wieland, *Platon und die Formen des Wissens*, 2nd ed. (Göttingen: Vandenhoeck & Ruprecht, 1999), 224–227.

15. Ludwig Wittgenstein, *Tractatus Logico-Philosophicus* (London: Kegan Paul, Trench, Tubner & Co, 1922), § 7.

16. Wieland, *Platon und die Formen des Wissens*, 229–232. For the difference between propositional knowledge and actual experience cf. Thomas Nagel, “What Is It like to Be a Bat?,” *The Philosophical Review* 83, no. 4 (1974): 435–450; Frank Jackson, “What Mary Didn’t Know,” *The Journal of Philosophy* 83, no. 5 (1986): 291–295.

application of these principles. Also, it is not a question of learning the principles *first* and *then* applying them. Rather, I learn these principles *while* practising them and reflecting on them in this process. However, when I have learned (or internalised) these principles, I am not reflecting on them while playing, I am just playing. On the other hand, knowledge about these principles alone does not enable me to play a musical instrument.<sup>17</sup> For Ryle, understanding is therefore not only a part of knowing *that* but also “a part of knowing *how*. [...] For one person to see the jokes that another makes, the one thing he must have is a sense of humour and even that special brand of sense of humour of which those jokes are exercises.”<sup>18</sup>

Michael Polanyi has furthermore pointed out that human knowledge consists of more than what can be put into words, and this he called “tacit knowledge.” I may not even be aware of having this knowledge or how I have acquired it. It is a form of embodied knowledge that, for example, allows me to ride a bicycle—and although I am *able* to ride it I cannot *explain* in detail what exactly I am doing while riding it. According to Polanyi, tacit knowledge is a matter of *internalising* the working principles of how to use objects. The acquisition of knowledge is therefore a process of internalising it and making it part of oneself. It is thus not a matter of acquiring knowledge by internalising abstract principles but by *dwelling* in them. For Polanyi, this kind of knowledge is not only something that one *has* but something one can *use*.<sup>19</sup> For example, in order act according to certain moral principles, I need to have internalised them. Experiential knowledge thereby becomes second nature to the one who has it—and it is therefore also not useful to differentiate the knower from the known as only through the experiential acquisition of knowledge someone becomes a craftsman, doctor, architect or designer. On the one hand, experiential knowledge can be seen as knowledge of how to do something, for example, how to produce or how to use something (to experience), and on the other hand it can be seen as knowledge about how something feels like (an experience).

Whereas theoretical and experiential knowledge are concerned with what exists, either as an experience or a claim about something, *practical knowledge* is concerned with the non-existent, that is, with acting—not with what is, but with what should be (or ought to be). Furthermore, practical knowledge can only be evaluated in terms of morals and values, that is, what good actions are. This, however, would depend on knowing whether actions are good or bad, that is, whether they have desirable or undesirable consequences. But how do I know this? Is this not a matter of subjectivity, belief or agreement rather than knowledge? In any way, practical knowledge is a non-propositional form of knowledge as moral actions

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17. Gilbert Ryle, *The Concept of Mind* (London: Hutchinson's University Library, 1949), chap. 2.

18. *Ibid.*, 54.

19. Michael Polanyi, “Tacit Knowing,” in *The Tacit Dimension* (Gloucester, MA: Peter Smith, 1983); cf. Maurice Merleau-Ponty, *Phenomenology of Perception*, trans. Colin Smith (London: Routledge & Kegan Paul, 1981). Heidegger also claimed that knowledge of the world is gained by dwelling in it rather than abstracting from it. By considering humans beings not as subjects but as *Da-sein* (being-there) he broke down the separation between subject and object (of knowledge) in which knowledge is a matter of “being-in-the-world” rather than abstraction. Theoretical and practical knowledge comes from being involved in the world and caring for something, in which the things in the world are discovered as available rather than occurrent. Consequently, things are always discovered as something “in order to ...,” that is as something handy (*zuhanden*) and not as something objectively present (*vorhanden*). Heidegger, *Being and Time*, 53, 62–68 (§§ 12, 15–16). See pp. 54–58.

cannot be true or false; they can only be made and then judged as good or bad respectively. Thus, they cannot be verified by propositional standards.<sup>20</sup> Moral knowledge is either a form of belief or doctrine according to which one acts, and so to speak a matter of argumentation and persuasion; or it is exercised through moral reasoning, for example, by evaluating the consequences of one's actions. Moral knowledge is thus essential for guiding actions not only in terms of interpersonal relationships but also in terms of producing artefacts and technologies to achieve desirable ends. Experience and technical knowledge in themselves are free of values and can be used for any kind of end—both desirable and undesirable (according to the values of the one who is affected by them). Not every good technical solution will lead to desirable or useful results. Therefore, practical knowledge (e.g. one's conception of the good life, values, morals and norms) needs to guide technical actions. As a designer, I may therefore ask myself if I am using my skills for good and appropriate ends.

Although all three forms of knowledge—theoretical, experiential and practical knowledge—are necessarily relevant for design as inquiry, design is generally less concerned with true or false and right and wrong—which is related to the existing—but rather with possibilities. However, the question is not only how knowledge is used in design but also how designing and design objects can be regarded as forms of knowledge.

### Designing as Knowledge

To design something usually means to create something new, and it is thus neither a matter of following a predetermined plan nor a matter of applying “knowledge” developed in other areas (such as the sciences) to the world and the problems of everyday life. Furthermore, to design something primarily means to *invent* rather than to *discover* something (of course, it is not impossible to discover something while designing but this does not seem to be the primary goal). Design is concerned with what could be rather than what is, and therefore with inventing new realities rather than understanding existing reality. As such, it is a different form of inquiry than inquiry in the sciences, because discovery necessarily needs to assume that there is something to be discovered, while invention does not. In other words, the subject matter for design is not given but invented through designing.<sup>21</sup>

The possibility of inventing something new, however, has not always existed and it became only possible through a conceptual shift from seeing the world as something that has been created (e.g. by a divine being) towards seeing the world as something that humans actively *create* themselves. The historical development of the concept of invention is centred around the distinction between invention and discovery and the desire to consider human activity as an activity of inventing—or *creating*—something new and not just as an activity of discovering or copying something preexisting. This desire was epitomised by the conception of artists as creators who were able to create something entirely new “out of themselves”

20. Cf. Alfred J. Ayer, *Language, Truth and Logic* (London: Penguin Books, 1971), chap. 6.

21. This, however, is not to say that the sciences do not invent, as understanding can be seen as a form of inventing an explanation. However, the constitutive assumption for doing science necessarily needs to be that there is something that can be discovered. Cf. Immanuel Kant, “Anthropology from a Pragmatic Point of View,” in *Anthropology, History, and Education*, The Cambridge Edition of the Works of Immanuel Kant (Cambridge: Cambridge University Press, 2011), 328 (AA, 224); Buchanan, “Rhetoric, Humanism, and Design,” 24.

and thus as divine or promethean figures.<sup>22</sup> This conceptual shift can probably best be understood through the change of what an “idea” is. Whereas in classical antiquity and medieaval times ideas were seen as eternal entities beyond human perception, in the Renaissance ideas came to be things that humans have and that allow them to invent something new. This change in conception made it possible to regard the work of artists as creations, that is, something entirely new and not mere copies of eternal ideas.<sup>23</sup>

Invention can thus be understood as a creative-productive process leading to something new—a new reality or possible new realities. (Although invention does not happen *ex nihilo*, as it were, as every new idea or creation is based on something already existing, such as previously existing ideas, concepts, technologies or languages. One could nevertheless argue that the invention of a particular idea, concept or view on the world is new.) The production of these new realities, however, also requires the ability to *imagine* these new realities first. Designing can thus be considered as the ability to imagine something new and to create something new by turning these imaginations (ideas) into design objects (*Entwürfe*).<sup>24</sup> To understand designing as a form of knowledge consequently requires to consider imagining, creating and sketching as forms of knowing.

Imagination, however, is often not viewed as a form of knowledge as it does not seem to be concerned with what exists but rather with inventing something that does not exist. In the philosophical tradition there are two main views on imagination in relation to knowledge: one based on Plato and the other on Aristotle. Plato regards imagination as the lowest form of cognition, as images are only shadows and reflections and do not reveal any true knowledge about an object; in fact, for Plato, nothing in the physical world does. Imagination, as the production of images, is thus only a form of imitation and not a form of producing knowledge. Furthermore, he sees the artistic imagination of poets as a non-rational process.<sup>25</sup> Likewise, Aristotle regards imagination (*phantasia/φαντασία*) not as knowledge itself but nevertheless as an important faculty in the cognitive process. According to Aristotle, thinking takes place in the form of images and thus he places the ability to form these mental images between perception and reason in his epistemological framework.<sup>26</sup> Kant follows Aristotle but further divides imagination (*Einbildungskraft*)—the ability to picture something that is not directly given by sense perception—into four related functions: first, a *reproductive* function that allows one to have a coherent experience over time and to see series of perceptions as a unified object that extends through time and not just as perceptions of random and chaotic things. Second, a *productive* function that establishes a

22. See note 40 on page 34. Prometheus (literally “fore-thinker”) is a demigod in Greek mythology and brother of Epimetheus (literally “after-thinker”), both are equated with the concepts foresight and hindsight. Cf. Plato, *Protagoras*, trans. Stanley Lombardo and Karen Bell, *Complete Works*, ed. John M. Cooper (Indianapolis, IN: Hackett Publishing, 1997), 320d–322a.

23. See Panofsky, *Idea*; Blumenberg, “Nachamung der Natur” The change of the concept “idea” is furthermore related to the rise of the concept “*disegno*” see pp. 33–38.

24. See note 2 on page 17.

25. Plato, *Republic*, 509d–513e, 600e–602d; Plato, *Ion*, trans. Paul Woodruff, *Complete Works*, ed. John M. Cooper (Indianapolis, IN: Hackett Publishing, 1997), 533c–535a; cf. Mark Johnson, *The Body in the Mind: The Bodily Basis of Meaning, Imagination and Reason* (Chicago: University of Chicago Press, 1987), 141–144.

26. Aristotle, *De Anima*, 427b, 431a–431b, 432a; cf. Johnson, *The Body in the Mind: The Bodily Basis of Meaning, Imagination and Reason*, 144.

temporal unity and structure of consciousness. The structure of consciousness thereby determines the criteria that objects must meet in order to become aware of them. Third, a *schematising* function that provides the means to relate sensation to abstract concepts and to conceptualise what is perceived and experienced. Here, a schema is not an actual image but rather an organisational structure for matching sensations to abstract concepts and vice versa. Fourth, a *creative* function that facilitates the free creation of novel structures and meanings, which is not controlled by concepts and rules; both in terms of an artistic creation of new structures as well as the formation of new concepts through reflective judgement. Kant regards the appreciation of art objects as a form of reflective judgement that leads to knowledge (*Erkenntnis*) by making aesthetic judgements about the objects that are perceived, for example, determining whether they are beautiful or not. Through reflective judgement existing concepts may be challenged or new concepts may be formed when the perceived objects cannot be categorised according to existing categories or concepts of the perceiver.<sup>27</sup>

However, as Mark Johnson has observed, Kant's system of imagination cannot close the gap between forms of creative imagination and forms of imagination that are governed by rules and concepts. Since creative imagination does not seem to be guided by rules, it is often considered a non-rational process. Although it is a process of making new connections between rule-governed ideas and concepts, it nevertheless seems incomprehensible where these new connections come from. In other words, creativity does not seem to follow any logic. According to Johnson, however, imagination is not at all non-rational but rather forms the body of rationality. He therefore suggests eliminating the gap between sensation, imagination and understanding as, for him, there is no disembodied cognition through which imagination becomes part of the cognitive realm. For Johnson, these new connections are rooted in experience, whereby new meaning and concepts are generated through metaphorical projection from these experiences.<sup>28</sup> Imagination can then be considered as an act of creating new forms of understanding and new ways of seeing the world and thus, new realities and possibilities through producing images, metaphors, analogies and models. In other words, imagination can be seen as a form of *possibilising*.<sup>29</sup>

Although "creativity" is probably the most overused concept in design, it nevertheless seems to be fundamental to the creation of anything new. Creativity may be explained as the ability to transcend boundaries, or the ability come up with new ideas and concepts, or devise new solutions to problems. Creativity is thus the ability to cross these boundaries whereby invention is the actual crossing.<sup>30</sup> According to Arthur Koestler, a creative mental function can furthermore be considered as the act of connecting two previously separated

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27. Kant, *Critique of Pure Reason*, 245–257, 271–277 (AA, B 107–120, B 133–139); Kant, *Critique of the Power of Judgement*, 66–67, 166–167, 172–173, 192–193, 214–217 (AA, 179, 286–287, 292–293, 314–315, 338–341); Kant, "Anthropology from a Pragmatic Point of View", 278–280 (AA, 167–169); cf. Johnson, *The Body in the Mind: The Bodily Basis of Meaning, Imagination and Reason*, 165.

28. Mark Johnson, "Toward a Theory of Imagination," in *The Body in the Mind: The Bodily Basis of Meaning, Imagination and Reason* (Chicago: University of Chicago Press, 1987), 166–169.

29. Edward S. Casey, *Imagining: A Phenomenological Study* (Bloomington, IN: Indiana University Press, 1976), 205.

30. Cf. D. N. Perkins, "The Possibility of Invention," in *The Nature of Creativity: Contemporary Psychological Perspectives*, ed. Robert J. Sternberg (Cambridge: Cambridge University Press, 1988), 362, 372–374.

areas. For Koestler different areas of understanding and knowledge are separated by different forms of thinking and different (uses of) concepts. He calls these areas *operative fields* (see fig. 15). Within these fields the “associative flow is regulated not by logic, but by habits of thought acquired by past experience.”<sup>31</sup> While a particular concept may be habitually bound to one operative field, a creative act breaks down the separation of these two fields and allows one to see a concept simultaneously in both fields, whereby new insights may be achieved. Koestler calls this process *bisociation* (or dual association), which occurs when “a mental concept is simultaneously perceived under two different angles.”<sup>32</sup> Koestler conceives these fields spatially and describes them as planes. The bisociated concept connects these previously unconnected planes in the form of an intersection. The concept is thus simultaneously part of both planes. According to Koestler a bisociation is therefore “any mental occurrence simultaneously associated with two habitually incompatible contexts.”<sup>33</sup> This, however, ultimately leads to the formation of new concepts as the newly bisociated fields “cease to be ‘independent’; that is, the contact thus established between them will make them coalesce into one continuous flow.”<sup>34</sup> A new concept is thus formed by drawing two (previously unrelated) fields together, seeing something from a new point of view or by seeing something in terms of something else.<sup>35</sup> Creativity thus leads to new viewpoints, meaning and understanding. Thereby, creativity is probably less a matter of technique or method than a matter of attitude and desire to see the world differently.<sup>36</sup>

Designing, however, is not only an act of imagining something or being creative, but the ability to turn something imagined into a design object (*Entwurf*). For Vitruvius, who gives one of the earliest accounts of this activity, designing was generally concerned with the arrangement (*dispositio*) of structures for a specific purpose by means of sketches, drawings and plans.<sup>37</sup> It is interesting that Vitruvius considers these means for arrangement ideas (*idea*/*ιδέα*) by pointing to the Greek term, which may indicate that he considers the sketches, drawings and plans themselves as ideas and not just as expressions of ideas. For him, these means of arrangement furthermore “come of reflexion [*cogitatione*] and invention [*inventione*]. Reflexion is careful and laborious thought, and watchful attention directed to the agreeable effect of one’s plan. Invention, on the other hand, is the solving of intricate problems and the discovery of new principles by means of brilliancy and versatility.”<sup>38</sup> Vitruvius thus conceptualises designing (arranging) as a form of understanding; on the one

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31. Arthur Koestler, *Insight and Outlook: An Inquiry into the Common Foundations of Science, Art and Social Ethics* (London: Macmillan, 1949), 36.

32. *Ibid.*, 36.

33. *Ibid.*, 37.

34. *Ibid.*, 38.

35. *Ibid.*, 38–41. Koestler develops his ideas on discovery, invention and imagination as well as his concept of bisociation further in *The Act of Creation*, in which he attempts to develop a general theory of human creativity. This earlier conception, however, seems to be more precise. Cf. Arthur Koestler, *The Act of Creation* (London: Hutchinson, 1964), bk. 1.

36. Perkins, “The Possibility of Invention” 379, 381. For an elaboration of certain methods for creating new perspectives in the humanities and sciences see Andrew Abbott, *Methods of Discovery: Heuristics for the Social Sciences* (New York: W. W. Norton, 2004).

37. In discussing architectural design, Vitruvius considers the appropriate means for arrangement: groundplan, elevation and perspective.

38. Vitruvius, *The Ten Books on Architecture [De architectura]*, 14 (bk. 1, chap. 2, sec. 2.); cf. Vitruvius, *On Architecture*, trans. Frank Granger, vol. 1 (London: William Heinemann, 1931), 24–27.

hand as a process of reflection on the desired functions and effects of design objects and, on the other hand, as a process of solving complex problems.

These arrangements, however, cannot be *universally* valid but are always specific, particular and individual cases for a *concrete situation*. Design thus cannot and need not be scientific as it cannot invent universal or generalisable arrangements. According to Otl Aicher, designing is guided by expectations, projections, wishes and desires that “are oriented towards concrete cases, not general knowledge. [...] It is projected at a meaning, a general insight, but an insight into what has to be made, what has to be designed. That requires constructive imagination that does not stop at the object as such, but relates it in imagination to goals, evaluations, constellations. The mind is decisively involved in this ‘figurative synthesis’, but it is carried by evaluating sensory perception.”<sup>39</sup> The design process does not need to follow scientific methods or rigorous procedures as the results are not evaluated according to scientific standards. Rather, they are evaluated and judged in terms of the appropriateness or inappropriateness of the suggestion made, that is, in terms of how convincing, understandable or desirable the presented design objects are. Design can then be considered not primarily as problem-solving, but as an imagination of and inquiry into possible worlds and things. As such, design objects are something preliminary—trials, sketches or attempts—but not ultimate solutions to problems.<sup>40</sup>

Designing a specific situation can be seen as a *reflective conversation* with that situation, as Donald Schön has called it, that is, as a way to understand a situation and to figure out the most appropriate arrangement of it. However, not necessarily in terms of solving concrete problems, but rather as an inquiry into the consequences that the proposed ideas would have in that concrete situation. According to Schön, when designers have conversations with situations they inhabit *design worlds*, which “contain particular configurations of things, relations and qualities, and [...] act as holding environments for design knowledge. A designer’s knowledge is not only in his ideas or actions, but in things with which he deals. The objects of a design world are [...] ‘things to think with.’”<sup>41</sup> These are made up of the designer’s understanding, ideas and design strategies as well as the situation itself. Through the dialogue the designer creates a new design world and thus “a particular set of things to think with.”<sup>42</sup> Inhabiting design worlds may be likened to writers inhabiting the stories they

39. Aicher, “Design and Philosophy,” 78–79; cf. Kant, *Critique of Pure Reason*, 256–257 (AA, B 119–120).

40. Designing a design object can be compared to writing an essay, which is an attempt to understand something without claiming to be universally valid. Design can thus be better understood as a form of rhetoric than a form of science, as designing is an activity of developing persuasive design objects (arguments) for a specific situation, which appeal to technical functions (*logos/lóyos*), emotions (*pathos/páthos*) and which have a certain character (*ethos/ἦθος*). Cf. Richard Buchanan, “Declaration by Design: Rhetoric, Argument, and Demonstration in Design Practice,” *Design Issues* 2, no. 1 (1985): 4–22; Aristotle, *Rhetorica*, trans. W. Rhys Roberts, vol. 11 of *The Works of Aristotle*, ed. David Ross (Oxford: Clarendon Press, 1959), 1356a. Furthermore, designing can be understood in terms of three of the five canons of classical rhetoric: first, as *invention (inventio)*, that is, as a sketching in order to find something new; second, as *arrangement (dispositio)*, that is, as outlining a structure, plan, guideline or process; third, as *style (elocutio)*, that is, as creating an actual design object with certain aesthetic features. Cf. Quintilian, *Institutio oratoria*, trans. H. E. Butler, Loeb Classical Library, vol. 1 (London: William Heinemann, 1933), 382–391 (bk. 3, chap. 3); Cicero, *De oratore*, trans. E. W. Sutton, Loeb Classical Library, vol. 1 (London: William Heinemann, 1942), 98–99 (bk. 1, chap. 31, sec. 152).

41. Donald A. Schön, “Designing: Rules, Types and Words,” *Design Studies* 9, no. 3 (1988): 182.

42. *Ibid.*, 183; cf. Donald A. Schön, *The Reflective Practitioner: How Professionals Think in Action* (New York: Basic Books, 1983), chap. 3.

write and the dialogues they have with their characters. In this manner, designing is also a question of understanding the situations of others, that is, “acquiring” the modes of existence of others and their life situations, whether real or imaginary.

Designing is thus a form of understanding through imagination, creation and producing design objects of a possible world and can thus produce knowledge and insight in the following ways. First, designing is an attempt to clarify and to make sense of *possible futures* by sketching out possible worlds, which then makes it possible to discuss the most appropriate or inappropriate one. Designing possible worlds can thus be seen as a form of *negotiating* possible futures. Design grounds these possible worlds in the present through relational objects, that is, through objects that have a certain everyday familiarity or function. Designing then relates the possible to the known and familiar. This imaginative view takes the real world as a starting point and develops sketches of possible worlds, whereby the sketch opens up the possible world and, at the same time, determines this possible world. These sketches are hypothetical entities whose limits, however, are determined by what is representable through the sketch and thereby also limit the possible world. Models on the other hand are intersections of the imaginary (the possible) and the real since they are subject to their realisability, that is, the model transfers imaginable things into real things.<sup>43</sup> Second, designing is thus an attempt to understand the *present* in the light of a possible world. Since designing creates new worlds it inevitably creates new views on the present world, as the present world is seen in the light of the new world. Designing can thus be seen as negotiating what is real, or as Clive Dilnot writes, “what design, as a mode of transformative action, allows us to see is how we negotiate the limits of what we understand, at any moment, as the Actual. In design, in other words, we begin to see the processes whereby the limits of the Actual are continually formed and re-formed.”<sup>44</sup> One could even argue that it is through designing that one understands the world, as through designing the world is not seen as something given but as something that is made; or in the words of Aicher, “we perceive both what is and also what should be in models of concepts and definitions. Access to reality, to the world opens up through a model, a structure of statements, concepts and conceptual operations. And a leap into the future, into a new, possible world, also needs speculation, work on the model.”<sup>45</sup> Third, designing can be regarded as a form of theorising and a design object as a *concrete theory* of something existing or possibly existing (if a “theory” is considered as a good answer to a question that both shows what the question is and makes the answer to this question understandable to others). A house, for example, can be seen as a concrete theory about the organisation, aspirations, wishes or fears of a family as it is a materialisation of them. Design objects are therefore concrete

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43. Ludger Schwarte, *Philosophie der Architektur* (München: Wilhelm Fink Verlag, 2009), 354–355.

44. Clive Dilnot, “The Science of Uncertainty: The Potential Contribution of Design to Knowledge,” *Doctoral Education in Design: Proceedings of the Ohio Conference, October 8–11, 1998* (1999): 69.

45. Otl Aicher, “The World as Design,” in *The World as Design: Writings of Design* (Berlin: Ernst & Sohn, 1994), 188. For Kant, even science can only discover that what it designs. “They [who study nature] comprehended that reason has insight only into what it itself produces according to its own design; that it must take the lead with principles for its judgments according to constant laws and compel nature to answer its questions, rather than letting nature guide its movements by keeping reason, as it were, in leading-strings.” Kant, *Critique of Pure Reason*, 109 (AA, B 10).



rather than general theories as they answer specific and particular rather than general questions. They are consequently tied to particular situations and are not generalisable.<sup>46</sup>

Designing produces knowledge neither by being a special form of thinking nor by combining making and thinking (although this is surely a part of designing), but by imagining a possible world by producing a design object.<sup>47</sup> Of course, a possible world produced by imagination is not necessarily knowledge in propositional terms, as it cannot be evaluated in terms of right or wrong. Rather, it is a form of material imagination that articulates a different or possible world in form of a design object. Designing means thinking *about* possible worlds *through* material objects whereby a *concrete* situation is imagined. Aicher sums this up brilliantly: “A design [*Entwurf*] is analytical and synthetic at the same time, specific and general, a concrete matter and one of principle. It keeps to the matter in hand and to demands, it goes back to facts and opens up new thinking spaces. It ‘counts the peas’ and opens up perspectives. It calculates and opens up landscapes of possibility.”<sup>48</sup>

### Knowledge as Answer or Question?

When design objects are considered as concrete theories they can provide knowledge about a concrete situation. The design object is an answer to the questions that have emerged in the design process, which is an attempt to understand a situation. Thus, the design object can be seen as a solution to a problem or an answer to a question. However, designing can also be seen not only as a matter of solving problems but as a form of problematising situations. Designing can therefore also create problems instead of solutions; and although the design object is concrete theory, it may consequently be seen as a problem or question rather than an answer. But are questions an acceptable outcome of an inquiry (let alone design process) and can questions be regarded as knowledge?

Inquiry, it seems, is often regarded as solving a problem or finding something out. Following this view, the process of inquiry comes to an end when something has been found out or a problem has been solved. For John Dewey, for example, “inquiry is the controlled or directed transformation of an indeterminate situation into one that is so determinate in its constituent distinctions and relations as to convert the elements of the original situation into a unified whole.”<sup>49</sup> In other words, the aim of inquiry is to establish a situation that is known. If I know a situation, the situation is clear to me and I am not puzzled by it. For

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46. Cf. Achim Hahn, *Architekturtheorie: Wohnen, Entwerfen, Bauen* (Wien: Huter und Roth / UTB, 2007), 201–205; cf. Ryle, *The Concept of Mind*, 286–292.

47. Some have claimed that designing is “design thinking,” as different from “scientific thinking,” as it focuses on solutions rather than problems. This may be the case, but is also not surprising, as the goals of design and science seem to be very different; one aims to produce design objects (solutions), the other aims to provide scientific theories (explanations). Furthermore, this is not applicable to design as inquiry, as the aim is not to solve problems or find solutions. Cf. Bryan Lawson, *How Designers Think: The Design Process Demystified* (Oxford: Architectural Press, 2005), 43; cf. Nigel Cross, *Designerly Ways of Knowing* (Basel: Birkhäuser Verlag, 2007). It is also often claimed that design and art are special forms of knowledge as they combine making and thinking. “The exceptional thing about research in and through art is that practical action (the making) and theoretical reflection (the thinking) go hand in hand. The one cannot exist without the other, in the same way action and thought are inextricably linked in artistic practice.” Janneke Wesseling, ed., *See It Again, Say It Again: The Artist as Researcher* (Amsterdam: Valiz, 2011), 2. This however, does not seem to be special to design as it may occur in other areas as well, for instance in the sciences.

48. Aicher, “The World as Design,” 189.

49. Dewey, *Logic*, 104–105 (sentence originally italicised). For Dewey a situation is not a concrete situation or an object, but the contextual whole, in which concrete objects are experienced and understood. *Ibid.*, 66–67.

Dewey, such a situation does not necessarily need to be a scientific problem, but it is the occurrence of an “uncomfortable” situation. It is a situation in which a conflict between needs and realities occurs. For example, I may find a situation uncomfortable when feeling cold—which then becomes my problem. To establish a situation in which I am not feeling cold anymore, for instance, by putting on a coat or heating up the room, is to turn the uncomfortable or troubling situation into a stable and comfortable one. Feeling cold, however, is an indeterminate situation, which needs to be turned into a problem, thus leading to defining the measures by which the situation can be changed. The successful change of the situation—not feeling cold anymore—is then the solution to the problem. The feeling of indeterminacy is thereby the driving force for any form of inquiry—the inquiry being the process by which the situation is changed from an indeterminate into a determinate one with the aim to establish a unified or stable situation. For Dewey, a puzzling situation is therefore not a given but something that needs to be created—the situation needs to be *problematized*. The main process of an inquiry is to problematise a situation instead of expecting a world that passively awaits to be inquired. Thus, for Dewey, “to find out *what* the problem and problems are which a problematic situation presents to be inquired into, is to be well along in inquiry. To mistake the problem involved is to cause subsequent inquiry to be irrelevant or to go astray. Without a problem, there is blind groping in the dark.”<sup>50</sup> For Dewey, defining the problem is the main part of any form of inquiry in order to gain an understanding of what is wrong with a situation. For this reason, defining the problem or question is necessarily the first stage and the starting process of an inquiry. But does an inquiry necessarily need to produce an answer, or, in Dewey’s words, a comfortable situation? Can it not also produce an uncomfortable one? That is, can problematising in itself be considered as a form of inquiry with a problem or puzzling situation as its result?

Design does not, and cannot, search for definitive answers to problems because design cannot be evaluated in term of right or wrong—the “answers” of design depend on the specific situation. As a result, design is essentially concerned with what Horst Rittel has called “wicked problems,” problems that are ill-defined, whereby the definition of the problem is a problem itself. In this sense, inquiry is mainly a form of problem definition or rather problem-finding than problem-solving, whereby the result is to define a situation as problematic. For Rittel, solutions to wicked problems—if wicked problems can be solved at all—cannot be judged in terms of right or wrong, true or false, but in terms of good or bad, satisfying or lacking, appropriate or inappropriate. For instance, social problems, such as street crime, do not seem to be problems which can be solved—at least not easily. They are not problems with clearly defined boundaries and a limited number of possible solutions, such as mathematical equations or chess moves, but they are socially *constructed* problems. The problem of street crime, for example, “can be explained by not enough police, by too many criminals, by inadequate laws, too many police, cultural deprivation, deficient opportunity, too many guns, phrenologic aberrations, etc. Each of these offers a direction for

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50. Ibid., 108.

attacking crime in the streets. Which one is right?”<sup>51</sup> Thus, there can also be no “right” answer to the “problem” as the explanation for its cause depends on the personal point of view of the one who explains it. For Rittel, defining problems and finding solutions are interrelated because defining the problem is part of the solution. The individual standpoint of the one who defines the problem and solution is part of this problem/solution complex, as it fundamentally defines both. For Rittel, the main task of design is therefore the communication of problems and possible solutions including the consequences they may have. He calls this “objectification,” which permits one to view the problems from various angles and perspectives—and is not to be confused with objectifying in the sciences, as this denotes detaching the solution from the subjects and turning it into a scientific truth. According to Rittel, a designer should therefore be seen “as somebody who helps to bring about problems rather than as one who offers solutions to problems. He is a *mid-wife of problems* rather than an offerer of therapies. He is a teacher more than a doctor. [...] Another characteristic of this man is that he *makes careful, seasoned respectlessness*, i.e. casting doubt on something, a virtue.”<sup>52</sup> For Rittel, designing is thus an argumentative process of raising questions that can then be discussed in order to gain a perspective on them.<sup>53</sup>

Following Rittel’s view, designers should be concerned with showing problems rather than giving answers. In other words, designers should aim to show problems from various perspectives through design objects—perhaps by giving various answers and showing their consequences and implications—to allow for discussions and debate about possible solutions. Whereas for “normal” design, defining a problem is mainly the starting point for the design process to which the design object is the solution, for design as inquiry problematising (showing, materialising, visualising) an issue in form of design objects can be the outcome of the design process. Here the design object provides the audiences with the means to gain a perspective on issues and problems. Design as inquiry may therefore problematise a situation without the aim to turn it into a comfortable one, and thus draw attention to something—an issue, problem or possibility. It may create problematic situations in order to raise questions instead of answering them.<sup>54</sup> Design objects may then not only be used to criticise social or political conditions, but may become media that allow to gain more nuanced and even contradictory perspectives on these conditions, as they can make

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51. Horst W. J. Rittel and Melvin M. Webber, “Dilemmas in a General Theory of Planning,” *Policy Sciences* 4, (1973): 166. Rittel mainly uses the word “planning” rather than “designing” but he uses them somewhat interchangeably and therefore I am adhering to the term “designing” in the following.

52. Horst W. J. Rittel, “On the Planning Crisis: Systems Analysis of the ‘First and Second Generations,’” *Bedriftsøkonomi* 8, (1972): 395.

53. *Ibid.*, 394–395; cf. Rittel and Webber, “Dilemmas in a General Theory of Planning,” 167–169.

54. See pp. 47–50. A design object often seems to be understood as the solution to a problem. However, I think it is fair to say that design objects have created more problems than they have actually solved—they may look like a solution at first sight but may create many more problems in the long run. Cf. Burckhardt, “Design ist unsichtbar.” This is something that becomes increasingly evident in current ecological crises. The “solutions” that design objects provide are only temporary solutions and they should rather be understood as experiments and prototypes and not as ultimate solutions to problems (as the case of the Pruitt-Igoe housing complex has shown). Furthermore, not providing a solution, that is, not designing something, may also be understood as a form of design. In this sense, design can also entail deciding not to produce or build something, as Benedikt Loderer has remarked in his address for the award of the “Wakkerpreis” in 2007 to the village of Altdorf in Switzerland, which was awarded for the architecture they have decided not to build. Benedikt Loderer, “Was ist Baukultur?,” 2007, [http://www.altdorf.ch/dl.php/de/46442b01ebb0c/wp\\_rede\\_loderer\\_12\\_05\\_07.pdf](http://www.altdorf.ch/dl.php/de/46442b01ebb0c/wp_rede_loderer_12_05_07.pdf) (accessed July 19, 2012).

complex issues accessible in material form. Thereby, design objects are not arguments for one or the other position but rather objects, which problematise an issue or object by causing reaction to that issue. However, although design objects may create questions and perspectives on something, how can these perspectives be conceived as knowledge? Or put differently, to what kind of knowledge does the perception and experience of design objects lead?

### Design Objects as Knowledge

In order to gain knowledge from design objects they need to be seen as artefacts for reflection. Such artefacts are different from artefacts for practical use or communication and may be understood as what Marx Wartofsky has called tertiary artefacts. Wartofsky distinguishes between three types of artefacts: *primary artefacts* are artefacts used for directly manipulating or producing something, such as tools or skills; *secondary artefacts* are representations (of primary artefacts) used for communication; *tertiary artefacts* are non-representational artefacts such as imaginary worlds, artworks or theories.<sup>55</sup> Although design objects can be placed in all three categories, the third category enables viewing design objects as both imaginations of possible worlds and objects to gain a perspective on possible worlds, and thus as objects for reflection. They are, however, not media for merely communicating or *representing* ideas and concepts (visualisations) but rather for *presenting* them (materialisations) and may thus be seen as ideas and concepts themselves. In order to regard design objects as objects for reflection they need to be *seen as* objects for reflection rather than practical use, since they tend to “disappear” in the context of use.<sup>56</sup>

Traditionally, this is not the role of design objects but of art objects as objects not for use but for reflection. Kant, for example, distinguishes between agreeable art (applied or decorative art) and beautiful art (fine art). According to Kant the former creates pleasurable sensations and background atmospheres, and the latter leads to reflection and knowledge as it creates a critical distance. Hence, it is important that art objects are presented in such a way that they lead to reflection rather than entertainment, that is, that they allow one to have a critical distance and not to confuse them with ordinary objects.<sup>57</sup> To say that design objects become objects for reflection, however, is not to say that they become art objects, but rather that they can serve a reflective purpose that is similar to art objects (or imaginary worlds or theories). In the following, I will conceive design objects as forms of knowledge by drawing on theories that have argued for art objects in a similar way. I consider these theories as useful as they more generally make it possible to view material artefacts as knowledge.

The question whether art objects can be sources of knowledge often centres around the *cognitive value* of art. In this discourse, for the most part in relation to literature, the main questions are thus, first, *what* can one learn from art objects and second, *how* can one

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55. Marx W. Wartofsky, “Perception, Representation, and the Form of Action: Towards an Historical Epistemology,” in *Models: Representations and the Scientific Understanding* (Dordrecht: D. Reidel, 1979), 200–209.

56. See pp. 54–58.

57. Kant, *Critique of the Power of Judgement*, 184–185 (AA, 305–306). Cf. Max Horkheimer and Theodor W. Adorno, “The Culture Industry: Enlightenment as Mass Deception,” in *Dialectic of Enlightenment: Philosophical Fragments*, ed. Gunzelin Schmid Noerr (Stanford, CA: Stanford University Press, 2002).

learn from them? Cynthia Freeland summarises the cognitive value of art as follows: “(1) Artworks stimulate cognitive activity that may teach us about the world. [...] (2) The cognitive activity they stimulate is part and parcel of their functioning as artworks. (3) As a result of this stimulation, we learn from artworks: we acquire fresh knowledge, our beliefs are refined, and our understanding is deepened. (4) What we learn in this manner constitutes one of the main reasons we enjoy and value artworks in the first place.”<sup>58</sup> Freeland considers art objects not merely as objects for aesthetic appreciation but as objects that convey some form of knowledge; and it is this knowledge that makes them interesting *as* art objects. Thereby, it is important that it is the art object itself that makes this knowledge available and that it does not simply serve as a means for communicating knowledge. It thus needs to be a presentation rather than a representation. Art objects can be interesting, new, provocative, intense or suggestive and thereby stimulate emotional responses and cognitive activity. They require interpretation and thus make the audience think and reflect which leads to new forms of understanding and seeing the world. The forms of knowledge and the way in which art objects convey it can be described in the following ways.<sup>59</sup>

First, art objects may offer experiential knowledge, that is, they can show how an emotion, an event, a perspective or a situation may feel like, such as a situation that an audience could or would normally not encounter. In this sense, art simulates a situation and thereby provides a “virtual experience,” a simulation of how it feels like to undergo something. This can happen, for example, through physical simulation in form of re-enactments or imaginative simulation in form of literature. Although this simulated or virtual experience leads to “real” experiences, it differs from “actual” experiences as it is removed from the context of real life. Whereas virtual experience is made or constructed experience, actual experience just happens. Virtual experience can therefore be made to stand still and be re-experienced and analysed in more detail than actual experience.<sup>60</sup> Second, art objects may allow one to gain knowledge about morals and values, for example, by following fictional characters and reflecting their actions and motives and thereby one’s own position on them. In this way, art, and particularly literature, can investigate moral concepts not in form of arguments about general moral principles, but by fleshing out the consequences particular situations may have. Thereby, these works enable a more nuanced or fine-grained view of moral concepts and values by depicting several conflicting but intertwined concepts and values at the same time. Since the audience treats the fictional situations as situations that require decisions about morals and values and the characters as moral agents, the moral responses felt are similar to the responses felt in real life contexts.<sup>61</sup> Third, art objects often

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58. Cynthia Freeland, “Art and Moral Knowledge,” *Philosophical Topics* 25, no. 1 (1997): 19.

59. Cf. Eileen John, “Art and Knowledge,” in *The Routledge Companion to Aesthetics*, ed. Berys Gaut and Dominic McIver Lopes (London: Routledge, 2001); Berys Gaut, “Art and Knowledge,” in *The Oxford Handbook of Aesthetics*, ed. Jerrold Levinson (Oxford: Oxford University Press, 2003).

60. Dorothy Walsh, *Literature and Knowledge* (Middletown, CT: Wesleyan University Press, 1969), 90–91, 103–106; cf. David Novitz, *Knowledge, Fiction and Imagination* (Philadelphia: Temple University Press, 1987), 120.

61. Martha C. Nussbaum, *Love’s Knowledge: Essays on Philosophy and Literature* (New York: Oxford University Press, 1990), chaps. 4–5; cf. Eileen John, “Reading Fiction and Conceptual Knowledge: Philosophical Thought in Literary Context,” *The Journal of Aesthetics and Art Criticism* 56, no. 4 (1998): 331–348; Matthew Kirian, “Art, Imagination, and the Cultivation of Morals,” *The Journal of Aesthetics and Art Criticism* 54, no. 4 (1996): 337–351.

require the audience to adopt a new perspective on things, for example, on certain aspects of the world and new ways of seeing, but also morals and ideas. Art can then lead to new conceptual knowledge by presenting new objects, perspectives or experiences that lead to the formation of new concepts or categories.<sup>62</sup>

According to these conceptions of the cognitive character of art objects, it seems that they are forms of knowledge not because they provide true knowledge about something, but because they provide a *perspective* on something. Furthermore they do not seem to argue for this perspective, but rather allow the audience to *experience* the perspective. This experience lets the audience notice aspects of the world previously not available to them; they facilitate the development of knowledge about the issues presented, not through arguments but through experiences. This view on art objects as forms of knowledge and understanding has been particularly advanced by the aesthetic theories of James O. Young and Martin Seel.

Young has argued for regarding art as a form of knowledge by comparing the way art objects are presented to the way scientific theories are presented. According to Young, both science and art create knowledge through representations, but whereas science articulates knowledge mainly through semantic representations, art mainly uses illustrative representation. Both semantic and illustrative representations can provide testimony or interpretations of the objects of investigation; testimony, Young argues, is cognitively less interesting than interpretation. Whereas science interprets the objects through functional propositions in form of theories and models, art interprets the objects through illustrative representation that offers a perspective on the objects of investigation. While semantic representations are demonstrated by means of rational argumentation, illustrative representations are demonstrated not by argument but instead place one in the position to recognise something and to *experience* the rightness (or wrongness) of the presented perspective.<sup>63</sup> According to Young, such illustrative representations can “draw attention to features of objects, place them in context, display their consequences and draw comparison between them” through techniques such as amplification, connection, correlation, juxtaposition, selection and simplification.<sup>64</sup> Therefore, he points out, illustrative representations are best suited to provide insights into complex subjects which cannot be explained through general laws, such as relationships, love or existence, since “a perspective can give us the capacity to discriminate features of complex phenomena and navigate the problems posed by daily life.”<sup>65</sup>

Although Young provides a powerful conception for seeing art objects as forms of knowledge by experiencing them as perspectives on something, it may lead to the conclusion that they only “illustrate” knowledge. Thereby, art objects could be seen as media for knowledge, that is, as vehicles for transmitting or illustrating (propositional) knowledge,

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62. John, “Reading Fiction and Conceptual Knowledge: Philosophical Thought in Literary Context”; cf. Nelson Goodman, *Languages of Art: An Approach to a Theory of Symbols* (Indianapolis: Bobbs-Merrill, 1968), chaps. 1, 6.

63. James O. Young, *Art and Knowledge* (London: Routledge, 2001), 65–69, 105–106.

64. *Ibid.*, 82.

65. *Ibid.*, 97.

rather than forms of knowledge themselves. The “real” knowledge could thus be separated from the art objects and transmitted or presented in a different medium. Art objects, however, not only illustrate something, they create an experience that cannot be separated from the medium.<sup>66</sup>

Seel has thus suggested a different way of looking at art objects. For Seel art objects are not simply perspectives on the world but media for “disclosing world disclosure.” With the term “world disclosure” Seel denotes the particular way in which the world is understood. For him, understanding the world is not a question of knowing the right things about the world—for example, propositional truths—but is rather matter of opening up new worlds. According to Seel, the “processes of world disclosure take place when changes in our access to a field of reality are accompanied by changes in fundamental conceptions about the phenomena of this reality. In the most radical case [...] world disclosure *opens up* reality in such a way that it first makes a whole field of phenomena known. In this case, world disclosure would be a genuine revelation of a new thing and a new view at the same time.”<sup>67</sup> For example, when I am learning a new language or skill, I am not only gaining a new perspective on the world, but an entirely new world opens up for me. For Seel, learning something new is both learning new things and at the same time creating new worlds that previously did not exist. In language, for example, metaphors do not only describe something from a different perspective, they rather create entirely new objects and worlds.<sup>68</sup> Language, skills, tools or equipment change the way I understand the world and at the same time create a new world, as they are objects through which the world is disclosed to me. However, since these objects are transparent in use, this mediated relationship is normally not an object of reflection.<sup>69</sup>

According to Seel, art objects can make this mediated relationship experienceable. When being confronted with art objects, it is not only the perspective that is experienced but the experience of *experiencing* a perspective. Thereby, the audience has to experience the art object, through which a perspective is presented, as the medium for the experience of that perspective and not (only) as a perspective on something.<sup>70</sup> In other words, art objects are not media for experiencing perspectives, but media for experiencing *experiencing* perspectives on something. In this sense, art objects are not mere transmitters of knowledge, but rather knowledge in the form of an experience. Thereby the knowledge is not in the art object but in the reflection on experience of it. However, according to Seel, this implies that neither the perspective nor the experience of the perspective are separable from the experience of an art object. The experience is thus the experience of an art object and not some form of knowledge that the art object communicates.<sup>71</sup> For Seel, aesthetic understanding

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66. Cf. Martin Seel, “Über die Arbeit des Schriftstellers (und die Sprache der Philosophie),” in *Ethisch-ästhetische Studien* (Frankfurt am Main: Suhrkamp Verlag, 1996).

67. Martin Seel, “On Rightness and Truth: Reflections On the Concept of World Disclosure,” *Thesis Eleven* 37, (1994): 76–77.

68. *Ibid.*, 77.

69. See pp. 54–70.

70. Martin Seel, “Kunst, Wahrheit, Welterschließung,” in *Perspektiven der Kunstphilosophie: Texte und Diskussionen*, ed. Franz Koppe (Frankfurt am Main: Suhrkamp Verlag, 1991), 54, 63–64.

71. *Ibid.*, 63.

(*ästhetische Erkenntnis*) can therefore never be conceptual knowledge, since it is rooted in perception and bound to the aesthetic experience of an art object. Although an aesthetic experience may lead to conceptual knowledge, it is not a form of conceptual knowledge but an experience, which cannot be transferred into discursive systems. In other words, I need to experience an artwork in order to gain knowledge from it.<sup>72</sup> According to Seel, art is thus a form of reflection on human practice alongside theory and ethics. Whereas theoretical reflection is a reflection through arguments, and practical reflection is a reflection on arguments in relation to particular actions, aesthetic reflection is reflection through confrontations with perspectives on the world.<sup>73</sup> According to Seel, art objects, or rather the experience that they create, can furthermore indirectly be seen as arguments as they can be used as justifications for adopting certain views, behaviours, attitudes or beliefs; though these arguments become only valid when experiencing the particular art object.<sup>74</sup>

In this context, Seel furthermore asks what a theoretical or ethical practise would look like that is prepared to use the potential of aesthetic experience for its inquiry?<sup>75</sup> This is a particularly interesting question for conceptualising design as an inquiry. An exploration of theoretical and ethical questions would thereby not take place in an abstract realm but in the realm of concrete experience. These experiences would then make it possible to explore ideas and questions in a more engaging and experiential way and would thus provide the means to gain richer perspectives on such issues.

Both Young's and Seel's conceptions of aesthetic understanding or knowledge are useful epistemological frameworks for design as inquiry. Following Young's conception, design objects can be considered as forms of knowledge as they allow one to evaluate issues by experiencing perspectives on them. Following Seel's conception, design objects can be regarded as objects for understanding as they allow one to reflect on how artefacts mediate human experience and relationships. Thus design as inquiry could explore moral and ethical issues, changing values and possibilities of existence by creating media for *experiencing* these issues and thereby understanding them aesthetically. However, the knowledge that these objects provide is not inscribed into them in form of propositions, that is, knowledge is not presented in form of design objects, but rather they are media for an experience that provide new ways of understanding.

## Conclusion

Knowledge in design is not a matter of finding general principles or even truth but rather understanding through an experience that is related to concrete and particular situations and the reality of everyday life. It is not a matter of having the right or wrong knowledge about something, but rather a form of understanding or realising something, whereby understanding can be seen as a way of making sense of something.

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72. Martin Seel, *Aesthetics of Appearing*, trans. John Farrell (Stanford, CA: Stanford University Press, 2005), 118–119. In conceptual art, however, a separation of aesthetic reflection and aesthetic experience seems to be possible to a certain extent. Cf. Schellekens, "The Aesthetic Value of Ideas."

73. Seel, "Kunst, Wahrheit, Welterschließung," 79.

74. Martin Seel, "Was ist ein ästhetisches Argument?," *Philosophisches Jahrbuch* 94, (1987): 42–63.

75. Seel, "Kunst, Wahrheit, Welterschließung" 79–80.



In design, knowledge is created through designing, which is not a special way of thinking, but a form of understanding something through designing it. Consequently, design creates its own objects through the imagination of possible worlds, which then can be understood as concrete theories (rather than general theories) that create knowledge about a particular situation or case. This knowledge is articulated and developed in form of design objects that allow one to experience a perspective on these situations. Design objects present possible worlds through which an audience can gain a perspective on these worlds and discuss their desirability or undesirability. At the same time, the audience experiences these design objects as the media through which they experience perspectives on these worlds and situations. Thereby, design objects do not represent but present possible worlds through experiences rather than arguments.

These forms and conceptions of knowledge and understanding seem to be more appropriate to design as inquiry and lay the foundations for a theoretical framework that allows one to consider design as a form of philosophical inquiry by investigating philosophical issues and problems through experienceable perspectives.



## Chapter 4: A Material Philosophy

Any design object embodies certain values, ideologies and forms of understanding the world, and thus shapes the way people live, act or behave in some way.<sup>1</sup> Although this may be considered as the “philosophy” of an object, most design objects rarely invite their users to *reflect* on these embedded values and ideas. They are rather dispositions for a certain way of living than results of philosophical investigations. They are shaped mainly by the personal convictions, values and views of designers, economical forces or the demands and preferences of consumers. Here, however, philosophy is not considered as a personal view of the world but a form of reflection and debate.<sup>2</sup> In the following, I will develop a view on design that engages in a philosophical reflection and dialogue *through* designing and design objects; that investigates philosophical questions and question values or world-views rather than merely representing them. Accordingly, this chapter is the central element of the theoretical framework for conceiving design as a philosophical inquiry and a material philosophy.

But what is the difference between exploring philosophical questions through designing artefacts rather than writing a philosophical essay? One philosopher who not only wrote but also built, was Ludwig Wittgenstein. Together with Paul Engelmann, Wittgenstein had constructed a house for his sister in Vienna (see fig. 16). Arguably, building the house had a profound influence on his philosophical thinking, and thus one could claim that designing can be a form of philosophical thinking. His philosophical writings changed considerably in between writing the *Tractatus Logico-Philosophicus* and the *Philosophical Investigations*, the specific period in which he gained architectural experience by building the house.<sup>3</sup> In some sense, the house corresponds formally to the precise, reduced and almost austere philosophy developed in his earlier philosophy. However, it is not a materialisation or an illustration of it. Rather it seems that he approached architecture in the same way as he approached philosophy—through reduction. Whereas in his earlier philosophy he investigates language from an *abstract* and purely rational point of view; his later philosophy shows an investigation of language in *use*; the first inquiry leading him to view language as something precise, where the meaning of words and statements is determined by logical reasoning and clear language; the second inquiry leading him to view language as something ambiguous, where the meaning of words and statements is determined by their use, requiring him to look rather than think.<sup>4</sup> Like language, design is shaped by the context of use rather than logical premises. Design does not proceed by logical and linear deduction from premises but rather by seeing and making connections and relationships between things.

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1. See pp. 64–70.

2. Louis Althusser, for example, distinguishes between philosophy as a special form of inquiry and spontaneous philosophy as it occurs in everyday life and in the sciences. Whereas spontaneous philosophy is more a question of norms, morals and world-views, philosophy as a special form reflects on these assumptions—for example, on which assumptions claims about the world are based and how these views can be justified. Louis Althusser, “Philosophy and the Spontaneous Philosophy of the Scientists,” in *Philosophy and the Spontaneous Philosophy of the Scientists & Other Essays*, ed. Gregory Elliot (London: Verso, 1990).

3. Otl Aicher, “Use as Philosophy,” in *Analogous and Digital* (Berlin: Ernst & Sohn Verlag, 1994).

4. Ludwig Wittgenstein, *Philosophical Investigations*, ed. G. E. M. Anscombe and R. Rhees, trans. G. E. M. Anscombe, 2nd ed. (Oxford: Blackwell Publishers, 1958; reprint, 1999), 31e (§ 66).

Wittgenstein even describes architectural design as more difficult than philosophising, but also sees similarities between both: “As is frequently the case with work in architecture, work on philosophy is actually closer to working on oneself. On one’s own understanding. On the way one sees things. (And on what one demands of them.)”<sup>5</sup>

In this chapter, I will explore: First, different conceptions of philosophy that can provide a framework for design as philosophical inquiry. Philosophy is thereby not regarded in terms of academic philosophy but as a form of reflection on concepts and the conditions of human life. Second, philosophy is not only a form of logical or rational argumentation, but also concerned with the creation of fictional worlds, new concepts and new ways of thinking. Third, designing can be considered as a philosophical inquiry whereby design objects are the media through which the inquiry into philosophical questions takes place. Fourth, design objects can be considered as an inquiry through experiencing them. In this way, design objects are understood as media for philosophical inquiry when they pose philosophical questions and trigger philosophical reflection on the issues or experiences that they present.

### Conceptions of Philosophy

Similar to design, philosophy is both an activity and a field as well as a description of specific types of questions or problems (see table 1 on page 266). To ask what philosophy is, is already a philosophical question. Although one could look at what philosophers do, this nevertheless presupposes a concept of what a philosopher is and does. Philosophy thus deals with *conceptual* rather than empirical questions. As part of the humanities, philosophy aims to provide an intersubjective understanding of a particular subject matter instead of objectifiable knowledge about it. Philosophy, however, cannot be defined by a certain methodology, a set of methods or a specific subject matter as anything can become the object of a philosophical inquiry (then often called “philosophy of x.”). It is thus often distinguished from the humanities and sciences, which deal with a specific subject matter (*Einzelwissenschaften*), since philosophy deals with conceptual questions that are foundational to any of these specific fields of study. Contrary to the sciences, as well as some fields in the humanities, however, philosophy does not accumulate any objectifiable knowledge or facts and thus does not seem to solve any questions or problems. A philosophical inquiry rather seems to deepen and expand the understanding of questions and problems.<sup>6</sup>

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5. Ludwig Wittgenstein, *The Big Typescript: TS 213*, ed. C. Grant Luckhardt and Maximilian A. E. Aue (Oxford: Blackwell Publishing, 2005), 300e (407). “You think philosophy is difficult enough but I can tell you it is nothing to the difficulty of being a good architect. When I was building the house for my sister in Vienna I was so completely exhausted at the end of the day that all I could do was going to a ‘flick’ every night.” Paul Wijdeveld, *Ludwig Wittgenstein, Architect* (London: Oxford University Press, 1994), 195. The extent to which design objects such as Wittgenstein’s house are not understood as equivalent to theoretical or philosophical works can be seen in the fact that the house was supposed to be demolished to make space for a hotel complex. To destroy his manuscripts or books in order to make space for some newer publications in a library would immediately be seen as a different matter.
  6. Cf. Ernst von Aster, *Geschichte der Philosophie*, 18th ed. (Stuttgart: Alfred Kröner Verlag, 1998), ix–xxi; Anthony Kenny, *An Illustrated Brief History of Western Philosophy* (Oxford: Blackwell Publishing, 2006), xi. My conception of philosophy has been greatly influenced by Maarten J. F. M. Hoenen, *Was ist Philosophie?* (lecture series, Philosophisches Seminar, University of Freiburg, summer semester 2010) MP3 audio files, [http://www.podcasts.uni-freiburg.de/podcast\\_content?id\\_content=80](http://www.podcasts.uni-freiburg.de/podcast_content?id_content=80) (accessed July 4, 2012); Maarten J. F. M. Hoenen, *Kontroversen in der*

Philosophy, and particularly academic philosophy, can thus sometimes appear to be a somewhat otherworldly activity that seems to contribute little to practical problems or matters of everyday life. David Hume, for example, made a distinction between the “mere philosopher” who solitarily contemplates the world, often in an incomprehensible way, and the “man of the world” who actively engages with the world and makes his or her ideas understandable to a wider audience.<sup>7</sup> Immanuel Kant furthermore distinguishes two types of philosophy, not so much based on process or communication, but rather on the types of questions that are asked. For Kant, there are questions that are specific to philosophy as an academic field (scholastic) and questions that are of concern to everyone (cosmopolitan). He identifies the questions that everyone is concerned with as: “1. What can we know? 2. What ought we to do? 3. What may we hope for? 4. What is man?”<sup>8</sup> For Kant these questions are investigated and answered by metaphysics (epistemology), philosophy (ethics), religion and anthropology, and in some sense all collapse within the last one. These questions are not only investigated in philosophy but are questions that are important to everyone and are explored differently in many fields, including design. Nevertheless, they are philosophical questions. But how exactly does philosophy investigate philosophical questions?

Generally, philosophy may be understood in three ways: First, as an academic discipline within the *sciences* or *humanities*, that is, as a discipline with certain questions, approaches and methods in which experts discuss these amongst each other. Second, as a form of *wisdom*, that is, as an area of human knowledge and understanding that is concerned with questions relevant to human life, which necessarily concern everyone, such as questions about the right or good life. Third, as a *way of life* whereby a philosopher not only investigates philosophical ideas abstractly but actually lives philosophically. Philosophical wisdom can thus not be separated from the philosopher and be turned into objectifiable knowledge. The last form of philosophy is very different from the first, as the first aims to separate knowledge from the one who knows.<sup>9</sup> While somewhat neglecting academic philosophy with its disciplinary questions, some conceptions of philosophy can serve as a potent foundation for conceptualising design as a philosophical inquiry: philosophy as a way of life, philosophy as way of defamiliarising the world, philosophy as an investigation of concepts, and philosophy as the production of concepts.

In classical antiquity philosophy was not only a form of discourse or abstract reasoning, it was also a *way of life*. Philosophy was not only a matter of knowing but rather of living, practice and existence with the aim to achieve wisdom through spiritual development

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*Philosophie* (lecture series, Philosophisches Seminar, University of Freiburg, summer semester 2010–2011) MP3 audio files, [http://www.podcasts.uni-freiburg.de/podcast\\_content?id\\_content=93](http://www.podcasts.uni-freiburg.de/podcast_content?id_content=93) (accessed July 4, 2012); Maarten J. F. M. Hoenen, *Logik und Metaphysik* (lecture series, Philosophisches Seminar, University of Freiburg, summer semester 2011) University of Freiburg, MP3 audio files, [http://www.podcasts.uni-freiburg.de/podcast\\_content?id\\_content=113](http://www.podcasts.uni-freiburg.de/podcast_content?id_content=113) (accessed July 4, 2012); Maarten J. F. M. Hoenen, *Voraussetzung und Vorurteil* (lecture series, Philosophisches Seminar, University of Freiburg, summer semester 2011–2012) MP3 audio files, [http://www.podcasts.uni-freiburg.de/podcast\\_content?id\\_content=124](http://www.podcasts.uni-freiburg.de/podcast_content?id_content=124) (accessed July 4, 2012).

7. David Hume, *An Inquiry Concerning Human Understanding*, vol. 2 of *Essays and Treatises on Several Subjects* (London: Bell & Bradfute [et. al.], 1817), 5–7 (sec. 1).
8. Immanuel Kant, *Logic*, trans. John Richardson (London: Simpkin and Marshall, 1819), 29–30 (AA, 25); cf. Kant, *Critique of Pure Reason*, 694–695 (AA, 542–543).
9. Gernot Böhme, *Weltweisheit, Lebensform, Wissenschaft: Eine Einführung in die Philosophie* (Frankfurt am Main: Suhrkamp Verlag, 1994), 9–15.

and self-transformation. In Epicurean and Stoic philosophy, for example, spiritual exercises were developed to achieve this transformation and to reach peace of mind (*ataraxia/ἀταραξία*), inner freedom (*autarkeia/αὐτάρκεια*) and a state of cosmic consciousness through an imaginary “view from above.” These exercises aimed to strengthen self-reflection and to change one’s perspective by ficticiously adopting the perspectives of others—from humans to the cosmos and atoms. Physics, for example, was thus practiced through meditation rather than experiment. Ancient Greek philosophy thus made a distinction between practicing philosophy and the philosophical discourse. Although it was a combination of theory and practice, the aim was to practice philosophy; the discourse therefore possessed mainly an educational purpose and the aim was not to theorise moral actions but to act morally right. However, since the end of classical antiquity and the foundation of the medieval universities this unity of philosophy and life was divided and philosophy became increasingly a purely theoretical or scholastic occupation.<sup>10</sup>

Design can also be regarded a process of self-transformation when designers adopt the perspectives of others rather than impose their perspectives onto other people and the world. Designing can furthermore be considered as a form of understanding through making. Design as inquiry is thus not a matter of theoretical discourse but a matter of relating philosophical ideas and concepts to the reality of everyday life and thus a combination of theory and practice.<sup>11</sup>

In order to be able to look at the world differently, philosophy furthermore aims to *defamiliarise* the world by turning the obvious into a problem. Bertrand Russel, for example, sees the aim of philosophy to overcome prejudices and beliefs derived from common sense and customs. Although philosophy diminishes “our feeling of certainty as to what things are, it greatly increases our knowledge as to what they may be; it removes the somewhat arrogant dogmatism of those who have never travelled into the region of liberating doubt, and it keeps alive our sense of wonder by showing familiar things in an unfamiliar aspect.”<sup>12</sup> For Russel, philosophy aims to show the world in a new light by making the world seem strange and by creating different possibilities for looking at the world. Philosophy is thus a matter of problematising and questioning what is familiar—not taking the world for granted but retaining a sense of wonder about the world.<sup>13</sup>

This conception of philosophy is perhaps best described by Plato in his *Analogy of the Cave* (see fig. 17).<sup>14</sup> Plato describes a cave, in which prisoners with chains and fixated heads view shapes on a wall. These shapes are shadows that are cast on the wall by objects

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10. Pierre Hadot, “Philosophy as a Way of Life,” in *Philosophy as a Way of Life: Spiritual Exercises from Socrates to Foucault*, ed. Arnold Davidson (Oxford: Blackwell Publishers, 1995; reprint, 1999); Pierre Hadot, *What is Ancient Philosophy?* (Cambridge, MA: Harvard University Press, 2004), 179–220. Some recent studies have shown that on average the moral behaviour of ethicists does not differ from that of non-ethicists. See Joshua Rust and Erik Schwitzgebel, “The Moral Behavior of Ethicists,” in *Companion to Experimental Philosophy*, ed. Justin Sytsma and Wesley Buckwalter (Oxford: Blackwell Publishers, forthcoming).

11. See pp. 83–89.

12. Bertrand Russell, *The Problems of Philosophy* (Oxford: Oxford University Press, 1998), 91.

13. Philosophy as wonder about the world is, of course, the famous conception laid out by Plato and Aristotle. Plato, *Theaetetus*, trans. M. J. Levett, *Complete Works*, ed. John M. Cooper (Indianapolis, IN: Hackett Publishing, 1997), 155d; Aristotle, *Metaphysica*, 982b (bk. A, sec. 2).

14. Plato, *Republic*, 595a–608b (bk. 10).

carried in front of a fire behind the prisoners. The prisoners, however, take the shadows for reality. One of the prisoners is released and can thus see the true nature of the shapes and what causes them. He then ascends to the entrance of the cave and can see yet another reality beyond the cave with the sun as its source. When returning to the other prisoners, they refuse his account of the true nature of reality and rather remain in the reality they are accustomed to.

Although the analogy seems to portray philosophy as a quest for knowledge and truth that lies beyond the world of sensory perception, it also shows the capability of philosophy to rip people out of their conventions and to make them wonder about their ordinary and everyday situation. Plato's cave can thus be interpreted in the following ways. First, the people carrying the objects can be seen as opinion leaders who create ideologies, opinions and beliefs. Second, philosophy renders these ideologies, opinions and beliefs visible as arbitrary and thus defamiliarises the prisoners from the familiarity of the everyday world by showing it as an imprisonment. Third, the prisoners resist liberation as they feel comfortable in the cave of opinions.<sup>15</sup> In this regard, philosophy can be conceived as critique that aims to break through everyday disguises and clichés.<sup>16</sup> Here, otherworldliness may also be regarded as a prerequisite for being able to ask philosophical questions in the first place, as it is a way of stepping outside of social or ideological conventions.<sup>17</sup> Likewise, design as inquiry can question the status quo by showing different perspectives on the world and new possibilities for existence. Thereby, the designed objects do not fit comfortably into the existing world but rather show a different, strange and unfamiliar world. However, since these objects sit in the reality of everyday life, they also defamiliarise the world as they ask the audience to question their assumptions about modes of existence and living.

According to Plato's analogy, philosophy could be conceived as a search for truth about the nature of reality and its first causes and thus in metaphysical and ontological terms.<sup>18</sup> However, this inquiry does not necessarily need to be seen in physical terms, but may also be viewed in conceptual terms, and thus as matter of *questioning concepts*. For R. G. Collingwood, for example, metaphysics is not an inquiry into the physical nature of things but rather a conceptual inquiry of absolute presuppositions, that is, metaphysics without ontology. For Collingwood absolute presuppositions are the unquestioned assumptions and concepts that lay the foundations for any scientific inquiry. The concept "causation," for example, is an absolute presupposition that makes it possible to assume that "gravitation" causes things to fall down, which is a relative presupposition. The absolute presupposition

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15. Rafael Ferber, *Philosophische Grundbegriffe I: Eine Einführung* (München: Verlag C. H. Beck, 2008), 11.

16. Theodor W. Adorno, *Philosophische Terminologie: Zur Einleitung*, ed. Rudolf zur Lippe, 4th ed., vol. 1 (Frankfurt am Main: Suhrkamp Verlag, 1982), 131.

17. Simon Critchley, "What Is a Philosopher?," Opinionator Blog, *New York Times*, May 16, 2010, <http://opinionator.blogs.nytimes.com/2010/05/16/what-is-a-philosopher> (accessed June 12, 2012). According to Plato, the story of Thales of Miletus who fell into a well while intensively observing the stars and was subsequently laughed at by a peasant girl for not noticing the simplest things, can be seen as an example for the necessity to distance oneself from worldly affairs in order to be able to see another reality. Plato, *Theaetetus*, 174a–174b.

18. Aristotle describes metaphysics as a science that is foundational to physics as it investigates the first principles or being as being. Aristotle, *Metaphysica*, 980a–993a (bk. A), 1026a30 (bk. E), 1003a20 (bk. I). The term "metaphysics," however, was never used by Aristotle. The term was created by an ancient editor who grouped several of Aristotle's texts into a book with the title "metaphysics," as it was placed on the shelf after his books on physics.

cannot be empirically verified and cannot be right or wrong, but needs to be assumed for the subsequent claims to make sense. According to Collingwood “the answer to any question presupposes whatever the question presupposes. And because all science begins with a question (for a question is logically prior to its own answer) all science begins with a presupposition.”<sup>19</sup> Many forms of inquiries seem to neglect the absolute presuppositions of their question. The task of metaphysics is thus to inquire and question these absolute presuppositions. For Collingwood, philosophy is a conceptual inquiry into the underlying assumptions about the world, that is, an inquiry into concepts rather than into the things themselves.<sup>20</sup> For Louis Althusser, the task of philosophy is furthermore to make conceptual distinctions and differences through argumentation. Philosophy can therefore be considered as both an ideological critique of the assumptions that guide forms of inquiry and as a way of creating new areas of inquiry.<sup>21</sup> Design can also act as a conceptual and ideological critique by making assumptions visible through design objects, whereby design objects ask the audience to question or reconsider beliefs and values. The process of designing is also a form of questioning concepts instead of applying and following them uncritically. Instead of searching for answers and solutions, design can be an inquiry into questions and concepts.

Philosophy, however, not only investigates and criticises concepts, it also *produces concepts*. According to Gilles Deleuze, philosophy is not a matter of discovering first principles or identities but a matter of inventing concepts.<sup>22</sup> For him, philosophy does not start with common sense, as this is merely stating what everybody knows already: a knowledge that relies on common agreement, as it assumes that there is an agreed way or even a right way of thinking about things. Philosophy would then simply affirm already held opinions. Whereas *everyday concepts* prevent thinking in order to make everyday life and the functioning of a society possible, *philosophical concepts* create a disruption of the everyday. Philosophical concepts are thus not descriptive and do not state what is, but open up a new way of thinking about the world. In order to break out of mere opinions, philosophy needs to be seen as an activity of creating concepts rather than attributing concepts to experience, that is, to create concepts that go beyond common sense and not to accept common sense as a presupposition for philosophy.<sup>23</sup> For Deleuze, philosophy is thus not a matter of knowledge but of creating new perspectives on the world through concepts—and thus seeing things that were previously invisible. So defined, philosophy does not ask questions about what there is, but about what there could be—metaphysics and ontology are thus not a question of *what being is* but *what being could be*, and likewise ethics not a question of how one

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19. R. G. Collingwood, *An Essay on Metaphysics* (Oxford: Clarendon Press, 1940; reprint, 1948), 63.

20. *Ibid.*, pt. 1.

21. Althusser, “Philosophy and the Spontaneous Philosophy of the Scientists,” 74–100.

22. Deleuze, together with Félix Guattari, furthermore distinguishes philosophy as the production of concepts from both science, which produces descriptions about functions in the form of propositional statements, and art, which produces affects, percepts and sensations in the form of artefacts. Gilles Deleuze and Félix Guattari, *What Is Philosophy?*, trans. Hugh Tomlinson and Graham Burchell (New York: Columbia University Press, 1996), 2, 24, 117, 198.

23. Gilles Deleuze, *Difference and Repetition*, trans. Paul Patton (New York: Columbia University Press, 1994), 129–135; cf. Clair Colebrook, *Gilles Deleuze* (London: Routledge, 2002), chap. 1.



*ought to live*, but how one *could live*. Philosophy, conceived in this way, “would then mean *discovering, inventing, new possibilities of life*.”<sup>24</sup>

Following Deleuze’s philosophical reversal of metaphysics, Kant’s famous questions may be restated as: What could there be? What could we do? What could we wish for? What could humans become? These questions, however, are not only questions that concern philosophy but also design. Design as philosophical inquiry would thus be a matter of inventing new concepts and possibilities for life through design objects.

Design can be regarded as a philosophical inquiry when it asks and investigates philosophical questions through designing objects. I will subsequently use the following four conceptions of philosophy to frame design as philosophical inquiry: (1) a form of understanding through experience and making that is bound to the designer and cannot be objectified but only shown; (2) a way to explore philosophical questions through design objects that defamiliarise the everyday world; (3) the use of design objects to critique and explore concepts; (4) the use of design objects to produce new concepts.

### Approaches to Philosophical Questions

Although philosophy cannot be defined by a particular set of methods or by a specific subject matter, there are nevertheless various approaches that can be used to explore philosophical questions. In the most general sense, philosophy is a form of *reflection* on philosophical questions. These questions, however, need to be created by transforming the object of wonder or astonishment into a philosophical question that can be investigated and explored through various approaches, and that can be presented and discussed with others. A philosophical inquiry can thus construct and approach the subject matter from a wide range of positions.

Philosophy is often considered as a form of *rational discussion*, *abstract reasoning* or *logical argumentation*, in which one defines terms, states premises and draws conclusions in order to analyse philosophical problems. This approach is thus often called analytic philosophy, furthermore denoting a form of argumentation that consists of analysing arguments according to their soundness, consistency, erroneousness, broadness or narrowness of definitions, contradictions or tautologies. The aim is then to construct true statements and to model the philosophical inquiry somewhat according to scientific rigour. Although this may lead to true and logical statements, these statements often appear to be without content, as these statements only seem to validate themselves and are somewhat removed from lived experience.

Beyond argumentation and analysis, however, there are other approaches available to explore philosophical questions, which seem to be more appropriate to design. They are less based on abstract reasoning, but rather aim to show the world from a different perspective and establish new ways of thinking by focussing on human experience. In philosophy

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24. Gilles Deleuze, *Nietzsche and Philosophy*, trans. Hugh Tomlinson (New York: Columbia University Press, 2006), 101; Todd May, *Gilles Deleuze: An Introduction* (Cambridge: Cambridge University Press, 2005), chap. 1; Colebrook, *Gilles Deleuze*, chap. 1. Hans Lenk even describes this form of philosophy as “designer-philosophising.” Hans Lenk, *Kreative Aufstiege: Zur Philosophie und Psychologie der Kreativität* (Frankfurt am Main: Suhrkamp Verlag, 2000), 70.

this is usually understood as a *phenomenological* approach. Phenomenology does not aim to describe the world from an abstract point of view or a view from nowhere, but rather through actual and lived experience. Søren Kierkegaard, for example, makes a distinction between *abstract thought*, whereby no one seems to do the thinking, and *concrete thought* as the thoughts of someone that are subject to concrete lived experience.<sup>25</sup> The world does not have meaning in itself, since meaning and understanding is always meaning and understanding for someone. Martin Heidegger, furthermore, develops this into a general critique of abstraction as a way to understand the world. For Heidegger, the world becomes meaningful in the context of use and not through abstraction. Particularly in the context of everyday use the world is understood intuitively, that is, I do not need to contemplate all possible variables in order to open a door; I do not contemplate what a door or door handle is—I just open it. On that account, the world is pre-scientifically understandable to humans on the basis of everyday use.<sup>26</sup> Abstraction disrupts this relationship by treating things as objects separated from their context. Phenomenology thus provides a more relevant framework for design as inquiry than analytic philosophy as understanding emerges from a concrete and material experience whereby questions change from “what is ...?” to “what is it like ...?”

Here, however, understanding also seems to move beyond the consciousness of the individual and rather emerges from an interaction between subjects and objects.<sup>27</sup> According to James Gibson, humans do not project understanding or actions into an environment nor can meaning be found in it; rather understanding and actions emerge from an interaction with an environment, as environments afford certain forms of action and understanding and hinder others. Understanding does thus not only depend on human rationality and perception, but also on the character of the environment. According to Gibson, meaning and understanding thus sit somewhere “in between” humans and the environment.<sup>28</sup> The character of the environment, and particularly of the technological environment, thus shapes how the world can be understood. Don Ihde thus uses the term *postphenomenology* in order to indicate that in a phenomenological analysis or exploration of human experience, technologies should be taken into account for creating understanding, as the human experience of the world is technologically mediated.<sup>29</sup> Here, the design of an environment profoundly influences and changes the way humans understand the world. This leads to an interesting relationship between design and philosophy, as design objects become the media through which one understands the world since they are media for world-disclosure.<sup>30</sup>

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25. Søren Kierkegaard, *Concluding Unscientific Postscript to the Philosophical Crumbs*, trans. Alastair Hannay (Cambridge: Cambridge University Press, 2009), 278–279; cf. Thomas Nagel, *The View from Nowhere* (Oxford: Oxford University Press, 1986).

26. See pp. 54–58. Likewise, Wittgenstein has argued that in order to comprehend language one needs to look at how language is used, not through abstracting from its use. Wittgenstein, *Philosophical Investigations*, §§ 43, 65.

27. Heidegger, for example, uses the term “*Dasein*” (being-there) instead of “human” in order to avoid human consciousness and the dichotomy between subjects and objects.

28. James J. Gibson, *The Ecological Approach to Visual Perception* (New York: Psychology Press, 1986), chaps. 3, 8.

29. Don Ihde, *Postphenomenology: Essays in the Postmodern Context* (Evanston, IL: Northwestern University Press, 1995), chaps. 3, 6.

30. Cf. Heidegger, *Being and Time*, §§ 15–16, 23; Seel, “On Rightness and Truth” See pp. 54–58, 64–70, 92–96.

Many forms of philosophical inquiry furthermore introduce elements into the analysis or reflection that are somewhat *fictional*, as they are not statements of facts or states of affairs. Rather they are heuristic devices that provide the means to see the world from a different point of view and allow one to think about something that was previously impossible. As a result, they introduce something new into the discussion beyond definition. (What follows is a brief overview, as I will discuss these approaches in more detail in the following chapters.)

*Analogies* and *metaphors*, for example, are frequently used devices in philosophical inquiries. An analogy is a comparison that allows one to draw conclusions about the nature of something unknown or unobservable by comparing it to something known or observable; a metaphor expresses something in terms of something else. Although both can serve as illustrations of abstract concepts, at the same time they also create the objects that they aim to illustrate as one can only talk about them in *terms of* the analogy or metaphor. Metaphors and analogies are thus devices for creating concepts that make it possible to think about something in a different way.<sup>31</sup>

Another frequently used approach are *thought experiments*, which are imaginary experiments that are used to clarify concepts and supposedly allow one to draw, for example, conceptual or ethical conclusions that are also applicable to “reality.” Thought experiments are mainly used instead of real experiments because of moral, financial or technical reasons. However, since they construct imaginary and abstract situations, the applicability of their results to the “real world” is limited. For this reason, they may be understood more as mirrors of the real world that make it possible to see aspects of the world in the light of these mirrors.

A further approach is to construct *fictional entities* to shape a discussion, such as Jean-Jacques Rousseau’s “social contract,” John Rawl’s “veil of ignorance” and “ideal observer,” Adam Smith’s “impartial observer” and “invisible hand,” or Friedrich Nietzsche’s “Übermensch.” In contrast to thought experiments, these fictional entities are not means to clarify something, but are devices that permits one to adopt a different perspective on the world, either viewing the world from the perspective of such a persona or viewing the world as if such objects would exist.

Philosophical problems, however, can also be discussed *indirectly* by means of stories, aphorisms, fables or allegories that make the philosophical problem experienceable. Thereby, the philosophical problem or question is not explained but shown. Kierkegaard’s work *Either/Or*, for example, takes such an approach and explores the question of how one should live from two contrary viewpoints. Because Kierkegaard does not argue for one or the other position, the reader is faced with two perspectives and needs to decide which one

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31. For a comprehensive overview of philosophical metaphors see Ralf Konersmann, ed., *Wörterbuch der philosophischen Metaphern* 3 ed., (Darmstadt: Wissenschaftliche Buchgesellschaft, 2011).

is the preferable one.<sup>32</sup> Many other philosophers have explored issues through fictional writing and poetry as a means to show or say things that could not be said otherwise.<sup>33</sup>

These philosophical approaches aim to show perspectives in an experiential way rather than arguing for them by abstract reasoning. Furthermore, philosophy moves closer to literature, which can be a form of ethical discussion in terms of fleshing out moral situations and dilemmas and thus relating them to actual experience.<sup>34</sup> The distinction between philosophy and literature is thus not clear cut and perhaps a matter of reading something *as* philosophy or *as* literature (and art). Similarly, I can view someone as a philosopher or as an artist, as sometimes both even seem to be merged into one and the same person.<sup>35</sup> The distinction is consequently a question of the respective conception and aim of philosophy.

For Maurice Merleau-Ponty, for example, the aim of “philosophy consists in relearning to look at the world.”<sup>36</sup> As such, it does not seem to be very different from other forms of inquiry with a similar aim, for example, literature, art or design, but also science, as they similarly aim to look at the world and show the world in a different way. According to Merleau-Ponty, philosophy and literature cannot be distinguished when they explore experiences of the world, as “philosophical expression assumes the same ambiguities as literary expression, if the world is such that it cannot be expressed except in ‘stories’ and, as it were, pointed at.”<sup>37</sup> In this regard, “philosophy” is just one way among many forms to understand the world. Not to end up in a philosophical *cul-de-sac*, this is to say that there are many *philosophical inquires* of the world, which can take place in different *media* and not only in the form of conceptual and logical argumentation that is usually regarded as “philosophy.” Philosophy then is seen more as an attitude and a particular form of asking questions than a specific field. Particularly when dealing with ethical or existential questions, poetry, drama or literature can often be regarded as philosophical. Samuel Beckett’s play *Waiting for Godot*, Jim Jarmush’s film *Stranger than Paradise*, or Franz Kafka’s novel *The Trial*, for example, show the absurdity of human life and the arbitrariness of decision-making and their outcomes, in a way that can hardly be explained with rational arguments. Rather they *show* philosophical problems and questions.<sup>38</sup>

Although there are many alternative ways to explore philosophical questions besides abstract reasoning and logical argumentation, all of these explorations seem to depend on language or narratives as the medium for both *doing* philosophy and *communicating* philosophical ideas. The question is thus, whether a philosophical exploration can take

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32. Julian Baggini and Peter S. Fosl, *The Philosopher’s Toolkit: A Compendium of Philosophical Concepts and Methods*, 2nd ed. (Oxford: Wiley-Blackwell, 2010), sec. 2.4, 2.9, 2.10, 5.5.

33. Wittgenstein, for example, claimed that philosophy should only be versified. Ludwig Wittgenstein, *Vermischte Bemerkungen*, vol. 8 of *Werksausgabe*, ed. Georg Henrik von Wright (Frankfurt am Main: Suhrkamp Verlag, 1989), 483.

34. See page 93.

35. Cf. Jean-Noël Vuarnet, *Der Künstler-Philosoph*, trans. Brunhilde Wehninger (Berlin: Merve Verlag, 1986). Stanisław Lem, for example, has claimed that he is a philosopher, but since one cannot construct grand philosophical systems anymore, he decided to do philosophy through the writing of science fiction. Lem states this in the afterword in Stanisław Lem, *Dialogue*, trans. Jens Reuter (Frankfurt am Main: Insel Verlag, 1981), 307–309.

36. Merleau-Ponty, *Phenomenology of Perception*, xx.

37. Maurice Merleau-Ponty, “Metaphysics and the Novel,” in *Sense and Non-Sense* (Evanston, IL: Northwestern University Press, 1964), 28.

38. Ferber, *Philosophische Grundbegriffe I*, 23–24.

place in a non-linguistic medium, that is, through material artefacts. Notably, conceptual art has attempted to explore philosophical ideas through art objects.<sup>39</sup> Since conceptual art aims to engage the audience intellectually rather than emotionally, the art objects are evaluated in terms of the ideas that they represent rather than in terms of their materiality and aesthetic qualities.

Although, conceptual art objects represent philosophical ideas and concepts materially and thereby experienceable, the strict separation between philosophical concepts and their material and visual presentation, turns them into somewhat arbitrary illustration of existing philosophical concepts rather than into a medium for exploring them.<sup>40</sup> Furthermore, conceptual art objects are mainly evaluated in terms of their qualities as art objects and not in terms of their philosophical value.<sup>41</sup> However, since percepts and affects *can* lead to new concepts there is no need to separate both. The aim of design as inquiry should thus be to create and explore philosophical concepts *through* the aesthetic and material qualities of design objects.<sup>42</sup>

Design may thus be conceived as a philosophical inquiry in terms of *designing* and *design objects*. Designing can be regarded as a philosophical inquiry when designers adopt a philosophical attitude and try to understand aspects of the world through designing, that is, from the standpoint of making something. Design objects are thereby the media for exploration when they are used in order to create concepts, ask questions or show a new perspective. Since design objects are always *for* something, they can be understood in terms of real or hypothetical use. As useful objects they are materialisations and manifestations rather than illustrations of certain values and concepts within a society. As objects for reflection, however, design objects can expose these values, world-views and concepts that usually remain hidden in objects for practical use, and turn them into questions and problems to be discussed or experienced.

### Designing as Philosophical Inquiry

Designing and making something is an actual, concrete and physical experience and thus can lead to a direct and personal form of understanding something. Jean-Jacques Rousseau, for example, has observed the relationship between making and philosophy in relation to the education of children: “instead of glueing a child to books, I bury him in a workshop, his hands work for the profit of his mind; he becomes a philosopher and believes he is only a laborer.”<sup>43</sup> In his account of education, eidetic learning is more appropriate than learning abstract facts (at least in early ages). Although Rosseau does not clearly state it in this way, developing one’s own faculties both in perception, thinking and making creates personal autonomy, freedom and independence. According to Epicurus only self-sufficiency leads to

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39. For example, Joseph Kosuth, *Art After Philosophy and After: Collected Writings, 1966–90* (Cambridge, MA: MIT Press, 1991).

40. Cf. Peter Goldie and Elisabeth Schellekens, eds., *Philosophy and Conceptual Art* (Oxford: Clarendon Press, 2007), ix; Schellekens, “The Aesthetic Value of Ideas,” 81–83.

41. Cf. Deleuze and Guattari, *What Is Philosophy?*, 198.

42. See pp. 40, 80.

43. Jean-Jacques Rousseau, *Emile: Or, On Education*, trans. Allan Bloom (New York: Basic Books, 1979), 177.

true freedom and the development of this faculty is the necessary condition for leading a philosophical life.<sup>44</sup> Through making something, one can thus discover both personal freedom as well as dependence on others. In the following, I will reflect on two philosophical experiments, which aim to explore this relationship—as well as other philosophical issues—through the experience of making something.

On the Fourth of July 1845, a few days before his twenty-eighth birthday, Henry David Thoreau took up residence in a small cabin he built himself on the shores of Walden Pond near Concord in Massachusetts (see fig. 18). He set himself the task to stay there for the duration of two years and two months and to earn a living based only on the labour of his own hands, for example, by growing his own food and making his own furniture. During this time he wrote his famous autobiographical novel *Walden, Or Life in the Woods*, in which he explains his motivations for conducting this experiment as follows:

I went to the woods because I wished to live deliberately, to front only the essential facts of life, and see if I could not learn what it had to teach, and not, when I came to die, discover that I had not lived. [...] I wanted to live deep and suck out all the marrow of life, to live so sturdily and Spartan-like as to put to rout all that was not life, to cut a broad swath and shave close, to drive life into a corner, and reduce it to its lowest terms, and, if it proved to be mean, why then to get the whole and genuine meanness of it, and publish its meanness to the world; or if it were sublime, to know it by experience, and be able to give a true account of it in my next excursion.<sup>45</sup>

Through this self-experiment, Thoreau wanted to experience life itself by freeing it from anything unnecessary. His premise was that humans often live a senseless life and spend their time acquiring things and positions they do not need and that do not lead to a fulfilled life. Rather than leading a free and self-determined life, they become enslaved by their own material and technological creations and end up in resignation. Thoreau wanted to break free from this resignation and find out what really matters.

For Thoreau many of the things that make life supposedly comfortable are not only unnecessary but also hinder spiritual elevation and philosophical reflection. He considers philosophy as a way of life and practice, and thus accuses many philosophers of not living philosophically but only teaching philosophy. For him, “there are nowadays professors of philosophy, but not philosophers. [...] To be a philosopher is not merely to have subtle thoughts, nor even to found a school, but so to love wisdom as to live according to its dictates, a life of simplicity, independence, magnanimity, and trust. It is to solve some of the problems of life, not only theoretically, but practically.”<sup>46</sup> Thoreau thus presents himself as a true philosopher, who aims to live philosophically and to engage practically with philosophy. Thereby, he aligns himself with ancient philosophers, who lived philosophically and

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44. “Freedom is the greatest fruit of self-sufficiency.” Epicurus, *Vatican Sayings*, § 77.

45. Henry D. Thoreau, *Walden: Or, Life in the Woods* (Boston: Trickner and Fields, 1854), 98–99. During his actual stay he wrote the first draft, but the book was published several years later after many revisions. Cornelius Browne, “Henry David Thoreau’s *Walden*,” in *The Oxford Encyclopedia of American Literature*, ed. Jay Parini (New York: Oxford University Press, 2004).

46. Thoreau, *Walden*, 17–18.

practiced asceticism in order to elevate their minds. The descriptions of his experiences with nature as the experience of a cosmological unity, for example, show a strong connection to Stoic and Epicurean philosophy.<sup>47</sup>

At the beginning of the book, Thoreau outlines the project, the necessities of life and the economical circumstances that made the project possible. He records all his earnings and spendings and calculates travel costs and thus reflects on the original meaning of the word “economy” as the sustainment of one’s life and household. It is furthermore a critique of an economy that seems to be out of touch with sustaining the necessities of life, but is rather based on expansion and maximising profits. He not only contemplates these concepts but also enacts his critique, for example, by laying out two and a half acres of beans not in order to make a profit, but to experience farming and to develop self-discipline through daily routine. Although it seems to be more a spiritual exercise than farming, Thoreau does make a point about the relationship between a worker and the land. In the end, he even makes a profit of almost nine dollars.<sup>48</sup> He furthermore questions whether technological developments still serve human needs. He claims, for example, that the railroad is not built to satisfy human needs, but that humans rather satisfy the needs of the railroad, as “we do not ride on the railroad; it rides upon us.”<sup>49</sup> In a thought experiment, he asks if it is faster to travel a distance of thirty miles by foot or by train. He calculates that one can travel the distance in one day by foot, but would need to work one day to buy the ticket for the train in addition to the time of travel. As a result, travelling by foot seems to be faster.<sup>50</sup>

For Thoreau, however, the project was not a serious attempt to step outside society in order to live self-sufficiently but rather a spiritual exercise that allowed him to clear his thinking and to understand what is necessary in life. The project can thus be understood as an anthropological self-experiment to study his own experience, that is, his inner being of which *Walden* is the account.<sup>51</sup> The cabin is the central place for the inquiry as it provided the necessary reduced living conditions and restrictions.<sup>52</sup> Apart from reduction, the aspect of *making* plays an important role in Thoreau’s experiment. His living conditions are determined by what he can make, or produce with his own hands, that is, by his own physical labour. Accordingly, he philosophises through making whereby the theoretical reflection makes it possible for others to follow this process.

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47. Cf. Pierre Hadot, “There Are Nowadays Professors of Philosophy, but not Philosophers,” *The Journal of Speculative Philosophy* 19, no. 3 (2005): 229–237.

48. Thoreau, *Walden*, chap. 7.

49. *Ibid.*, 100.

50. *Ibid.*, 58.

51. Frederik Turner, “Reflexivity as Evolution in Thoreau’s *Walden*,” in *The Anthropology of Experience*, ed. Victor W. Turner and Edward M. Bruner (Champaign, IL: University of Illinois Press, 1986).

52. Huts and cabins and the resulting reduced living conditions have played an important role for many philosophers who also produced a very reduced form of philosophy. Ludwig Wittgenstein, for example, lived and wrote in a hut he built in Norway for some time in 1913. Ray Monk, *Ludwig Wittgenstein: The Duty of Genius* (London: Penguin Books, 1991), chap. 5. Martin Heidegger wrote in a hut in the Black Forest. Martin Heidegger, “Schöpferische Landschaft: Warum bleiben wir in der Provinz?,” in *Aus der Erfahrung des Denkens*, vol. 13 of *Gesamtausgabe* (Frankfurt am Main: Vittorio Klostermann, 1983). Furthermore, Le Corbusier built himself a reduced and small hut in 1951, called *Le Cabanon* in Cap Martin, in which he lived and worked each summer until his death in 1965. Niklas Maak, *Der Architekt am Strand: Le Corbusier und das Geheimnis der Seeschnecke* (München: Carl Hanser Verlag, 2010), 39–42. Cf. Günter Figal, *Heidegger in der Moderne* (lecture series, Philosophisches Seminar, University of Freiburg, summer semester 2012) MP3 audio files, [http://podcasts.uni-freiburg.de/podcast\\_content?id\\_content=151](http://podcasts.uni-freiburg.de/podcast_content?id_content=151) (accessed August 28, 2012).

The relationship between making and understanding as well as between individual autonomy and society has also been investigated by Thomas Thwaites in *The Toaster Project* (see figures 19–20), which is an attempt to build a toaster from “scratch.” What on first sight seems to be a quite silly and impossible task, is actually a deeply philosophical investigation into the condition of contemporary society. Thwaites’ premise for the project is taken from Douglas Adams’ *Mostly Harmless*, in which the protagonist of the book strands on a planet of a civilisation that is technologically less advanced than his own. Of course, he thinks that with all “his” scientific and technological knowledge he will be able to rule the planet, however, he is not even able to build a simple electric appliance. “Left to his own devices he couldn’t build a toaster. He could just about make a sandwich and that was it.”<sup>53</sup> Thwaites wonders where the things surrounding him actually come from, that is, what they are actually made of and how they are made. Surely one has at least a faint knowledge of what things are made of, but what use is this knowledge if one cannot make them oneself? Can one then really claim to know where things come from and how they are made?

The project documents Thwaites’ attempt, or rather failure, to build a toaster himself. He starts the project by taking apart a cheap toaster he bought for £3.94 and discovers that it consists of roughly 400 parts and 100 different materials. He then decides to rebuild it from five materials: steel, mica, plastic, copper and nickel which he sources himself from mines in Britain. He then tries to process the materials using non-industrial tools. During his attempt, Thwaites decided to not use the current knowledge and techniques of production but to rely on medieval production techniques that require less technical infrastructure. In the end, Thwaites managed to build something that remotely resembles a toaster and even operated for several seconds. The cost of production of the toaster totalled £1,187.54. But, of course, building a working toaster was not the aim of the project. Rather, the project uncovers the layers of knowledge in manufacturing processes and the context of the production of objects. A toaster is essentially, in Latour’s terminology, a black-box, and when Thwaites opens it up, a whole network of people, services, skills, materials, connections, forms of knowledge and problems emerge that constitute a toaster.<sup>54</sup>

For Thwaites the toaster is the *medium* for this inquiry and over the course of the project, he is confronted with many philosophical and conceptual questions, for example, what counts as “making from scratch,” what is “same or different material” or “is assembling a form of making?” On the back of the computer, with which I am writing these words it reads “Designed by Apple in California Assembled in China” but where is it actually *made*? Where does one start when discussing making something? Thwaites quotes Carl Sagan: “If you wish to make an apple pie from scratch, you first must invent the universe.”<sup>55</sup> Indeed, what does it actually mean to make something? Thwaites decides that “from scratch” means basic ingredients, that a car can count as similar to a horse, that a microwave is something like an advanced form of fire, and that plastic itself can count as a natural resource as it is

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53. Douglas Adams, *Mostly Harmless*. Quoted from Thomas Thwaites, *The Toaster Project: Or A Heroic Attempt to Build a Simple Electric Appliance from Scratch* (New York: Princeton Architectural Press, 2011), 5.

54. Latour, *Pandora’s Hope*, 183–185.

55. Thwaites, *The Toaster Project*, 40.



currently accumulating within the earth's geologic layers. Of course he could also investigate these questions theoretically, but his experiential approach to the project—that is, the first-hand experience of the inability to make a simple device such as a toaster—makes the project intriguing. For Thwaites, the toaster is the medium for his philosophical investigation, for thinking about the material world, concepts and what counts as production on a human scale. It fundamentally shows the limits of individual making and individual knowledge—and demonstrates that knowledge is for the most part located not in the individual but in the environment. It has an existential dimension as it reveals the existential dependencies on the system of production. The project furthermore asks if the world in which people live should be understandable to them.<sup>56</sup>

Both the experiments of Thoreau and Thwaites are forms of philosophical inquiry based on a first-hand experience. They both investigate what it means to make something—the one, what it means to sustain one's living conditions with one's own hands, the other, what it means to make something in a world of mass-produced technical devices. In both projects, the subjective experience of designing and making confronts them with philosophical and conceptual questions. What are the necessities of life? What does life have in store for me? Where does stuff come from? What does it mean to make? Where does the division of labour end and what does its end consist of? Surely, one could investigate these questions scientifically or could search what others have said about them; but the point is that they are not answered *for them* and can only be answered *by them*. They are in some sense unanswerable questions, but they encourage the audience to try to answer these unanswerable questions for themselves. The audience can re-experience this inquiry to a certain extent through the works—in Thoreau's case possibly more intimately—and thus the projects can also be considered as forms of philosophical inquiry for the audience. Both do not give clear cut answers to the audience, but rather transform the audience into thinkers themselves.<sup>57</sup>

### Design Objects as Philosophical Inquiry

Design objects are not only media for a philosophical inquiry through designing and making, they are also the manifestations of the inquiry. However, they do not communicate philosophical conclusions in form of objectifiable knowledge, but rather provide the audience with the means to (re-)experience the philosophical questions and invite them to draw their own conclusions. For this reason, they often ask more questions than they give answers. This is also the case with philosophical texts, as they do not present knowledge, but require the audience to follow a line of argument or thought and thus (re-)think the questions themselves.<sup>58</sup> Philosophical artefacts as well as philosophical texts thus *mediate* philo-

56. Cf. Arnold Gehlen, *Die Seele im technischen Zeitalter: Sozialpsychologische Probleme in der industriellen Gesellschaft* (Frankfurt am Main: Vittorio Klostermann, 2007), 24.

57. Cf. Browne, "Henry David Thoreau's *Walden*"

58. Wittgenstein, for example, claims in the foreword to the *Tractatus* that possible only someone who has thought about the same questions as him will understand them. In all of his writings he presents his observations, but mainly without argumentative justification. Rather, his remarks require the reader to *think the thoughts themselves*. Cf. James C. Klagge, *Wittgenstein in Exile* (Cambridge, MA: MIT Press, 2011), chaps. 1–3.

sophical questions as they allow the audience to engage with the questions by *experiencing* them for themselves. Thereby texts, and even more so artefacts, need to be read *as philosophy* and not as design or art, that is, not in terms of their aesthetic, functional or ethical value, but in terms of asking interesting philosophical questions. In the following, I will examine two projects that create concepts and enable the audience to engage in philosophical questions.

In February 2001 Michael Landy destroyed all his material possessions in the project *Break Down* (see fig. 21). What sounds like an act of pure destruction is actually an complex philosophical inquiry. Landy started the project by making a detailed inventory of every item he owned, from his passport and birth certificate to his car, clothes and art objects. This inventory took about one year to complete and added up to 7,227 items in total. The destruction of all these itemised objects then took place with an elaborately constructed disassembly line, which was set up on the ground floor of the former C&A department store on Oxford Street in London—right in a centre of consumerism—and was visible through the shopping windows. The space was open from 10 am to 6 pm, and not only an art audience but also passers-by entered the space; attracting over 45,000 visitors in total during the two-week-long installation. Upon entering the space, the visitors could watch Landy and his team of twelve co-workers in boiler suits taking apart all of his belongings and shredding the parts. After two weeks nothing but granulate was left, which was filled into transparent plastic bags and went to a landfill afterwards. Consequently, Landy was left with nothing but the clothes he was wearing. Although Landy reflects on concepts such as material and sentimental value during the project, his intention was to create “art,” although he decided not to sell any part of the project. The project could thus be regarded as a mere spectacle, especially as his question “what is it that makes consumerism the strongest ideology of our time?” remains largely unanswered.<sup>59</sup>

However, he created a situation and reflective space for an audience to ask these questions themselves and to further explore their own relationship to material objects. The disassembly line creates a rational system for the destruction of his belongings and deconstruction of Landy’s material life. Through the semi-automatic nature of the process the destruction of the items becomes seemingly inevitable; so that one can almost lean back and watch the drama unfold in front of one’s eyes. The audience can follow each individual item on the disassembly line, watch it being taken apart, shredded and ultimately transformed into granulate. The situation is almost surreal considering the location where one is surrounded by shops full of consumer goods.

Through the slow process of destruction, however, Landy creates an almost meditative situation that raises fundamental philosophical questions, for example, about the difference between monetary and sentimental value, memory and identity as well as the

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59. Parts of a Conversation between Michael Landy and Julian Stallabrass, First published in 2001, [http://www.artangel.org.uk/projects/2001/break\\_down/interviews/michael\\_landy\\_and\\_julian\\_stallabrass\\_2001](http://www.artangel.org.uk/projects/2001/break_down/interviews/michael_landy_and_julian_stallabrass_2001) (accessed September 8, 2012); Michael Landy on Break Down, April 2002, [http://www.artangel.org.uk/projects/2001/break\\_down/about\\_michael\\_landy/michael\\_landy\\_on\\_break\\_down](http://www.artangel.org.uk/projects/2001/break_down/about_michael_landy/michael_landy_on_break_down) (accessed September 8, 2012). The Eye: Michael Landy, DVD (London: Illuminations, 2005); Michael Wright, “Madman at C&A,” *The Evening Standard*, February 1, 2001; Richard Dorment, “A Deconstructed Life,” *The Daily Telegraph*, February 14, 2001.

general importance of material objects. The audience perhaps makes a mental inventory of their own possessions: Which items would I destroy? Which ones are necessary and which ones could be disposed of? Which ones are fundamentally part of me and which ones could I live without? What would it mean for me, if all my possessions were destroyed, for example, in a fire?

Landy decided that for him nothing is necessary and thus he rids himself of everything including his artist's archive. However, through the destruction of the art objects he possesses, including a print by a Turner Prize winner, he also raises questions about the status of art objects as he treats them as any other object. Furthermore, it also raises questions about the status of art on another level, as some visitors mistook the installation as a marketing and sales strategy.

Of course, Landy's aim was to produce "art," but this is also the weakness of the project in terms of a philosophical inquiry, at least when a philosophical inquiry is seen as a form of self-reflection. Although he may have considered the consequences the destruction would have for his life, he did not turn the project into an anthropological study investigating these effects. This, however, seems to be the most interesting part of the project. A documentary film that was made about his life after the project, shows the problems he runs into trying to acquire back some necessary items such as credit cards, passport, keys, a shaver and so on.<sup>60</sup> Landy's project does not document the effect the destruction had on him, although this would have allowed for a more nuanced reflection on the material condition in which humans live and on the importance of material belongings, at least in Western societies. It would have asked questions, such as: What does it mean not to have any material objects at all and to start from scratch again? However, in these two weeks Landy nevertheless created a situation that facilitated a philosophical reflection on the status of material objects in human life. By creating the disassembly line, he created a medium through which the audience could clarify or reconsider their concepts, for example, of identity or the worth of material possessions.

Design objects, however, can also lead to a direct change of concepts with vast implications for everyday life. As Lewis Mumford has shown, the introduction of the mechanical clock changed how people think about time quite radically and thereby also how people think about themselves and society.<sup>61</sup> If the introduction of the mechanical clock can lead to such a profound change of the concept of time, could then the introduction of a different clock lead to a different conception of time? This is at least the aim of the *10,000 Year Clock* (see fig. 22) conceived and designed by Danny Hillis and built by the Long Now Foundation. The aim of the foundation is to engage people in long-term thinking in order to be able to face global problems in a more farsighted way. If a clock produces rather than measures time, a clock with a longer time span than 24 hours could make people think in longer time spans—so the premise of the project.

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60. *The Man Who Destroyed Everything*, BBC Four, March 2, 2002.

61. Mumford, *Technics and Civilization*, 14–17. See page 53.

For Stewart Brand, one of the founders of the Long Now Foundation, such a clock could achieve a change in people's conception of time in a similar way as the first photograph showing the entire planet Earth, *The Blue Marble* (see fig. 24), has changed the conception of the planet as a whole, triggering the environmental movement. Before the existence of this image, people theoretically knew that Earth is one planet and therefore a single entity, but could not *see* and *experience* this. For Brand, the clock would thus need to be impressive and popular enough in order to reach a similar iconic status and to trigger a public discourse about long-term thinking.<sup>62</sup>

The *10,000 Year Clock* is the attempt to construct an artefact that would permit one to adopt a different conception of time. Hillis describes his concept for the clock as follows: "I would like to propose a large (think Stonehenge) mechanical clock, powered by seasonal temperature changes. It ticks once a year, bongs once a century, and the cuckoo comes out every millennium."<sup>63</sup> The first prototype of the clock was finished on December 31, 1999 and is on display at the Science Museum in London. It is a mechanical digital computer that displays the year in a five digit format (based on the Gregorian calendar), horizons that show the rise and set of the sun and the moon as well as their current positions, the lunar phase, and the visible stars of the night sky. The clock thus sits in a long tradition of astronomical clocks, orreries and planetariums.

The final *10,000 Year Clock*, however, is planned on a monumental scale. It is to be housed in an underground cavern inside a mountain and has an architectural dimension of about 60 meters compared to the 2 meter prototype. In addition to the functions of the prototype, it displays more information, such as alternative calendars and the movements of the visible planets. It could also chime differently every day for 10,000 years. Furthermore, the cavern is to incorporate a library and thus act as time capsule for the storage of knowledge. The idea is that the clock will become a site of pilgrimage in a remote location where visitors can have a spiritual experience with the shown time and may contemplate the centuries to come.<sup>64</sup>

The design and construction of the clock, however, also required the designers to engage in long-term thinking and to reflect on conceptual and philosophical questions in order to serve its intended use and to ensure its proper functioning for 10,000 years—something no artefact has ever achieved. The questions, for example, concern the type of artefact, its use, its location, its maintenance and its power source. Clocks are perhaps the most appropriate artefacts in order to engage with time; astronomical clocks in particular have always been fascinating to humans since they are models of the heavens and thus provide the means to predict future events such as solar eclipses. Many old clocks are still in opera-

62. Stewart Brand, *The Clock of the Long Now: Time and Responsibility* (New York: Basic Books, 1999), 3.

63. Danny Hillis quoted from *Ibid.*, 3. Cf. Danny Hillis, "The Millennium Clock," *Scenarios*, Wired Special Edition, 1995, <http://www.wired.com/wired/scenarios/clock.html> (accessed September 9, 2012).

64. *Ibid.*, chaps. 9, 11; Stewart Brand, "The Long Now," TED Talk, 2004, [http://www.ted.com/talks/stewart\\_brand\\_on\\_the\\_long\\_now](http://www.ted.com/talks/stewart_brand_on_the_long_now) (accessed September 3, 2014); Kevin Kelly, "Clock in the Mountain," The Long Now Foundation, <http://www.longnow.org/clock> (accessed September 9, 2012); A full scale prototype is currently built in the Sierra Diabolo Mountains near to Van Horn in Texas. The final clock is supposed to be built inside Mount Washington near Ely in Nevada.

tion today, which may indicate that people are likely to take care of them for a long time. The use of the clock should furthermore be a special event and a kind of mythical and spiritual experience. This may increase a long survival of the clock since spiritual places have a better chance of surviving, and have often been used to preserve knowledge, such as mediaeval monasteries that preserved the knowledge of the ancient world. The location thus needs to be both a place for a spiritual experience and a safe storage site for the clock. A mountain is thus an ideal place as it is not only a relatively safe storage site but also often a spiritual place, such as the Acropolis of Athens or Ayers Rock (Uluru) in Australia. However, since humans are also the greatest threat to the clock's survival, the clock should be stored somewhat remotely and hidden; perhaps similar to the artefacts of ancient cultures that survived because they remained buried. The clock thus needs to be constructed in such a way that it can function autonomously and without the need for human maintenance. This also requires a steady power source. Although humans could wind up the clock in some form of ritual, a power source independent of humans would be more reliable. The designers considered many potential sources, but decided using the sun's energy in the form of the difference in temperature between day and night as the power source, as it would even work should the atmosphere be clouded by volcanic eruptions.<sup>65</sup>

The *10,000 Year Clock* is an attempt to construct an almost mythical artefact that would make it possible for humans to experience time differently. As a monument it may allow one to relate to the future in a similar way as one relates to the past through monuments of ancient cultures such as the pyramids of Giza. But whereas ancient monuments were not built for that purpose, the clock deliberately takes future visitors into account. It is unclear, whether it will continue serving for this purpose for 10,000 years and perhaps it will be used very differently in the future, similar to the pyramids that transformed from being a burial site to a stone pit and finally to a tourist attraction. However, when considering that the latter are about 4,500 years old, they can give the visitor a different sense of time. The visitors of the clock thus need to engage with the clock *as* an object for conceptual change. Although the clock may lead to such a change unconsciously, as it was the case with the mechanical clocks described by Mumford, for a *philosophical reflection* on concepts, I need to *see* the clock as providing a new framework of time—that is, I need to take a philosophical interest in it and see it as philosophy. The clock may thus enable one to develop a new concept of time, one in which the present is part of a larger time-frame and thus of a long now (see fig. 23).<sup>66</sup>

Both *Break Down* and the *10,000 Year Clock* are artefacts that make it possible for the designer as well as the audience to engage in philosophical questions. However, they do not illustrate philosophical questions or concepts, but rather produce questions and concepts themselves. In the case of the former, these are questions about the relationship between material artefacts and the self. In the case of the latter, these are questions concern-

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65. Ibid., chaps. 1, 9, 10, 11; Stewart Brand, "The Long Now," TED Talk, 2004, [http://www.ted.com/talks/stewart\\_brand\\_on\\_the\\_long\\_now](http://www.ted.com/talks/stewart_brand_on_the_long_now) (accessed September 3, 2014).

66. Ibid., chap. 6.

ing how humans relate to future events and thus perhaps a new concept of time. These questions and concepts are not explored abstractly but concretely through material artefacts that provide the means to *experience* them. The aesthetic qualities of the artefacts are thus crucial to the experience and to only an arbitrary form of presentation.

### Conclusion

Design as philosophical inquiry does not aim to relate design to academic philosophy, but is rather a way of seeing design *as* philosophy—*as* philosophy conceived in a cosmopolitan sense, that is, as concerned with questions about the good life, understanding, values, and the human condition in general. The aim for design is thus not to illustrate philosophical questions, ideas or concepts, or to be a mere tool or method for philosophical inquiry. To regard design as a philosophical inquiry is rather to view it as a material form of thinking that can be philosophical when it is self-reflective and when design objects are used as media for this reflection. On the one hand, it can be a form of inquiry for a *designer* through designing, that is, through the activity of designing and making objects with these objects as the result of the investigation. On the other hand, it can be a form of inquiry for an *audience* whereby the inquiry is facilitated or instigated by design objects. In both instances design objects are at the centre of the inquiry and need to create philosophical questions and problems as well as facilitate reflection on them. In order to produce a philosophical *experience* or philosophical *concepts*, design objects thus need to: (1) pose a philosophical problem; (2) make this problem understandable; (3) lead to contemplation and reflection on the problem.

In the following chapters I will argue that design as inquiry can achieve this reflection through three complementary approaches: *fictions*, *models* and *simulations*. Fictional scenarios or thought experiments allow one to investigate hypothetical situations and to explore alternative value systems and situations, world-views and perspectives. Models allow one to understand something that cannot be known or experienced otherwise, both as models of and for something. Simulations allow one to stage experiences that would not be possible to have in everyday life and thus make it possible to investigate alternative perspectives and concepts through direct experiences.

## Chapter 5: Tangible Thought Experiments

All design objects are at some stage fictional—as ideas, proposals, sketches, models or prototypes they present possible objects and worlds. As Victor Margolin has observed, “as creators of models, prototypes and propositions, designers occupy a dialectic space between the world that is and the world that could be.”<sup>1</sup> The aim, however, is usually not only to present possible objects and worlds, but to turn them into actual objects and worlds. These fictional design objects can probably best be understood as *visionary proposals*, as they seem to anticipate “the future” and seem to be considered as actual, rather than fictional, objects.

One of the most famous examples of such a visionary design object is the General Motors Pavilion, also known as *Futurama* (see fig. 25), designed by Norman Bel Geddes for the New York World’s Fair in 1939. Inside the pavilion, a landscape and a metropolis of the 1960s was portrayed that was centred around the automobile—with multilane highways, large intersections and cities that could accommodate a large increase in traffic. The audience was moved through the exhibit on seats mounted on a conveyor belt. The way in which this miniature landscape was presented turned the audience into mere spectators of the things to come rather than into active participants in creating the future or thinking about alternative futures. Consequently, on leaving the pavilion the visitors were handed badges reading “I have Seen the Future” (see fig. 26). The exhibit presented this particular future as inevitable and excluded alternative possibilities—of course it was the preferred future of General Motors. Now that the landscape of the United States closely resembles that of the *Futurama* in the 1960s, the exhibition is in hindsight rendered a non-fictional one.

Most discussions about fiction and design nevertheless are based on the distinction between present and future. Bruce Sterling, for example, conceives fictional design as forward-thinking design and although he opposes *design fiction* to *science fiction*, he involuntarily aligns both since he excludes understandings of fiction that are not future-directed.<sup>2</sup> Julian Blecker on the other hand aligns design fiction with science fiction and future speculation in a straight-forward sense. For him design fiction is speculation about the future (or futures) through models and prototypes.<sup>3</sup> Both conceptions, however, exclude views on design fiction that are not future-directed, since they use the term “fiction” as an equivalent to “future.” Furthermore, *speculative design* is a term that is used to describe fictional design objects that aim not to propose the realisation of a particular future, but to open up a discussion about possible futures.<sup>4</sup>

However, in design, the term “fiction” is also used to describe objects that are intended to remain fictional rather than become real. Anthony Dunne, for example, opposes conceptual design to commercial design and describes one as fictional and the other as real. Fictional design objects are thus seen as objects that are not commercial or mass-produced and therefore unreal. What he calls *real fiction*, however, is a space between the real and the

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1. Victor Margolin, “Design, the Future and the Human Spirit,” *Design Issues* 23, no. 3 (2007): 4–15.

2. Bruce Sterling, “Design Fiction,” *Interactions* 16, no. 3 (2009): 20–24.

3. Julian Blecker, *Design Fiction: A Short Essay on Design, Science, Fact and Fiction* (Near Future Laboratory, 2009).

4. See page 44.

fictional, in which alternative uses and conceptual products can be articulated outside the marketplace.<sup>5</sup> Dunne furthermore uses the term *value fiction* to describe design as a form of cultural thought experimentation. He thus considers value fiction as opposed to science fiction, since the latter is a way of imagining impossible technologies in traditional cultural settings, whereas the former is a way of imagining alternative uses for existing technologies and thereby different cultural values. According to Dunne, the aim of value fiction is to encourage the audience to question the mechanism that defines design objects as fictional or unreal.<sup>6</sup>

Design fiction can, however, also be understood more in literary and *poetic* terms, than in an opposition between present and future or real and unreal. Here, fiction is seen as a (narrative) construction of a possible world that allows to investigate and explore a certain issue or topic. For design as philosophical inquiry, the poetic conception of fiction seems to be more appropriate than a temporal or a categorising one, as the aim is to explore philosophical questions and not to propose a particular future or alternative objects. Possible worlds are imagined through design objects, not as things to come, but rather as a way of questioning and reflecting on the world.<sup>7</sup> In philosophy, fictional elements, such as *thought experiments*, *fictional entities* or *indirect discourse*, are used to explore conceptual or ethical questions. These hypothetical situations or entities make it possible to explore different value systems and can thus create different perspectives and new concepts.

In this chapter, I will argue: First, that fictions play an important role in philosophical as well as scientific inquiry, both as heuristic devices and as forms of world-making. Second, that these fictional explorations in philosophy can best be understood as thought experiments, that is, as constructed situations, in which “what if” questions can be asked and possibilities investigated—not only theoretically, but also in experiential terms: poetically through literature, visually through film and tangibly through design. Third, that design can be considered as a philosophical inquiry both in terms of presenting fictional worlds and reflecting on possible worlds through design objects. Fourth, that fictional design objects have an ambiguous status, as they both seem to belong to a fictional world as well as to the real world in which they exist as material objects. This nature of fictional design objects, however, can lead to a particularly potent experiential form of inquiry.

### Reality and Possibility

Fictions are different from facts. Whereas facts are supposed to be accurate descriptions of reality, fictions are not. Etymological, however, both words denote making, creating or pro-

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5. Dunne, *Hertzian Tales*, 68.

6. Anthony Dunne and William H. Gaver, “The Pillow: Artist-designers in the Digital Age,” *CHI '97* (1997): 361–362; Dunne and Raby, *Design Noir*, 63.

7. Le Corbusier, for example, saw himself more as a poet than as an architect, and consequently described himself as a writer (*Homme de lettres*) in his passport. Although this is somewhat true as he wrote more than he actually built, it is more a question of attitude and of aims in architecture. For Le Corbusier the final goal of architecture was poetry rather than building; and poetic imagination as an intellectual activity and philosophical inquiry. Maak, *Der Architekt am Strand*, 120–121; Le Corbusier furthermore collected and photographed stranded and bizarrely formed objects on the beach, such as stones, wood, bones, mussels or snail shells which he called *objets à réaction poétique*, objects with an poetic potential. He saw the poetic potential of these objects in their questionable origin, as they raise questions, provoke presumptions and irritate both perception and thinking. *Ibid.*, 49–53.



ducing something.<sup>8</sup> In this regard, facts are not just found out there in reality, but are produced and made just as fictions are. But whereas facts claim to describe reality accurately, fictions aim to produce a plausible unreality. A similar relationship can be noted between making and truth, at least in the Latin language, in which, according to Vico, both words were used synonymously.<sup>9</sup> Consequently, for Vico, truth is something that humans have made; and humans can only know for sure that what they have made themselves, as only then they can know the cause and origin of things. From such a constructivist perspective the distinction between fiction, fact and truth breaks down as they are all made up and thereby fictions—though sometimes more and sometimes less useful. From this view the difference between making and knowing vanishes as one can only know what one has made. However, whereas fictions disclose themselves as made, facts usually do not; they are not regarded as something made but rather as true representations of reality.

Fictions are useful devices for structuring life. Humans make up things such as states or laws to structure their world in which these fictions are seen *as if* they were real. In philosophy many things that seem to be real have been considered as fictional. Jeremy Bentham, for example, considers motion, relation, power and matter as fictional entities as well as rights, obligations and duties. David Hume considers the self as a fictional entity and, for Bertrand Russell, even ordinary things such as places or persons are constructed.<sup>10</sup> However, in everyday life and in philosophical and scientific inquiry most of these entities are treated as if they were real. Hans Vaihinger has developed a theory of this “as if” relationship from a pragmatic point of view. For him, humans treat things as if they were real in order to be able to orient themselves in the world. These fictions, however, do not correspond to “reality” or to the “things-in-themselves,” their role is rather “to provide us with an *instrument for finding our way about more easily in this world.*”<sup>11</sup> According to Vaihinger, fictions are different from hypotheses, as they cannot be verified but need to be accepted. Among these fictions, he lists things such as atoms, laws and morals as they are all conceptual fictions that give structure to life or discourses. The concept of atoms, for example, has been a very potent fiction for scientific inquiry, although what is currently called “atom” is not the indivisible part the ancient Greek atomists had conceived. These fictions are *heuristic fictions*, as they have a transitional function and can lead to further inquiry and understanding that would not be possible without them. Scientific inquiry, for example in physics, relies on the assumption that the physical world exists in rational terms of causes and effects as otherwise a rational inquiry would not be possible. The existence of the world, however, is nothing that can be verified but something that is presupposed. Thus, fictions are nonrational acceptances of things that cannot be explained rationally.<sup>12</sup> Vaihinger derives the concept of

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8. The word “fiction” is derived from lat.  *fingere*  (creating, inventing, imagining, producing, composing, making up, pretending, forging) and the word “fact” from lat.  *facere*  (doing, making, creating, composing).

9. According to Vico, in Latin  *verum*  (the truth) and  *factum*  (what is made) are used interchangeably. See note 105 on page 50.

10. Edward Craig, ed.,  *Routledge Encyclopedia of Philosophy*  (London: Routledge, 1998), s.v. “Fictional Entities.”

11. Hans Vaihinger,  *The Philosophy of As If: A System of the Theoretical, Practical, and Religious Fictions of Mankind* , trans. C. K. Ogden, 2nd ed. (London: Kegan Paul, Trench, Trubner & Co, 1935), 15.

12.  *Ibid.* , pt. 1, chaps. 1–18.

heuristic fictions from Kant, for whom these fictions are abstract concepts of the mind, which do not have any relation to direct experience but are used in order to think rationally and thereby have a productive role in the thought process.<sup>13</sup>

Whether something is considered as fictional or as real is, however, often a matter of context and frame of reference. What may seem fictional in one context may seem real in another and vice versa. This is nicely illustrated in a scene in Woody Allen's movie *Annie Hall*. A young boy sits at a psychiatrist's office together with his mother since he refuses to do his homework. When asked to explain his reasons for this, he says that he does not see the point in doing his homework anymore as the universe is expanding and will eventually collapse and thereby destroy all life.<sup>14</sup> Here the scientific framework of reference is quite different from the everyday experience—and scientific "facts" are irrelevant or even counter-productive for everyday life. What seems to be true in one framework of reference seems to be a fiction in another. Nelson Goodman, thus states that only within a certain framework things can become fictions or facts.

The physicist takes his world as the real one, attributing the deletions, additions, irregularities, emphases of other versions to the imperfections of perception, to the urgencies of practice, or to poetic license. The phenomenalist regards the perceptual world as fundamental, and excisions, abstractions, simplifications, and distortions of other versions as resulting from scientific or practical or artistic concern. For the man-in-the-street, most versions from science, art and perception depart in some ways from the familiar serviceable world he has jerry-built from fragments of scientific and artistic tradition and from his own struggle for survival. This world, indeed, is the one most often taken as real; for reality in a world, like realism in a picture, is largely a matter of habit.<sup>15</sup>

For Goodman there are thus many different "real worlds" depending on the context and frame of reference. Furthermore all of these "real worlds" cannot be combined into one coherent "reality" as "we do not welcome molecules or concreta as elements of our everyday world, or combine tomatoes and triangles and typewriters and tyrants and tornados into a single kind."<sup>16</sup> All these different worlds serve different purposes of explanation. Goodman calls the creation of these different worlds "worldmaking" and does not distinguish between real and unreal worlds but between actual and possible worlds. For him, possible worlds are always rooted in actual worlds, to which they refer. What might seem fictional at first may sometimes even become actual—as is the case with scientific discoveries such as "vitamins," "bacteria," or "radiation."<sup>17</sup> According to Goodman, worldmaking is a fictionalising act, in

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13. Kant, *Critique of Pure Reason*, 659 (AA, B 503).

14. "Doctor: Why are you depressed, Alvy? Mom: Tell Dr. Flicker. Mom: It's something he read. Doctor: Something he read, huh? Alvy: The universe is expanding. Doctor: The universe is expanding? Alvy: Well, the universe is everything, and if it's expanding, someday it will break apart and that would be the end of everything! Mom: What is that your business? He stopped doing his homework! Alvy: What's the point? Mom: What has the universe got to do with it? You're here in Brooklyn! Brooklyn is not expanding!" *Annie Hall*, directed by Woody Allen, Rollins-Joffe Productions, 1977.

15. Nelson Goodman, *Ways of Worldmaking* (Indianapolis, IN: Hackett Publishing, 1978), 20.

16. *Ibid.*, 21.

17. *Ibid.*, 103–104.

which these different worlds are created, not from scratch but by remaking existing worlds through strategies such as composition and decomposition, weighting, ordering, deletion and supplementation or deformation of certain elements of these worlds. The description of a world is always dependent on the frame of reference for that particular world; and it is therefore not possible to describe a world without any frame of reference, as it is through this frame that a particular world is accepted as an actual world. For this reason different worlds can exist as actual worlds for different people and groups with different frames of reference.<sup>18</sup>

As a result, fictions or imaginary worlds cannot be completely detached from actual worlds. They are furthermore not unreal as they exist in some sense. Niklas Luhmann thus suggests viewing fictions not as unreal but rather as *doubled reality*. To conceive these fictional realities as doubled reality makes it possible to distinguish between the “real reality” and “realities” of other kinds, such as the apparent realities of fictional literature. Fictional or apparent realities are then realities besides the real reality rather than unrealities.<sup>19</sup> Hans Blumenberg furthermore observes that literary fictions are not fictionalised reality but rather fictionalised reality of reality, or realities, because literary fictions create conditions, which normally cannot be observed in reality. It follows that fictions create conditions in which something seems to be realistic; however, in order to be realistic, literary fiction cannot be real.<sup>20</sup> Fictions may then be regarded not as a fanciful illustration of an unreality but rather as a mirror of reality that make it possible to see the world and oneself from a different and distanced perspective.<sup>21</sup>

Besides conceiving fictions in terms of the difference between real and unreal or actual and possible, Wolfgang Iser suggests viewing fictions as the transitional element between the real and the imaginary. He therefore introduces a triadic relationship between the *real*, the *fictive* and the *imaginary*, in which a fiction can be understood as a transitional space or object. In this model a fiction is realised in a fictionalising act, through which the real can become irrational or the imaginary can become real. The real is thereby seen as a reference point for understanding the fictive and the imaginary as the realm of abstract possibilities.<sup>22</sup> For Iser, not only artistic fictions, such as literary fiction, can be described with this model but also epistemic, heuristic or social fictions. However, whereas the former present themselves as fictional in order to function, the latter conceal their fictionality for the same purpose. A fiction is thus a world “in brackets” that is seen as if it were a real world. As such it is not an empty play of imagination, but a description of an imaginary case.<sup>23</sup> Fictions are therefore not fictitious as they do not aim to deceive, that is, they cannot be described as wrong or false. The status of a fiction is accepted from the outset and the

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18. Ibid., 1–17.

19. Elena Esposito, *Die Fiktion der wahrscheinlichen Realität* (Frankfurt am Main: Suhrkamp Verlag, 2007), 7–8; cf. Niklas Luhmann, *Die Religion der Gesellschaft* (Frankfurt am Main: Suhrkamp Verlag, 2000), 58–60.

20. Esposito, *Die Fiktion der wahrscheinlichen Realität*, 17; cf. Hans Blumenberg, “Wirklichkeitsbegriff und Möglichkeit des Romans,” in *Nachahmung und Illusion*, ed. Hans Robert Jauß (München: Wilhelm Fink Verlag, 1969), 27.

21. Esposito, *Die Fiktion der wahrscheinlichen Realität*, 84.

22. Wolfgang Iser, *Das Fiktive und das Imaginäre: Perspektiven einer literarischen Anthropologie* (Frankfurt am Main: Suhrkamp Verlag, 1991), 20nn2–4, 23, 49–50.

23. Ibid., 36–40.

presented world is only evaluated according to the internal coherence and not in relation to the real world. Entering a fictional world means to accept the conditions of the fiction and in some sense, to suspend one's disbelief about the presented world, as well as to see the fiction *as if* it were a real situation, but not *as* a real situation. It is a simulation of a situation, in which one can experience the situation as if it were real but at the same time knows that it is a fiction. The status of a fiction as fiction can therefore not be decided by the audience, but has to be stated from the outset in the act of producing fictions, not with the aim to deceive but with the aim to make a possible world experienceable.<sup>24</sup>

Fictions can then be understood as possible worlds if their internal framework is coherent, irregardless of whether they are literary, philosophical or scientific fictions. According to Hume, anything that can be conceived by humans can be regarded as a possibility. "*Whatever the mind clearly conceives includes the idea of possible existence, or in other words, that nothing we imagine is absolutely impossible. We can form the idea of a golden mountain, and from thence conclude that such a mountain may actually exist. We can form no idea of a mountain without a valley, and therefore regard it as impossible.*"<sup>25</sup> For Hume, only those things that humans cannot imagine are impossible—they are impossible to imagine. Here, the possible is not only understood in terms of the real, that is, in terms of what could or could not become real, but in terms of what is *imaginable*. What is possible, however, can only be determined retrospectively. According to Henri Bergson, the possible should not be considered as something proceeding the real, because only when something has become real it seems to have been possible. For Bergson it is an illusion to think of the reality of tomorrow as already being contained in the actual present as it is only tomorrow when tomorrow's reality seems to have been contained in today's reality.<sup>26</sup> According to Bergson, art is both a creation of the real and of the possible through the creation of an art object, as an art object is the creation of a possible world within the real world. It is both the creation of the possible and of the real, as it is through the creation of this world that the real becomes possible rather than the possible becoming real.<sup>27</sup> Bergson thus argues against determinism and the unfolding of a predefined plan and for the capacity of art to create new possibilities. Since it is sometimes hard to see what is possible, a careful illustration of a possible situation can show and open new possibilities but also the individual, social or political consequences these possible worlds would have.<sup>28</sup>

In design, possible worlds are realised through fictional design objects, that is, through objects, artefacts, products or services that could possibly exist within the coherent framework of a possible world. Hence, design as inquiry can be conceived as an inquiry into

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24. Cf. Gregory Currie, *The Nature of Fiction* (Cambridge: Cambridge University Press, 1990), 11. See pp. 92–96. The term "suspension of disbelief" was coined by Samuel T. Coleridge, *Biographia Literaria: Or Biographical Sketches of My Literary Life and Opinions* (London: Georeg Bell and Sons, 1898), 145 (chap. 14).

25. Hume, *A Treatise of Human Nature*, 32 (bk. 1, pt. 2, sec. 2).

26. Henri Bergson, "The Possible and the Real," in *The Creative Mind: An Introduction to Metaphysics* (New York: Citadel Press, 1992), 99–101.

27. *Ibid.*, 103–104.

28. Cf. Oliver R. Scholz, "Kunst, Erkenntnis und Verstehen: Eine Verteidigung einer kognitivistischen Ästhetik," in *Wozu Kunst? Die Frage nach ihrer Funktion*, ed. Bernd Kleinmann and Reinold Schmücker (Darmstadt: Wissenschaftliche Buchgesellschaft, 2001), 47.

possible worlds through fictional design objects; following Iser's triadic model, these objects also exist in the real world as materialisations of the possible world. Design objects, whether fictional or actual, facilitate the discovery of new possibilities by creating new worlds and thereby extending the limits of what is considered as possible—how humans could live or what humans could become. Possibilities furthermore cannot be judged in terms of right or wrong but in terms of being desirable or undesirable. Possibilities, however, are different from potentialities. A potentiality describes the inherent potential of something becoming possible—something is possible and it is only a matter of realising it according to its potential. A car, for example, has the potential to drive a certain speed depending on its internal configurations and the external conditions of the road, weather and so on—if all these conditions are ideal, then it is possible for the car to drive this speed. Possibility understood in this way means that something can happen according to certain prerequisites and potentials. Possibility, however, can also be understood in terms of the unpredictable and unexpected—as something that is only seen as possible in hindsight, as it were.<sup>29</sup> Here, possibilities are not a matter of deducting from potentials, but rather a matter of creating new possibilities and realities. As a form of inquiry, design can probably best be regarded as a form of speculation or poetic imagination—not only about what is potentially possible, but also into possibilities that seem impossible.

### Thought Experiments

In philosophy, a thought experiment is a form of hypothetical reasoning that aims to generate consequences from a set of suppositions.<sup>30</sup> It is a mental set up that allows one to think things through and to make a subsequent point based on the conclusions drawn from the experiment. According to Nicolas Rescher, there are therefore important differences between thought experiments and mere speculations (in form of simple “what if ...” questions) as they need to facilitate an inquiry into some larger set of questions and problems. In other words, they need to permit one to draw some generalisable conclusions from them. For Rescher, thought experiments are not just substitutions for experiments that could be carried out, but are often experiments that could not be carried out at all. In this regard, “they are not a matter of thinking about experiments, but are, rather, experiments in thinking.”<sup>31</sup> They can, for example, include suppositions in form of counterfactual or subjunctive conditionals, which cannot be tested through real experiments but only through hypothetical reasoning. For Rescher, a thought experiment has to include the following elements: “(1) the *supposition* that it projects; (2) the *context of information* to which this supposition is being introduced; (3) the *conclusion* that is then derivable by means of this supposition; (4) the *larger question* it is designed to answer (i.e., the lesson that is drawn from it); and (5)

29. Cf. Schwarte, *Philosophie der Architektur*, 351.

30. The term “thought experiment” (*Gedankenexperiment*) was popularised by Ernst Mach to describe experiments that are carried out in thought alone. He conceived these experiments as substitutions for actual scientific experiments due to economical reasons and therefore suggests that every experiment should be preceded by a thought experiment to anticipate possible outcomes. Ernst Mach, “On Thought Experiments,” in *Knowledge and Error* (Dordrecht: D. Reidel Publishing, 1976).

31. Nicholas Rescher, *What If? Thought Experimentation in Philosophy* (New Brunswick, NJ: Transaction Publishers, 2005), 6.

the *course of reasoning* through which the preceding considerations are to be seen as providing the grounds for the purposed answer/lesson.”<sup>32</sup> Thought experiments thus include five overall stages: “supposing, context-specification, conclusion-deriving, lesson drawing, and synoptic reasoning.”<sup>33</sup> The outcome, however, is not the conclusion drawn from the specific experiment but the larger impact this conclusion has. Furthermore, thought experiments tend to have not a single outcome, but a range of possible outcomes of which some are more plausible than others. Although the term indicates that they are carried out in the mind, many forms of thought experimentation make use of a wide range of equipment and instruments, for example, models, drawings or scenarios in order to simulate a possible world.<sup>34</sup> Thought experiments seem to be particularly well suited for philosophical inquiry as the aim is not to generate observations but conceptualisations, and since they can help to exemplify, to clarify or to illustrate concepts. But, according to Rescher, it is not the topic or conclusion that makes a thought experiment philosophical but the reflection on the larger implications for human understanding and self-understanding that can be drawn from the conclusions. Thus, for Rescher, the “aim of philosophical thought experiments is getting clear about how people do—or rather, should—think about issues at stake.”<sup>35</sup> Philosophical thought experiments are therefore not only *experiments* but also *arguments*. They may be able to *show* how something could be, but they do not *prove* that it is.

In philosophy, thought experiments are widely used to explore conceptual or moral questions. Some of the most famous thought experiments, however, address epistemological questions. Most of these thought experiments are in some sense variants of Plato’s *Analogy of the Cave* (see fig. 17). The analogy supposes that humans may live in some sort of simulation environment, in which their perception is controlled or distorted by external forces that prevent them from seeing the true nature of the world.<sup>36</sup> Descartes followed the argument that perception cannot be trusted as it may be distorted by an “evil deceiver” and that therefore the only thing he can be sure of is that he himself exists because he thinks—that he is the one who might be deceived.<sup>37</sup> A further variation of the experiment is put forward by Hilary Putnam who argues that humans may very well just be “brains in a vat” whose sensory inputs are short-circuited and replaced by inputs for an elaborate simulation produced by some sort of machinery.<sup>38</sup> In some sense humans are brains in a vat, that is, they are brains inside a body whose sensorial structure “distorts” or “deceives” the brain’s perception of the world—humans cannot escape from their sensorial precondition and “see” the world as it “really” or “truly” is. Along these lines, Robert Nozick has restated this problem into a question and asked: suppose an “experience machine” would exist that produces an all-pleasant simulation fulfilling all desires and needs, would humans want to live inside such a

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32. Ibid., 7–8.

33. Ibid., 8.

34. Ibid., 8–9.

35. Ibid., 49.

36. Plato, *Republic*, 595a–608b (bk. 10). See page 102.

37. Descartes, *Meditations on First Philosophy*, 16–17.

38. Hilary Putnam, *Reason, Truth, and History* (Cambridge: Cambridge University Press, 1998), 5–6. Putnam then refutes that humans are brains in a vat on a linguistic-conceptual basis. Cf. John L. Pollock and Joseph Cruz, *Contemporary Theories of Knowledge* (Oxford: Rowman and Littlefield, 1999), 2–4.

simulation?<sup>39</sup> Nick Bostrom has furthermore argued it to be likely that humans not only *live* in a simulation but that they *are* actually simulation themselves.<sup>40</sup>

These philosophical thought experiments investigate the limits of knowledge and the nature of reality conceptually. Nozick's experiment furthermore not only reflects on these concepts, but also invites the reader to make a decision: would you enter the machine or not? The answer of most people would probably be no, as such a life would perhaps be considered inauthentic. This, however, also shows the limits of abstract thought experiments, as it is questionable how an answer to a hypothetical situation can shed light on the decisions people would make in an actual situation, that is, when they would be confronted with an actual machine in an actual situation. In reality, it seems, people are engaged in all sorts of elaborate self-deceptions. Despite that, many thought experiments, particularly ethical thought experiments, try to deduct actual behaviour from hypothetical behaviour in abstract hypothetical situations.<sup>41</sup> All purely hypothetical situations and experiments with controlled variables are abstractions and simplifications of the world. My behaviour in an actual situation, however, is very different from my hypothetical behaviour in an abstract hypothetical situation, since my actual decisions are largely shaped by the context and specificities of actual situations.

Although thought experiments are certainly abstractions and hypothetical cases, as experiments they should provide the means to make claims about the actual world. Humans may or may not live in a simulation, or may even be simulations themselves, but if there is no way of verifying this or escaping from it, it is not clear what kind of *lessons* and *practical* conclusions can be drawn from them. As a result, philosophical thought experiments often seem to be too abstract and appear to be more arguments than experiments. For a concrete philosophical inquiry, however, it is less important to know whether a hypothetical situation is the case or not, but what kind of implications would follow if this situation were the case.

The epistemological questions asked in these abstract philosophical thought experiments are furthermore explored in films, such as *The Matrix* (1999), which explores deception, *The Thirteenth Floor* (1999), which explores simulations and *Vanilla Sky* (2001), which explores an experience machine. These films are not mere illustrations of the respective philosophical thought experiments and problems, but rather explore them in a very different way—they explore the consequences these hypotheses may have in a real-life situation and thus give much richer conclusions to the problems. They not only state that it may be possible that humans live in a simulation, but try to understand what it would *mean* if this were true. These cinematic thought experiments thus not only aim to clarify concepts but also show how a world under these concepts may *feel like*. Thought experiments in film and literature are thus not forms of purely *abstract hypothetical* reasoning and imagining but

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39. Robert Nozick, *Anarchy, State, and Utopia* (Oxford: Blackwell, 1999), 42–43.

40. Nick Bostrom, "Are You Living In a Computer Simulation?," *Philosophical Quarterly* 53, no. 211 (2003): 243–255.

41. The "trolley problem" is one of those examples. See Philippa Foot, *The Problem of Abortion and the Doctrine of the Double Effect in Virtues and Vices* (Oxford: Basil Blackwell, 1978); Judith Jarvis Thomson, "A Defense of Abortion," *Philosophy and Public Affairs* 1, no. 1 (1971): 47–66; Judith Jarvis Thomson, "Killing, Letting Die, and the Trolley Problem," *Monist* 59, no. 2 (1976): 204–217; Judith Jarvis Thomson, "The Trolley Problem," *The Yale Law Journal* 94, no. 6 (1985): 1395–1415.

forms of *dramatic hypothetical* reasoning and imagining. That is, they are not descriptions of abstract possible situations, but rather permit the audience to experience a possible situation and thus to understand the situation not only rationally but also emotionally. Dramatic imaginations not only describe abstract concepts and possibilities, but facilitate the experience of these concepts and possibilities in hypothetical situations that, however, feel like concrete situations and real-world experiences.<sup>42</sup>

For instance, in thought experiments about global thermonuclear war, the difference between these two approaches becomes evident both in terms of conceptual understanding and in terms of conclusions and resulting actions. Herman Kahn, for example, explored the scenario from an abstract point of view in his studies *On Thermonuclear War* (1960) and *Thinking about the Unthinkable* (1962). He calculated how the United States as a socio-political system could survive a nuclear war in economic terms of population loss and infrastructural damages. His studies are thought experiments informed by mathematical calculations, strategic planning and game theory, but leave out any concrete, individual and psychological experience that such an event may cause. A very different approach was taken by Peter Watkins in his fictional documentary film *The War Game* (1965), in which he focuses on the individual experience and suffering that would be caused by such a war and, one could argue, provides a less abstract and possibly more realistic perspective of the consequences. Since thermonuclear war, however, is generally combined with the strategy of mutually assured destruction (MAD), there are likely to be no winners in this type of war. Stanley Kubrick has portrayed the absurdity of such a war in his film *Dr. Strangelove or: How I Learned to Stop Worrying and Love the Bomb* (1964), for which Herman Kahn was one of the major inspirations, and thus provided yet another perspective on the same issue. Whereas Kahn's abstract hypothetical thought experiment renders thermonuclear war as a feasible option for combat, the dramatic hypothetical explorations of Watkins and Kubrick render this option as either horrific or absurd.

Thought experiments are thus not neutral but involve decisions on the perspective from which the issue is investigated. This will to a large extent define the outcome of the experiments and the general conclusions drawn from them. Narrative thought experiments in literature and film can thus be used to construct a situation for realising and understanding something. They investigate problems not through abstraction and generalisation but through concretisation and particularisation—by relating problems and questions to actual experience and real-world situations, they provide richer and more complex perspectives than abstract forms of inquiry.<sup>43</sup> These narrative thought experiments, however, are not just illustrations of abstract problems, but create questions and problems through the narrative based on the following characteristics. First, they need to have a *clearly* understandable set of suppositions, variables, consequences and conclusions. Second, they need to have a *coherent* narrative that shows the unfolding of the experiment. Third, they need to experiment

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42. Cf. Richard Moran, "The Expression of Feeling in Imagination," *The Philosophical Review* 103, no. 1 (1994): 104–106.

43. Peter Swirski, *Of Literature and Knowledge: Explorations in Narrative Thought Experiments, Evolution, and Game Theory* (London: Routledge, 2007), 96, 99, 104.



with *relevant* questions that are not only relevant internally for the narrative but also for the audience. Fourth, they need to be *informed* by current developments in other areas relevant to the questions and problems investigated in order to be accepted and not contradicted. Fifth, they need to be *projectable*, that is, the results of the thought experiment should have implications for more general questions beyond the experiment, for example, regarding understanding, morals or human existence.<sup>44</sup>

### Fictional Design Objects

To explore philosophical questions, fictional design objects need to create some kind of narrative in order to be understood as thought experiments, possible worlds or poetic imaginations. In literary and cinematic narratives actual and possible design objects are used as plot devices that serve a variety of functions: (1) they can be used as props to *create* a plot or the setting for a plot, such as skateboards, guns, cars or buildings; (2) they can be used to *enable* narratives that would not be possible without them, such as time machines, doomsday machines or flying carpets; (3) they can be used to *drive* plots through objects, such as poisoned drinks, mysterious suitcases, secret documents or diamonds—plot devices that Alfred Hitchcock calls “MacGuffins;” (4) they can become protagonists and thus *act* themselves, such as speaking cars, intelligent machines or haunted houses.<sup>45</sup>

Although design objects can be used in fictional narratives to explore philosophical issues, they mainly serve as plot devices and it is thus the narrative, through which the philosophical issues are explored, rather than through the design objects themselves. However, in order to explore philosophical questions, design objects themselves would need to be seen as thought experiments, possible worlds or poetic imaginations. But how can design objects themselves tell a story?

In some sense, any design object presents a possible world for the potential users of the object, that is, potential users can *imagine using* the object and can thus create a fictional narrative in which they use the object. Through this imagined use, potential users can reflect on what the particular object would permit them to do and thus what kind of implications it would have for their lives. They can imagine how their world would be like if they would use the object; in case of a fictional design object they can imagine what the world would be like if such an object would exist. Design objects can thus be seen as a narratives of a possible world through actual or hypothetical use, whereby the narrative is created by the users or audience.

However, in order to engage with fictional design objects as philosophy, the imagination needs to be reflective. The objects thus need to be seen as *fictional objects* and not as *actual objects*, that is, they need to be seen as poetic objects and not as proposals in order to engage with them as thought experiments, possible worlds or poetic imaginations. Other-

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44. Ibid., 108–109.

45. Cf. Seymour Chatman, *Story and Discourse: Narrative Structure in Fiction and Film* (Ithaca, NY: Cornell University Press, 1978), 138–141; François Truffaut, *Hitchcock*, Revised ed. (New York: Simon & Schuster, 1985), chaps. 6, 8; Todd McGowan, “Hitchcock’s Ethics of Suspense: Psychoanalysis and the Devaluation of the Object,” in *A Companion to Alfred Hitchcock*, ed. Thomas Leitch and Leland Poague (Chichester: Wiley-Blackwell, 2011).

wise they would be interpreted not in terms of the philosophical questions raised, but in terms of their desirability or appropriateness. Fictional design objects thus need to be presented *as fictional* and approached with a suspended disbelief with regard to their practical or social function—they need to be treated *as if* they were objects within the actual world.

The project *Afterlife* (see fig. 27) by James Auger and Jimmy Loizeau, for example, can be regarded as a thought experiment that explores ethical and conceptual issues regarding death. Instead of cremating or burying the dead, the designers suggest that bodies could be decomposed in a controlled process that transforms the remaining energy stored in the body into electricity through microbial fuel cells. A coffin-like decomposition container is used to harvest the energy, which is then stored in a battery with the engraved name of the deceased.<sup>46</sup> The project, however, invites the audience not only to accept or reject this alternative form of interment, but also to speculate about the possible uses for the energy stored in the battery. On the one hand, one could speculate about the postmortem use of one's energy and perhaps set up instructions for such a use; on the other hand, one could speculate about how one would use the remaining energy of a deceased loved one. The project can be considered as a thought experiment as it sets up some variables and suppositions—the transformation of a dead body into electricity that is stored in a battery and can be used. However, it does not draw any conclusions or present arguments for or against such an interment practice, but rather makes it possible for the audience to *run their own* thought experiments. The battery is thereby used as a plot device for creating a narrative that enables the audience to draw their own conclusions from the thought experiment and to speculate about the wider implications this proposal might have—for example, questions about the responsibility for the actions carried out with the energy, concepts on personal identity and personhood, or the physicality of an afterlife. Since batteries are part of everyday life and are used for a wide range of purposes, the audience can relate to the proposition through a hypothetical use within the concrete context of their own lives. Through this concrete context they can imagine how it would *feel like* to use such an object, which would not be possible in an abstract thought experiment.

In a second stage of the project, Auger and Loizeau asked several designers to imagine a use for such a battery for an exhibition. Apart from some fairly obvious proposals, such as using the battery in electric appliances that would remind one of the deceased, some more subtle ones were presented that gave the deceased an uncanny presence in an afterlife. Dunne and Raby, for example, presented a scenario in which the energy would operate a suicide machine and thereby the deceased could assist the bereaved in committing suicide. The battery could also be used for carrying out all sorts of last will decrees, as proposed by

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46. James Auger and Jimmy Loizeau, *Afterlife*, 2009, <http://www.auger-loizeau.com/index.php?id=9> (accessed September 19, 2012). Based on a somewhat similar idea is the project *Biopresence* (2003) by Shiho Fukuhara and Georg Tremmel, who proposed to insert human DNA into trees, without affecting the gene structure of the trees, and thus function as living memorial. There are, however, already existing services that provide alternatives to the traditional interment, such as creating diamonds from the ashes of a deceased (LifeGem, <http://www.lifegem.com>) or cloning of pets (Sooam Biotech Research Foundation, <http://www.sooam.com>).

Onkar Kular, for example, to say things that one could not say during one's lifetime.<sup>47</sup> Within the project these suggestions can be seen as materialised conclusions of the thought experiment. However, the most interesting aspect of the project is probably that it enables the audience to speculate for themselves rather than presenting conclusions/solutions for how such a battery could be used.

Fictional design objects, however, do not necessarily need to be thought experiments in order to explore philosophical questions. As poetic imaginations they can explore conceptual or ethical questions through an indirect discussion. The project *Accessories for Lonely Men* (see fig. 28) by Noam Toran, for example, explores how the presence of a person can be simulated after the breakup of a relationship. The project consists of a collection of eight objects: a device that automatically fondles one's chest hair; a device that can be used to share a cigarette after sex; a device that breathes at the other person during sleep; a set of cold feet that can be placed in the bed; broken pieces of tableware that can be scattered on the floor; a device that pulls away the bedsheet during the night; a device to project a silhouette on the wall; and a device that moves hair into one's face in the morning.<sup>48</sup> All of these objects aim to simulate the interactions with the absent person by breaking down the person into various mechanical components. This, however, raises some interesting conceptual and ethical philosophical questions: What constitutes a person? Can a person be broken down into a set of mechanical actions? Can this set of actions replace the person emotionally, that is, can these actions create the illusion of the person being present? What will I remember a person for? Is it the cold feet in the bed, the fondling of my chest hair or the breathing I hear during the night? With regard to the use of emotional robots for instance in the care of the elderly, the question may also arise as to whether it is morally acceptable to substitute personal affection through simulated affections by machines?<sup>49</sup> Although the project does not ask these questions explicitly and thus does not give any answers to them, it nevertheless allows both the designer and the audience to ask and explore such questions within an everyday context and relates to emotions that many people have had.

When exploring moral questions and values, fictional design objects, however, do not need to lead to morally "correct" conclusions. Fictional design objects and the presented worlds can also be morally dubious or can even explore some darker issues in the same way as fictional literature does. Dunne and Raby have hinted at this quality of fictional design objects and described them as a form of *design noir*, that is, as objects with existential qualities that relate to individual desires, which might well sit outside the realm of the ordinary.<sup>50</sup> One can appreciate something as aesthetically pleasurable, even if one considers it as morally wrong or unacceptable, for several reasons: First, a morally wrong situation can be

47. James Auger, "Speculative Design: Crafting the Speculation," *Digital Creativity* 24, no. 1 (2013): 5–9. The objects were presented at Experimenta Design in Lisbon, 2009.

48. Noam Toran, *Accessories for Lonely Men*, 2001, <http://noamtoran.com/NT2009/projects/accessories-for-lonely-men> (accessed September 19, 2012). In contrast to Toran's objects, a CD (*Nie Mehr Allein*) that includes sounds of everyday life, such as refilling the fridge, reading the newspaper or going to the toilet, that aim to counteract the feeling of being alone in one's apartment, is available commercially. Cf. Dunne and Raby, *Design Noir*, 48, 64.

49. See, for example, PARO Therapeutic Robot, <http://www.parorobots.com> (accessed, September 6, 2014).

50. *Ibid.*, 46.

rendered as desirable in the fictional world, whereby the audience is seduced to appreciate the situation and the values as pleasurable, arousing and stimulating. Second, the audience may find delight in the transgression of moral values as such and not in the particular representation of the values. The fictional world can offer the audience a space, in which they can break free from the morally binding norms in the actual world. Third, morally wrong situations may be appreciated for their cognitive reward such as curiosity or fascination.<sup>51</sup> To some extent, it is often through these existential, tragic or upsetting situations through which one is able to form moral conceptions.<sup>52</sup>

My object *Traces of an Imaginary Affair* (see figures 29–30), for example, explores such a morally questionable behaviour. It is a kit that consists of a set of nine tools that can be used to leave traces of an affair, such as bite marks, carpet burns, bondage marks, love bites, scratches and bruises. In addition, probes of perfume, lipstick and hair can be applied to either the body or clothes. These traces can thus be used either to impress friends or to make one's partner suspicious and thereby jealous. Making one's partner jealous intentionally seems to be a common behaviour in relationships and is used in order to get more attention, to bolster one's self-esteem or to test the strength of partnerships. This is often achieved by strategies such as going out without the partner, ignoring the partner or flirting with others.<sup>53</sup> The kit provides the means to instigate jealousy by manufacturing physical evidences, similarly to people who used fake evidence of victimisation or illnesses to receive attention from others or to manipulate their behaviour.<sup>54</sup> The object thus presents a tool for engaging in a behaviour that may be considered as immoral. The audience can appreciate this transgression of morals intellectually and perhaps reflect on their own moral behaviour in relationships by imagining to use the tools themselves.

These examples highlight the two general approaches: fictional worlds can be imagined and presented by the designer or they can be imagined by the audience. Design objects can be used to show perspectives on moral or conceptual issues and turn them into questions through design objects. Designing and materialising them is thus a way to explore and investigate these issues. Thereby, fictional design objects do not only present themselves—as design object usually do—, but also present issues about the world, that is, they are not only objects-in-the-world but also objects-about-the-world.<sup>55</sup> In other words, they refer to the fictional worlds to which they belong, but they also refer back to the actual world, in which they exist as material objects. Fictional design objects are objects to think with for the designer and can be used to provoke a fictional and imaginative engagement of the audience. The aim is to open up a space in which one can imagine possible worlds

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51. Matthew Kieran, "Art and Morality," in *The Oxford Handbook of Aesthetics*, ed. Jerrold Levinson (Oxford: Oxford University Press, 2003), 460–461.

52. Sabine A. Döring, *Ästhetische Erfahrung als Erkenntnis des Ethischen: Die Kunsttheorie Robert Musils und die analytische Philosophie* (Paderborn: Mentis Verlag, 1999), 56.

53. David M. Buss, *The Dangerous Passion: Why Jealousy is Necessary in Love and Sex* (New York: The Free Press, 2000), 210–215.

54. Marc D. Feldman and Charles V. Ford, *Patient or Pretender: Inside the Strange World of Factitious Disorders* (New York: John Wiley & Sons, 1995); Raj Persaud, *From the Edge of the Couch: Bizarre Psychiatric Cases and what they Teach Us about Ourselves* (London: Bantam Press, 2003).

55. Cf. Walsh, *Literature and Knowledge*, 55; cf. Martin Seel, *Ethisch-ästhetische Studien* (Frankfurt am Main: Suhrkamp Verlag, 1996), 136–137.

including the actions, uses and values that these worlds involve. In some sense, these imaginations are forms of interactive imaginations that involve the imaginary use of the presented objects. Through this imagined interaction and use, one can *experience* the fictional world and can judge the social, political or ethical quality of the conditions that are presented and that arise based on an emotional response to this possible world.<sup>56</sup>

As the presented examples indicate, fictional design objects and fictional worlds may also challenge and even subvert moral concepts and values. Thereby social, economic, ecological, intellectual, architectural, religious and moral values as well as scientific and technological limitations are open for exploration and reassessment. Fictional design objects provide alternatives to the actual world that make one think about the social conditions of the actual world. Since fictional worlds are not self-contained, but also refer to aspects of the actual world, they may cause one to look anew at certain situations and may lead one to reconsider morals or concepts. The fictional world can act as a laboratory to explore these values in a way that would not be possible in the actual world.<sup>57</sup> The fictional world thus serves as a mirror for the present condition of the actual world, as it is not the fictional condition that is challenging, but the fictional condition that challenges the actual world. Fictional worlds produced through design objects can be regarded as thought experiments that place the process of argument and analysis into the mind of the audience, rather than presenting arguments and conclusions to the audience.<sup>58</sup>

### Ambiguous Design Objects

Fictional objects are usually surrounded by clues that suggest their fictional status, such as book covers that indicate that the text is fictional, stages that separate the performance from reality, art galleries that present object as “art objects” rather than “ordinary objects,” and so on. These clues indicate that one is not looking at actual objects or representations of actual objects, but at fictional objects. If these clues are missing, fictions can be mistaken for reality or vice versa. Fictional objects thus require a certain aesthetic distance and separation from reality.<sup>59</sup> The appropriate aesthetic features thus make it possible to frame an object either as real or as fictional. A documentary, for example, can be presented as a report of actual events. However, if such a realistic style is adopted in literature or film, this can lead to the impression that the presented fictional events represent actual events. The status of the object thereby becomes *ambiguous*, as it is unclear whether it is fictional or real.

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56. Cf. Gregory Currie, “Realism of Character and the Value of Fiction,” in *Aesthetics and Ethics: Essays at the Intersection*, ed. Jerrold Levinson (Cambridge: Cambridge University Press, 1998), 167.

57. Novitz, *Knowledge, Fiction and Imagination*, 137–141; cf. Noël Carroll, “Art and the Moal Realm,” in *The Blackwell Guide to Aesthetics*, ed. Peter Kivy (Malden, MA: Blackwell, 2004), 131.

58. Cf. *Ibid.*, 137.

59. Cf. Heinz Schlaffer, *Poesie und Wissen: Die Entstehung des ästhetischen Bewußtseins und der philologischen Erkenntnis* (Frankfurt am Main: Suhrkamp Verlag, 2005), 150–152. Contemporary art often seems to function only on the basis of these clues, since “art objects” without these clues are often indistinguishable from “ordinary objects” and are then read accordingly, for example, they may be mistaken as rubbish or as misplaced objects by cleaners. This has happened for instance to Michael Landy, who exhibited a bin full of rubbish at the Karsten Schubert Gallery in London in 1994, which was then removed by cleaners. “Man ‘Destroys’ Life for Art,” BBC News, February 9, 2001, <http://news.bbc.co.uk/2/hi/entertainment/1162348.stm> (accessed September 20, 2012).

One famous example for this ambiguity is Orson Welles' radio drama adaptation of H. G. Wells' story *War of the Worlds* (see fig. 31) delivered on October 30, 1938, which caused many listeners to mistake fiction for fact. In the radio drama, Welles presented the story of a Martian invasion of Earth in a news-bulletin format with background commentary and live on-site reports as interruptions of the "regular" programme, which portrayed the invasion as currently in progress. Although references to the fictional status of the broadcast were given throughout the programme, perhaps because of the political climate preceding the Second World War, the drama was mistaken as the report of an actual event and thus caused mass hysteria and panic in many American cities, with news reports of thousands fleeing their home, traffic jams and swamped phone systems. The overall realistic impression of the programme was caused by several features: real places, which were familiar to listeners, were mentioned; the listeners had confidence in the radio as a medium for important announcements, especially when presented in a news format; the interruptions of the current programme added to the impression that something important was being announced; experts, such as scientists and military personnel commented on the events, which were therefore regarded to be true.<sup>60</sup> Today the fictional landing site of the Martian invasion in Grover's Mill in West Windsor Township, New Jersey is marked with a monument referring to the story and the subsequent events, in which fiction and reality seemed to blur (see fig. 32).

However, the ambiguity created by blurring reality and fiction can also be used as an artistic strategy that permits one to show radically different perspectives. In *The War Game* (1965), as mentioned previously, Peter Watkins depicts the consequences that a nuclear attack on Britain would have for the civilian population through a fictional narrative. In a documentary-style news format including interviews and on-site reports, he follows chronologically the events prior to and after a nuclear strike. The interviews prior to the strike are partly based on real claims and interviews with nuclear scientists and politicians and seem quite naive, uniformed and hopelessly optimistic about the feasibility and consequences of nuclear war in relation to the events that follow. In the moment of the strike, a news reporter visits a family preparing an ad-hoc domestic shelter from furniture as suggested in survival manuals issued by the government at that time. The nuclear explosion, however, renders these protective measures as completely inadequate. Following the strike, the film shows the possible resulting dramatic consequences, such as radiation sickness, psychological problems, infrastructural damages and shortages in food supply. Although a work of fiction, the film depicts reality more realistically than the supposedly real information issued in the form of civil defence brochures and films by the government—which are consequently revealed as propaganda and fiction rather than realistic descriptions of nuclear war. Although the film was originally produced by the British Broadcasting Corporation (BBC), it was not shown on television until 1985 due to internal and governmental censor-

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60. Hadley Cantril, *The Invasion from Mars: A Study in the Psychology of Panic* (New Brunswick, NJ: Transaction Publishers, 2005), chaps. 1–3; Radio Listeners in Panic, Taking War Drama as Fact, *New York Times*, October 31, 1938, late city edition.

ship.<sup>61</sup> Although the film is a work of fiction, it cannot be “dismissed” as being only a fiction, but rather creates a space of fictional and poetic ambiguity, in which the content seems to be both real and fictional at the same time—like a reversible figure, one can read it *as* fiction or *as* (a possible) reality.<sup>62</sup>

In some sense, ambiguous fictions are a form of intervention into reality, a strategy which the Yes Men have used exemplary in many projects and interventions. In 2008, for example, in collaboration with many other activists, they printed over 80,000 copies of a “fake” edition of *The New York Times Special Edition* (see fig. 33) and handed them out in the streets of New York. The newspaper was dated half a year ahead for July 4, 2009 and featured the subtitle “All the News We Hope to Print.” It contained many articles about events that seemed to be impossible at the time of distribution—and some still seem to be impossible today. Among the articles and headlines were: “Iraq War Ends,” a report that announced the immediate return of all troops from Iraq; “Court Indicts Bush on High Treason Charge,” a report about George W. Bush being charged with treason for waging a disastrous and expensive war against Iraq, knowing that the country was not in possession of weapons of mass destruction; “National Health Insurance Act Passes,” an article that announces the introduction of a public health care service for all citizens; “All Public Universities To Be Free,” a report about the abolishment of tuition fees for public universities; “New Wage Cap Will Stabilize Economy,” a report on a law that fixes a maximum wage for managers and “Public Relations Industry Forecasts a Series of Massive Layoffs” on the end of corporate lobbying. The newspaper furthermore includes many subverted advertisements and a recall for all petrol-operated vehicles. Of course, the newspaper can be read as a parody or an ironic commentary on the current socio-political situation of the United States. However, it can also be seen as a space for thinking about the seemingly impossible and thereby making the impossible perhaps seem less impossible. Furthermore the project uses the medium very intelligently, as the printed news—and especially the news printed in newspapers such as *The New York Times*—are traditionally associated with stating what really has happened. The fact that the activists actually produced, printed and distributed the paper is part of the ambiguity that the project creates, as a newspaper is usually regarded as a real object and not as a fictional one.<sup>63</sup>

According to Stephen Duncombe, projects of this sort do not aim to criticise or reveal the truth about the current state of affairs, which is presumably masked by certain ideologies, but instead aim to explore alternatives to the current condition—the question thus changes from “what?” to “what if?” The aim is not to state what should be but rather to explore what could be and to open up spaces for dreams about alternatives to the current

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61. Peter Watkins, *The War Game*, <http://pwwatkins.mnsi.net/warGame.htm> (accessed September 20, 2012); James M. Welsh, “The Modern Apocalypse: The War Game,” *Journal of Popular Film and Television* 11, no. 1 (1983): 25–41; Michael Tracey, “Censored: *The War Game* Story,” in *Nukespeak: The Media and the Bomb*, ed. Crispin Aubrey (London: Comedia, 1982); Patrick Murphy, “The War Game – The Controversy,” *Film International* 3, (2003): 25–28.

62. This view may be supported by the fact that in 1966 the film won the Academy Award for Best Documentary Feature and remains the only “fictional” film to win this award.

63. *The Yes Men Fix the World*, directed by Andy Bichlbaum and Mike Bonanno, P2P Edition, Article Z, et al., 2010, AVI File, <http://vodo.net/yesmen> (accessed September 20, 2012); The Yes Men, *New York Times Special Edition*, <http://www.nytimes-se.com> (accessed September 20, 2012).

situation by exploring seemingly impossible alternatives. For Duncombe, this form of social and political exploration can be described as *Dreampolitik* in opposition to *Realpolitik*, that is, as thinking about the future not in terms of what is possible within the parameters of a system, but to think about the future in terms of what is impossible and to dream about radically different alternatives. These imaginations could then also affect the real world, not because they are proposals to be realised, but because they *make one think* about alternatives in the first place. According to Duncombe, utopian literature has often been used to think about the impossible, not as a proposal for a different world, but as a medium for reflecting on the current state of the world. Particularly utopias that present a radically different world and society, such as Thomas Moore's book *Utopia*, show the reader the possibility that society could be different and that there are—if only imaginary—alternatives to the current state of society. The aim is thus not to realise a particular utopian society, but to affect—or rather infect—the audience with an idea of a radically different world and thereby to open up discussions about the status quo, which sometimes may appear to have no alternatives. For Duncombe, these dreams and utopias disrupt the present, since the present is thereafter seen in the light of these radical, alternative worlds. According to Duncombe, these utopian proposals, however, need to be transparently impossible, since they should not be seen as visionary proposals to be realised, but rather as starting points for thinking about alternatives.<sup>64</sup>

The impossible, however, can only have an effect when it can be imagined that it could become possible. By printing *The New York Times Special Edition* and handing it out on the street, the Yes Men made the impossibility of the presented “news” more possible by stating them in cold print instead of presenting them as abstract ideas. Since newspapers usually report facts and actual news, the presentation of fictional news in this medium created an ambiguous situation, in which fiction invaded reality. The ideas thus invaded the everyday life of the audience and interrupted mundane activities such as going to work or sitting in the subway. Although clues about the fictional status of the newspaper were given, the power of the newspaper as an object of the real world created a state of ambiguity between fact and fiction—at least for a moment. This moment, however, is important as in this moment the fictional news were experienced as the actual news, enabling the audience to *experience what it feels like* if these news were actual news. The presented impossibilities may thus seem less impossible, since one has experienced them *as if* they were possible.

The Yes Men have used this strategy in several other projects, most notable in *Dow Does the Right Thing* (see fig. 34). After setting up a fake website for the Dow Chemical Company, the Yes Men were invited as representatives for the company by BBC World and asked to comment on the 20th anniversary of the chemical accident in Bhopal. The accident occurred on a Union Carbide chemical plant, a company that was acquired by Dow. As fake

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64. Stephen Duncombe, *Dream: Re-imagining Progressive Politics in an Age of Fantasy* (New York: The New Press, 2007); Stephen Duncombe, “Utopia is No Place: The Art and Politics of Impossible Futures” (lecture, Walker Art Center, July 29, 2010) FLV video file, <http://channel.walkerart.org/play/utopia-no-place> (accessed December 16, 2010). The term *Realpolitik* describes political actions and decisions that are determined by what is possible rather than what would be ideal. *Dreampolitik* would be a form of politics that not only includes realistic options but also idealistic or impossible options.



representatives, the Yes Men announced that Dow would liquidate Union Carbide and use the resulting \$12 billion to compensate the victims of the accident. According to the Yes Men, they presented what Dow should be doing, but the company claims they could or would not do. Following the interview, the company's share price fell by 4.24 percent but rebounded after the BBC corrected the announcement.<sup>65</sup> This is, however, in some sense proof that the company actually *could* compensate the victims if they *would* accept the loss in share price—it is thus *not impossible* for Dow to do this. In this case, the Yes Men questioned the concepts of “possible” and “impossible” at least in economic and political terms.

Although fictions ideally should be understood *as* fictions in order to function properly, the fictions of the Yes Men need to be misunderstood as reality in order to have their intended effects, at least initially. They thus create ambiguity regarding their fictional or actual status because they are not *explicitly* labelled as fictions. Furthermore, newspapers, websites, interviews or corporate presentations are usually regarded *as* actual objects and things and perhaps even as things that *constitute* reality. Fictional design objects that serve some function are thus almost inevitably seen as actual design objects, which are supposed to be used in the real world rather than in a possible world. The project *Afterlife* by Auger and Loizeau, for example, can be understood as a fiction or as a product proposal—as a matter of fact, the designers are quite vague in their presentation of the object regarding its actual or fictional status.

The ambiguous status of fictional design objects, however, may have an interesting effect on the exploration of philosophical questions. Whereas objects or ideas that are clearly labelled as “theoretical,” “fictional” or “artistic” are somewhat removed from an everyday context and can thus be viewed from a safe distance, design objects almost always sit within an everyday context of use and can thus create much stronger reactions, irritations or controversies as they seem to *invade* reality. The conceptual or ethical questions they pose can thus not be dismissed that easily as “theory,” “fiction” or “art.” Fictional design objects can therefore open up a space for thinking that is direct, experiential and related to the reality of everyday life. They are perhaps a more effective and radical medium for exploring social, political or moral issues as they literally *materialise* these issues in form of tangible objects that both sit within the actual *and* a possible world.

## Conclusion

Fictions play an important role in philosophy in the form of metaphors, thought experiments, fictional entities and indirect discourse through narratives. They provide the means to establish new objects for inquiry, new ways of thinking and new perspectives on the world and are thus often regarded as heuristic fictions. Fictions are objects in between reality and imagination. As a result, they both concretise imaginations and at the same time fictionalise reality by providing a different perspective and view on the world, which can make

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65. *The Yes Men Fix the World*, directed by Andy Bichlbaum and Mike Bonanno, P2P Edition, Article Z, et al., 2010, AVI File, <http://vodo.net/yesmen> (accessed September 20, 2012). For the fake Dow website see <http://www.dowethics.com> (accessed September 7, 2014).

reality seem just one among many possible interpretations of the world. Especially thought experiments play an important role for viewing the world from a different perspective. By asking “what if ... ?”, an experimental situation is created, in which alternative interpretations of the world can be explored. They are devices for clarifying how to think about the real and about possible worlds and, in this sense, they are instruments for clarifying views about possible worlds rather than just stories or illustrations of them.

Literature and film can sometimes be understood as thought experiments that investigate the suppositions and their consequences in terms of their relationship to everyday life, that is, they investigate what kind of world would arise from certain suppositions. However, they are dramatic rather than abstract, and render possible worlds *experienceable* in terms of their consequences. Some design objects can furthermore be regarded as tangible thought experiments, as they not only illustrate these possible worlds but also materialise them, as it were. Through design objects the barrier between the possible world and the real world can be disrupted to some extent and the possible world can be experienced *as if* it were a real world. Because design objects are usually interpreted in terms of their use in everyday life, fictional design objects can invade reality and create a certain *ambiguity* between the possible and the real, whereby possible worlds are not experienced from a safe distance but *as if* they were part of the real world.

Design as philosophical inquiry can utilise fiction as an approach for investigating possible worlds and, for example, the social, political or moral consequences that the introduction of certain artefacts and technologies could have. Fictional design objects can thus be understood as heuristic and conceptual devices that can change ways of thinking through a material manifestation of questions, problems and issues. Furthermore, they can be understood as *real fictions*, that is, as fictions that exist materially in the real world, perhaps providing a perspectival change of one’s view of the world through direct experience.

## Chapter 6: Thinking Things

Although any artefact can potentially trigger reflection, models are specific tools to create understanding.<sup>1</sup> Both by using models and through the process of modelling, one can reflect on actual or possible objects. In this respect, models are similar to fictions as they are often devices for creating something that does not exist, and similar to metaphors, as they show something in terms of something else.

In design, models are usually used for both developing and communicating ideas, mainly, however, in the form of anticipatory objects that represent things which should eventually exist, such as models of buildings or products. The use of models in design has its roots in the three-dimensional architectural models used since the Renaissance. These models, however, were less used for guiding the subsequent construction phase of the building but rather to convince a client of the shape of a particular building and as a reference for the building contract. Here, models had an advantage over other forms of representation as they made the object to be built tangible.<sup>2</sup> Although in design models function as tools for developing ideas for possible objects and for communicating these ideas, they are often not used as tools for philosophical reflection.

Models are not only rhetorical devices but also devices for reflection and inquiry. To make a model is not only to make a model of what one knows already, making a model is rather a form of thinking—a device or process for *thinking something through*. In making a model of an object, the object becomes more defined and tangible. Making a model is thus not only a representation of what already exists, but a presentation of what could exist, whereby the object of inquiry is in some sense created by modelling it. Building models is thus also always a form of reflection about what might be real or what might become real.

In philosophy and science, models are often abstract and theoretical descriptions, but sometimes the process of concrete and physical modelling is crucial for understanding something. A famous example is the discovery of the structure of Deoxyribonucleic acid (DNA) by James Watson and Francis Crick (see fig. 35). Watson and Crick used molecular modelling to analyse the structure of DNA by considering possible arrangements to include the various nuclear acids in the model and the empirical evidence derived from patterns shown in x-ray diffraction photography; particularly from *Photo 51* (see fig. 36), taken by Raymond Gosling and Rosalind Franklin, that indicated the double helix structure of the molecule.<sup>3</sup> Since the molecule could not be observed or photographed directly, these x-ray diffraction images are as close as one could get in making the actual molecule visible. However, the photographs did not show the actual structure of the molecule but rather patterns that needed to be interpreted. The physical model built by Watson and Crick on the other

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1. Cf. Turkle, *Evocative Objects*.

2. Bernd Mahr, "Modellieren: Beobachtungen und Gedanken zur Geschichte des Modellbegriffs," in *Bild, Schrift, Zahl*, ed. Sybille Krämer and Horst Bredekamp (München: Wilhelm Fink Verlag, 2003), 74. The word "model" has its roots in the Latin *modulus* as a diminutive form of *modus* (proportion).

3. James D. Watson, *The Double Helix: A Personal Account of the Discovery of the Structure of DNA* (London: Weidenfeld and Nicolson, 1968); Brenda Maddox, *Rosalind Franklin: The Dark Lady of DNA* (New York: HarperCollins Publishers, 2002).

hand *shows* the physical structure of DNA, when the parts of the model are *seen as* representing the atomic structure of the molecule. Here, modelling served to analyse empirical data and as a way of thinking about the structure by modelling it, whereby building the model was a crucial process of finding—or rather understanding—the structure of DNA.

In this chapter, I will argue: First, that models are not merely illustrations of something, for example, a theory about the actual or a possible world, which could also be explained in other ways, but that they are objects in which showing and explaining converge. That is, models can show something that cannot be explained in other forms. Thereby, models are not accurate representations of an object but heuristic fictions that create objects. They are thus not neutral entities but objects that create a certain reality through modelling it. Second, that models can be regarded as material metaphors and concepts and thus as a philosophical inquiry through creating material analogies and metaphors; not only to illustrate abstract ideas but to make them experienceable through design objects. Third, that design objects can be seen as aspirational and conceptual role models as well as material portraits that make it possible to create and to reflect the self-conceptions and world-views of a certain society. Fourth, that models are not only objects for reflection but also objects for action, that is, they are not only objects for representation but also objects for use. In this regard, models can be understood as mediating instruments or as tools that lets one intervene in reality.

### Models as Thinking Things

Models are very helpful tools for a philosophical inquiry as they allow one to adopt new ways of thinking and thus new concepts. Models make this possible due to their working principles and their epistemological and ontological status as objects, which I will sketch out in the following.

As material or immaterial objects, models are not only defined by their appearance in form of texts, bodies, drawings, sketches or sets of rules, but always refer to something outside themselves. On the one hand, models can be models *of something* and are thus the result of an induction of knowledge, ideas, thoughts or rules that make up their content. On the other hand, models can be models *for something* and thus a reference point or value, from which the content can be extracted via a deduction and transferred to something else, for example, the construction of a house or a certain behaviour.<sup>4</sup> According to Nelson Goodman models thus *exemplify* what they model: “The model citizen is a fine example of citizenship, the sculptor’s model a sample of the human body, the fashion model a wearer, the model house a sample of the developer’s offerings, and the model of a set of axioms is a compliant universe.”<sup>5</sup> Furthermore, models can also *denote* what they model: “The car of a certain model belongs to a certain class. And a mathematical model is a formula that applies to the process or state or object modeled. What is modeled is the particular case that fits the

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4. Bernd Mahr, “Das Mögliche im Model und die Vermeidung der Fiktion,” in *Science & Fiction: Über Gedankenexperimente in Wissenschaft, Philosophie Und Literatur*, ed. Thomas Macho and Annette Wunschel (Frankfurt am Main: Fischer Taschenbuch Verlag, 2004), 162.

5. Goodman, *Languages of Art*, 171–172.

description.”<sup>6</sup> Models are therefore mediators between particular and concrete experiences and abstract and general ideas. They are, however, not simply visualisations or materialisations of knowledge or ideas, but rather create these objects in the process of modelling them. Modelling is thus a process that both creates the model and the object the model refers to.

According to Herbert Stachowiak, who set out to develop a universal theory of models, all models share three characteristic properties: (1) models are always models *of something*, that is, they are images or representations of natural or artificial originals, which, however, themselves can be models; (2) as models *for something* they do not present all properties of the original, but only certain features and properties, which are determined by the creator or user of the model according to their relevance; (3) models are not only models for or of something, they are also models *for someone*. They are not explicitly related to their originals but are substitutes of these originals for a certain person, for a certain purpose and in a certain time, and thus need to be interpreted by someone.<sup>7</sup>

Although models are objects in themselves they are always representations of something else—something outside themselves. A model can thus be regarded as a simulative reproduction of a real or imagined object that is used to illustrate a certain real or imaginary object. Thereby a model is not a copy of something but an object that uses specific attributes to visualise or explain something. Models that refer to imaginary objects can do this either with the aim of representing something that should exist in the form of prototypes and role models, or they can do this with the aim of representing something that could exist.<sup>8</sup> As material or visual objects they render these possible worlds experienceable and thus allow one to gain a perspective on them.

According to Max Black, models are furthermore symbolic representations of real or imaginary objects with certain features that allow one to draw rules or conclusions from them. For Black, models can have the form of *scale* models or *analogue* models. *Scale models* are models that preserve the relative proportions of what they model. They can be real or imaginary and may be material objects, systems or processes, such as experiments, in which social or psychological processes are modelled in a miniature format in a laboratory, or in which physical or biological events are accelerated or decelerated in order to be able to observe them. Scale models can principally also function as working models, as the working principles according to which the model functions are the same (or similar) to the original—for example, a model of an airplane can fly or a model of a steam engine can drive a wheel. Likewise the outcome of model experiments in social psychology, such as the *Obedience to Authority* experiment by Stanley Milgram or the *Stanford Prison Experiment* by Philip Zimbardo, allow one to draw conclusions for the function of society at large. However, not every function can be arbitrarily scaled; machines and devices, such as motors or

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6. Ibid., 172.

7. Herbert Stachowiak, *Allgemeine Modeltheorie* (Wien: Springer, 1973), 129n2, 131–133.

8. Cf. Samuel Strehle, “Evidenzkraft und Beherrschungsmacht: Bildwissenschaftliche und soziologische Zugänge zur Modellfunktion von Bildern,” in *Visuelle Modelle*, ed. Ingeborg Reichle, Steffen Siegel, and Achim Spelten (München: Wilhelm Fink Verlag, 2008), 57.

nuclear explosives may or may not work if they are too big or too small. *Analogue models*, on the other hand, aim to reproduce a material object, system, structure or process in another medium—for example, models of abstract or unobservable objects. Whereas a scale model imitates the object that it models and therefore needs to rely on a similarity of features and proportions, an analogue model shows the general structure and pattern of relationships of the object. For Black, analogue models furthermore do not aim to prove something but to show a plausible hypothesis, and are usually conceived in a more simple and abstract way than the object that they model.<sup>9</sup> Analogue models are ubiquitous in the sciences mainly in the form of theoretical models such as mathematical models or models of physical elements.

For Black, models are thus in some sense fictional entities or rather *heuristic fictions*, as they are usually treated *as if* they were the object to which they refer. They make it possible to draw conclusions about the object that they model. In order to achieve this, one needs to suspend one's disbelief when dealing with models similar to when dealing with works of fiction; when dealing with a model, however, it is rather a suspension of an ontological disbelief.<sup>10</sup> Models, and especially theoretical models, are often more than just mere analogies; rather they seem to create the object to which they refer. Consequently, theoretical models can be seen as *new ways of talking* about an object and thus as new ways of thinking. For Black, models are in some sense similar to metaphors as they let one see something in a new way and make new connections; building models can thereby be seen as an act of imagination.<sup>11</sup>

Many models do not necessarily refer to any originals, in the sense that these objects really exist—at least for human perception and understanding. Models of atoms, for example, are not reproductions of an actual atom on a larger scale, they are rather models that show the functional properties of an atom through an analogy to observable objects such as orbits, bowls or spheres. They show and explain the properties of an atom via an analogy to the observable world. They are not models of an original but rather a way of explaining the results of measurements. Therefore, one could say that atoms only exist in form of models and not as atoms themselves—they are brought into existence through models. Although an atomic model is a model of an atom, the atom itself is a model of something else, the structure of reality, whereby model and original collapse. The atom is thus a heuristic fiction and so is the model of it.<sup>12</sup> These models bring objects into existence by means of analogy, which are absent from the perceived reality of everyday life. The objects in question are “discovered” by modelling them and then exit in the form of models.<sup>13</sup>

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9. Max Black, “Models and Archetypes,” in *Models and Metaphors: Studies in Language and Philosophy* (Ithaca, NY: Cornell University Press, 1962), 220–223.

10. See note 24 on page 124.

11. *Ibid.*, 228–229, 336–337, 243. Cf. Edward N. Zalta, ed., *The Stanford Encyclopedia of Philosophy* (Summer 2010 Edition) (Stanford, CA: Stanford University, 2010), s.v. “Models in Science.”

12. Achim Spelten, “Visuelle Aspekte von Modellen,” in *Visuelle Modelle*, ed. Ingeborg Reichle, Steffen Siegel, and Achim Spelten (München: Wilhelm Fink Verlag, 2008), 41n1; cf. Mahr, “Modellieren,” 67. For a history of the atom as a heuristic fiction see Bernard Pullman, *The Atom in the History of Human Thought*, trans. Axel Reisinger (New York: Oxford University Press, 1998), 31–32.

13. The mutual dependence between *modelling reality* and a *model of reality* is furthermore evident in the Greek conception of the universe as *cosmos* (*kósmos/kóσμος*), that is, as an orderly arrangement. Anaximander, for

But how exactly do models work and how does their referential structure function? That is, how can something be understood as a model? Generally, models are objects to visualise (or materialise) something; and this can often be considered quite literally—models can be looked at and can often be touched. The aim of looking or touching a model is then to understand something and to gain new insights into something. When looking at a model one does not only want to understand the model but also the object to which the models refer, for example, when looking at an architectural model, one aims not primarily to understand the model itself, but rather the future building to which it refers. Thereby, the visual aspects of models are of particular importance as they *show what they explain*, that is, models use visual means for the explanation of the issue at stake. Through these visual means they explain, for example, functions, processes, relationships or proportions and sometimes these things become visible in the model for the first time. In this respect, models not only refer to the attributes of the object that they model, they themselves have these attributes. An architectural model, for example, not only refers to the proportions of the future building, it has these proportions itself. Or, in other words, an architectural model can only refer to the building by having the proportions of the future building itself, or a functional model of an engine can only refer to the engine that is to be constructed when it has the same functional properties. Thereby, visualisations or materialisations are not a matter of aesthetics or convenience but rather fundamental to the working mechanisms of models.<sup>14</sup>

In order to function as models, however, they need to be viewed and understood *as* models, that is, they cannot be viewed “impartially” but with the intention of seeing something else in them—the object to which they refer. Understanding and interpreting a model “correctly” is therefore of fundamental importance in order to see it *as a model for an object* and not as the object itself. In other words, the viewer needs to interpret the referential structure of the model correctly. Viewing and understanding a model are thereby inseparable, as models are not only merely illustrations of concepts, claims or explanations, they *are* explanations, which do not need to be translated into another mode of explanation.<sup>15</sup> Models are thus different from “ordinary” objects, as they are understood not in terms of what they are but in terms of what they explain. In order to function as models, they need to show aspects of the objects that they model as well as allow one to see and understand them as models. This may be obvious for scale models—for analogue models, however, this may require some change in perception as the viewer of the analogue model needs to actively relate the features of the model to the features of the object the model refers to, that is, to see the model as something else.

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example, is said to have built a model of the cosmos. By building the model, he “discovered” the specific movement of the celestial objects and at the same time made the universe appear through the model. McEwen, *Socrates’ Ancestor*, 47; cf. Hahn, *Anaximander and the Architects*. Anaximander is furthermore said to have introduced the sundial (*gnomon/gνώμων*) into Greek culture, which can be understood as a clock, but also as a device that reveals the orderly movement of the planets and stars. Schwarte, *Philosophie der Architektur*, 15.

14. Spelten, “Visuelle Aspekte von Modellen,” 41–42.

15. *Ibid.*, 43.

Ludwig Wittgenstein has referred to these perceptual phenomena as the *perception of aspects*: to see something as something that holds some meaning for the viewer. He explored this concept through multistable images such as the *Duck-Rabbit* (see fig. 37), an image that can be seen as either a duck or a rabbit but never as both at the same time. For this reason, the viewer needs to *decide* to view and interpret the image as a duck *or* as a rabbit. Seeing and understanding collapses as the image becomes either a duck or a rabbit depending on my interpretation, and my interpretation depends on what I am seeing in the image. In any case, I see and interpret the features of the image either *as* a duck or *as* a rabbit. According to Wittgenstein, perceiving aspects does not add any additional visual clues to one's perception, but rather changes the framework of what is perceived. At the beginning I may only see some lines on the paper but then these lines form a figure, that is, the features on the paper have not changed but my interpretation of them has. In this sense, perception changes and not that which is perceived. When I perceive something *as something* I can describe my perception in new ways. New concepts form through this change in perception, that is, my concepts change through my change in perception. This may even require some training, for instance when interpreting blueprints, construction drawings, floor plans or electric circuits. Following Wittgenstein's investigation of seeing aspects, models can be conceived as objects in which new concepts emerge by seeing the features of the model in a new way. Thereby the properties and functions of the object that is modelled become understandable through the model; perceiving and understanding the model is part of the explanation or insight that the model provides. Models are thus independent forms of knowledge that allow one to picture things or to make things tangible and thereby open up new ways of thinking and access to the world—to visualise aspects of the world.<sup>16</sup>

Although models provide the means to explain and comprehend of the world, this does not mean that models necessarily need to correspond to reality—rather it seems, that reality is often *created* through models. Models of the world are not only representations of the world but are worlds in themselves and thereby can create new worlds. As Clifford Geertz has argued, models can be seen as *models of* and *models for* reality; the first is a reflection on what *does* exist, the second a reflection on what *could* exist. The latter is thereby a crucial driver of cultural development. Models are not simply neutral representations of something, as modelling changes both the modeller and that what is modelled.<sup>17</sup>

### Models as Concepts and Metaphors

Models are both presentations and representations. As representations they are inevitably abstractions of the objects they aim to represent. That is, a model is not the object it represents but an abstraction of this object as it would otherwise not be a representation but the object itself. Consequently representations can never be a complete representation of the object itself. This is can be illustrated through the relationship between a map and a territ-

16. Wittgenstein, *Tractatus Logico-Philosophicus*, § 5.5423; Wittgenstein, *Philosophical Investigations*, pt. 2, sec. xi; Spelten, "Visuelle Aspekte von Modellen" 46–56.

17. Clifford Geertz, *The Interpretation of Cultures* (New York: Basic Books, 1973), 93–94, 114; cf. Csikszentmihalyi and Rochberg-Halton, *The Meaning of Things*, 27.



ory. A map is necessarily always an abstraction of a territory and can never show all aspects of it as it would then be identical with the territory. Representations are always abstractions and simplifications of objects and never the objects themselves. Gregory Bateson, for example, has argued that a map shows not a territory itself but the (significant) differences within a territory. A map is not a *literal* representation of a territory but a *structural* representation that can show the overall pattern of a territory. Representations are thus always “inaccurate” because they are abstractions that leave out a great amount of details about the object that they aim to represent.<sup>18</sup> In a fictional exploration of this problem, both Lewis Carroll and Jorge Luis Borges have shown the absurdity of the idea of attempting to make a map that includes all details of the territory, as such a map would inevitably need to be on the scale of one to one, and thereby would cover the territory that it aims to represent. Map and territory would be identical which pushes the concept “map” *ad absurdum*.<sup>19</sup> The conceptual relationship between map and territory shows that maps, models or other forms of representations are necessarily abstractions from the object that they aim to represent, as they would otherwise not be representations but the objects themselves. On the other hand, models are not only *representations* of reality but often *presentations* of a possible reality. Thereby it is not a matter of how accurately they represent an existing object but how convincingly they present a possibility.

Models show the important features of the object that they model in another medium, for example, by using a different material. Thereby, models are similar to metaphors and analogies, as they show something in terms of something else. Metaphors, however, are not just illustrations and representations of something that could be shown or said differently (and perhaps more directly), rather, they are tools for creating something new. For José Ortega y Gasset, the ability to create metaphors is therefore one of the most powerful human capabilities, as “all our other faculties keep us within the realm of the real, of what is already there. The most we can do is to combine things or to break them up. The metaphor alone furnishes an escape; between the real things, it lets emerge imaginary reefs, a crop of floating islands.”<sup>20</sup> Metaphors are consequently not just forms of saying something differently or decoratively, they are tools for showing and expressing something that is often difficult to express otherwise. Furthermore, they often make it possible to talk about something in the first place and thereby lead to the creation of a new perspective on something.

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18. Gregory Bateson, “Form, Substance, and Difference,” in *Steps to an Ecology of Mind: Collected Essays in Anthropology, Psychiatry, Evolution and Epistemology* (Chicago: University of Chicago Press, 2000), 460–461. The map/territory metaphor was first used by Alfred Korzybski, “A Non-Aristotelian System and its Necessity for Rigour in Mathematics and Physics,” in *Science and Sanity: An Introduction to Non-Aristotelian Systems and General Semantics* (Lakeville, CT: International Non-aristotelian Library, 1958).
  19. Jorge Luis Borges, “On Exactitude in Science,” in *Collected Fictions* (London: Penguin Books, 1999); Lewis Carroll, *Sylvie and Bruno Concluded* (London: Macmillan and Co., 1893), 169; cf. Umberto Eco, “On the Impossibility of Drawing a Map of the Empire on a Scale 1 to 1,” in *How to Travel with a Salmon & Other Essays* (London: Vintage Books, 1998). The map/territory relationship, however, may be challenged by non-static maps that enable the viewer to “zoom into” the map whereby the scale becomes variable and could possibly be one to one. Examples of this approach are *Google Maps* (since 2005) or *Powers of Ten* (1977) by Charles and Ray Eames.
  20. José Ortega y Gasset, “The Dehumanization of Art,” in *The Dehumanization of Art and Other Essays on Art, Culture, and Literature* (Princeton, NJ: Princeton University Press, 1968), 33. Some philosophers, however, have considered metaphors more as ways to obscure facts rather than as tools for understanding. Others have understood metaphors as abridged comparisons that only have decorative functions in speech and poetry. See Kelly, *Encyclopedia of Aesthetics*, s.v. “Metaphor.”

In other words, they are not just illustrations of abstract concepts but actually objects through which new concepts are produced. However, they are often not translatable into other forms of representation, that is, what is shown or said through metaphors is not just something existing dressed up differently.

According to Black, metaphors do not just show preexisting similarities between two things, but can actually create similarities. A metaphor is not constructed just by selecting a feature of two things and juxtaposing them, rather a metaphor redefines how the two things are understood and thus creates a different viewpoint. This new perspective is produced through an “interaction” between the two things that make up the metaphor—and ultimately, of course, by the speaker or author and the listener or reader.<sup>21</sup> For Black, metaphors thus “generate new knowledge and insight, by *changing* relationships between the things designated.”<sup>22</sup> That is, metaphors not only state what one knows already but can actually lead to new knowledge by creating a similarity between the principal and subsidiary subjects and thus permit one to see something in a new light—not necessarily in propositional, but in experiential terms, as one needs to *adopt* the new perspective. According to Black, metaphors have “the power to bring two separate domains into cognitive and emotional relation by using language directly appropriate to the one as a lens for seeing the other [... to] enable us to see a new subject matter in a new way.”<sup>23</sup> The new form of expression that the metaphor creates, however, does not need to be translated into another form but is itself the new form of understanding and thus a distinctive mode of thought. “We can comment *upon* the metaphor, but the metaphor itself neither needs nor invites explanation and paraphrase. Metaphorical thought is a distinctive mode of achieving insight, not to be construed as an ornamental substitute for plain thought.”<sup>24</sup>

Black thus views metaphors as “cognitive instruments” that lead to the creation of new knowledge—not in terms of knowing something previously unknown but in terms of producing a new perspective on the world and thereby new knowledge. He illustrates this by asking if something existed before someone perceived it. There may be four different types of existing things: (1) things that exist independent of human perception, such as the dark side of the moon; (2) things that exist, but which only make sense as entities within a conceptual framework, such as genes; (3) things that only exist as counterfactual possibilities retrospectively once they exist, such as bankruptcies before the invention of the financial system or a certain view of the world from a mountain previously unconquered;<sup>25</sup> (4) things that are actually produced through a new view on the world, such as slow motion cinematography mediated and produced by a technical artefact. For Black the last example is closest to the creative power of metaphors, as this new viewpoint is integrated into the world and becomes ordinary as soon as it has been introduced. However, when it is fully integrated into the world, the process of its creation is often forgotten. For Black, metaphors function

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21. Max Black, “More About Metaphor,” *Dialectica* 31, no. 3–4 (1977): 441–442.; cf. Max Black, “Metaphor,” in *Models and Metaphors: Studies in Language and Philosophy* (Ithaca, NY: Cornell University Press, 1962).

22. Black, “More About Metaphor,” 451.

23. Black, “Models and Archetypes,” 236.

24. *Ibid.*, 237.

25. Cf. Bergson, “The Possible and the Real.”

similarly as they “enable us to see aspects of reality that the metaphor’s production helps to constitute. But that is no longer surprising if one believes that the ‘world’ is necessarily a world *under a certain description*—or a world seen from a certain perspective.”<sup>26</sup> Metaphors are the tools that can create these perspectives, and thus seeing something metaphorical is seeing something as something—often in a different light or from a different point of view.<sup>27</sup>

According to George Lakoff and Mark Johnson, metaphors are not only a matter of illustration or language, they are at the very basis of the human conceptual system as they shape concepts and understanding. When metaphors are not perceived as metaphors anymore, they become metaphorical concepts, which to a large extent determine human understanding of the world, as the world is described in terms of these metaphors.<sup>28</sup> These underlying metaphors or metaphorical concepts, can then be regarded as root metaphors since they determine human understanding on an ontological level and become ontological elements that structure the world. According to I. A. Richards, “the process of metaphor in language, the exchange between the meanings of words which we study in explicit verbal metaphors, are superimposed upon a perceived world which is itself a product of earlier or unwitting metaphor.”<sup>29</sup> Metaphors build up layers and are based on earlier metaphors in an attempt to explain and understand the world.<sup>30</sup> Thereby, the chosen metaphor fundamentally defines the subsequent framework of explanation and argumentation. For Lakoff and Johnson, most concepts are metaphorical concepts. The concept “argument,” for example, is usually understood in terms of “war,” which then leads to all kinds of subsequent conclusions such as winning, losing, defending or attacking arguments as well as describing them as weak or strong. If one would, however, comprehend “argument” in terms of “dance” arguments would be carried out very differently. Metaphors are therefore not just illustrations; they are metaphorical concepts that allow one to make sense of the world and experiences.<sup>31</sup>

The conceptual consequences caused by the metaphors used for explaining and understanding something are noticeable in many areas. The metaphor “tree of life” in evolutionary biology, for example, has led to the placement of humans in the “crown” of the tree and thereby at a “higher” point in the process of evolution, thus depicting humans as more

26. Black, “More About Metaphor,” 454.

27. Cf. Paul Ricoeur, *The Rule of Metaphor: The Creation of Meaning in Language*, trans. Robert Czerny (London: Routledge, 2003), 251–254, 272; Marcus B. Hester, *The Meaning of Poetic Metaphor: An Analysis in the Light of Wittgenstein’s Claim that Meaning is Use* (The Hague: Mouton, 1967).

28. George Lakoff and Mark Johnson, *Metaphors We Live By* (Chicago: University of Chicago Press, 1980), 6.

29. I. A. Richards, *Philosophy of Rhetoric* (London: Routledge, 2001), 73.

30. Explanation and understanding progresses by the use of metaphor, that is, by explaining something in terms of something else. “The method in principle seems to be this: A man desiring to understand the world looks about for a clue to its comprehension. He pitches upon some area of common-sense fact and tries if he cannot understand other areas in terms of this one. The original area becomes then his basic analogy or root metaphor. He describes as best he can the characteristics of this area, or, if you will, discriminates its structure. A list of its structural characteristics becomes his basic concepts of explanation and description. We call them a set of categories. In terms of these categories he proceeds to study all other areas of fact whether uncriticized or previously criticized. He undertakes to interpret all facts in terms of these categories. As a result of the impact of these other facts upon his categories, he may qualify and readjust the categories, so that a set of categories commonly changes and develops. Since the basic analogy or root metaphor normally (and probably at least in part necessarily) arises out of common sense, a great deal of development and refinement of a set of categories is required if they are to prove adequate for a hypothesis of unlimited scope. Some root metaphors prove more fertile than others, have greater power of expansion and adjustment. These survive in comparison with the others and generate the relatively adequate world theories.” Stephen C. Pepper, *World Hypotheses: A Study in Evidence* (Berkeley: University of California Press, 1948), 91–92.

31. Lakoff and Johnson, *Metaphors We Live By*, chaps. 1, 21.

advanced and valuable. A different metaphor would perhaps lead to a different conception of the place of humans in nature (see fig. 38).<sup>32</sup> Likewise, societies have been described in terms of an organism, as a social body, which then can be talked about as having a head, limbs, organs for specific functions or even a soul (see fig. 39).<sup>33</sup> But also the human organism, particularly movement, metabolism or memory, has been described in terms of machines, such as clocks, motors or computers, which lead to particular ways of understanding humans (see fig. 40).<sup>34</sup> Generally, any underlying metaphor determines the subsequent understanding of a structure and the working principles of any phenomena. Historically, many explanations of (natural) phenomena were metaphorically based on three conceptual models for explanation: *sociomorph*, that is, phenomena are explained in terms of social mechanisms; *technomorph*, that is, phenomena are explained in terms of being created or designed; and *biomorph*, that is, phenomena are explained in terms of something being alive. Depending on the chosen model, the universe, for example, can be understood as a socially acting entity, as a clockwork or tent, or as a living organism.<sup>35</sup> As a result, the favoured metaphor has consequences for the subsequent frameworks of explanation and resulting world-views. As a root metaphor, however, it becomes invisible as a metaphor.

Models are similar to metaphors as they show something in terms of something else and can thus be considered as *material metaphors*. Like metaphors, models are not just demonstrations of what one knows already but allow one to make new connections and to adopt new perspectives, and can thus be regarded as “speculative instruments.”<sup>36</sup> Like other forms of representation, such as charts, maps, graphs or photographs, models are not illustrations of statements or facts, but rather are forms of understanding in their own right, since they *show* how things are and thus show what they explain.<sup>37</sup> Models do not need to be translated—and often cannot be translated—into other forms of representation or propositional statements in order to be understood. Therefore, they cannot be judged in terms of

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32. The “tree of life” metaphor was both used by Charles Darwin and Ernst Haeckel. Whereas Darwin used a more abstract conception that allowed him to conceive evolution in terms of the branching of a tree, Haeckel used a more literal conception in which one form of life is placed “above” another. Charles Darwin, *On the Origin of Species by Means of Natural Selection: Or the Preservation of Favoured Races in the Struggle for Life* (London: John Murray, 1859); Ernst Haeckel, *Generelle Morphologie der Organismen: allgemeine Grundzüge der organische Formen-Wissenschaft, mechanisch begründet durch die von Charles Darwin reformirte Descendenz-Theorie* (Berlin: Reimer, 1866); Ernst Haeckel, *The Evolution of Man: A Popular Exposition of the Principal Points of Human Ontogeny and Phylogeny* (London: Kegan Paul, Trench & Co., 1883).

33. Thomas Hobbes, for example, understood the state metaphorically as an organism. Thomas Hobbes, *Hobbes’s Leviathan: Reprinted from the Edition of 1651* (Oxford: Clarendon Press, 1909). Cf. Ritter, Gründer, and Gabriel, *HWPh*, s.v. “Organismus;” Oscar Hertwig, *Der Staat als Organismus: Gedanken zur Entwicklung der Menschheit* (Jena: G. Fischer, 1922); Ernst Mayr, *The Growth of Biological Thought: Diversity, Evolution, and Inheritance* (Cambridge, MA: Belknap Press, 1982); Albert Schäffle, *Bau und Leben des socialen Körpers* (Tübingen: H. Laupp, 1881).

34. Thomas Hobbes, René Descartes or Julien Offray de La Mettrie, for example, used a machine metaphor to describe organisms as complex machines. The machine model of living organisms was used to describe and explain different aspects of life, such as movement, regularity, organisation, working relationships between parts and the whole, rational explanation and the ability to plan and foresee actions. Currently this metaphor is influential in nanotechnology, neuroscience and synthetic biology. Kristian Köchy, *Biophilosophie zur Einführung* (Hamburg: Junius Verlag, 2008), 108–110. Cf. Marcus Wohlsen, *Biopunk: Solving Biotech’s Biggest Problems in Kitchens and Garages* (New York: Current, 2012), 204.

35. Ernst Topitsch, “Grundformen der Weltauffassung,” in *Erkenntnis und Illusion: Grundstrukturen unserer Weltauffassung* (Tübingen: Mohr Siebeck, 1988).

36. Black, “Models and Archetypes,” 237.

37. Black, “More About Metaphor,” 456.

right or wrong, but only in terms of how successful they facilitate to understand the object that they present or represent.

Design objects as material metaphors can create perspectives on possible worlds by presenting something new, or on the actual world by presenting it in a new light. Thereby, both constructing models as well as perceiving models permits one to discover something new and can thus be regarded as a form of inquiry. When confronted with an unfamiliar model, analogy or metaphor one needs to make sense of it, whereby new meaning and insight may be generated and the existing world is restructured.<sup>38</sup> Models as material metaphors may furthermore be used to make abstract ideas and concepts tangible and experienceable by turning them into “what it is like” experiences. Thereby, however, the concepts are not directly translated, but rather change depending on the form of presentation used for creating the experience.

An example of a design object that made an abstract concept tangible is the *Doomsday Clock* (see fig. 41), which first appeared in 1947 on the cover of the *Bulletin of the Atomic Scientists*.<sup>39</sup> The hand of the symbolic clock shows the time as seven minutes to midnight and aims to represent the imminent threat of a nuclear war. This threat is translated into the hands of an analog clock whereby midnight indicates doomsday (and is associated with the toll of the bell and the beginning of witching hour). The closer the hands are to midnight, the higher the probability of the catastrophe, that is, the clock does not indicate the “time” until the doomsday but the “probability” of a doomsday. In this sense, the clock is a metaphor for the abstract threat of a nuclear war as the time to midnight is *seen as* the probability of the catastrophe and not as the time until the catastrophe. The *Doomsday Clock* regularly appeared in the *Bulletin* and the time to midnight was adjusted several times. Currently, it is set to five minutes to midnight. Although initially the clock was used to indicate the threat of a nuclear war, today it includes risks, such as climate change and biosecurity into the calculation of probability.<sup>40</sup> The clock translates the state of the world—the possibility of a human-made global disaster—into a simple visual analogy and thereby allows one to grasp the abstract possibility of doomsday.<sup>41</sup>

Time, however, is itself a very abstract concept, since humans cannot perceive “time” as such but only experience duration as lived experience. In order to be able to perceive time, reference points are needed that indicate the passage of a certain amount of time. A series of photographs, for example, that show the aging of people or the change of a landscape may provide the means to experience time in terms of its consequences. Some objects, however, do not show time in terms of documenting the change of objects but allow one to grasp time, since they are manifestations of time, so to speak. A cross section of a tree, for example, lets one see time in terms of its annual rings. Old trees in particular can be used as

38. Cf. Ibid.; Ricoeur, *The Rule of Metaphor: The Creation of Meaning in Language*, 4–6, 251–254, 278–279.

39. The *Doomsday Clock* was introduced on the cover of the *Bulletin of the Atomic Scientists* 3, no. 6 (June 1947). Cf. <http://www.thebulletin.org> (accessed September 10, 2012).

40. Doomsday Clock Overview, <http://www.thebulletin.org/content/doomsday-clock/overview> (accessed February 12, 2013).

41. Michael Bierut, “Designing the Unthinkable,” *Design Observer*, December 1, 2010, <http://observatory.designobserver.com/entry.html?entry=12447> (accessed January 20, 2012).

witnesses of a period of time. A famous example is the cross section of a Giant Redwood Tree (see fig. 42) in the Muir Woods National Monument in California. The tree started to grow in 909, was cut down in 1930 and was subsequently put up as a landmark in the park. The annual rings of the tree were labelled with significant historical events: 909 A.D.; 1066 Battle of Hastings; 1215 Magna Carta Signed; 1492 Discovery of America; 1776 Declaration of Independence; 1930 Tree Cut Down.<sup>42</sup> In a scene in Alfred Hitchcock's film *Vertigo* the female protagonist (Kim Novak) stands in front of a copy of this landmark and reflects on the insignificance of her life in relation to that of the tree. Here, time is understood *in terms of* the annual rings of the tree, that is the rings are *seen as* the passage of time. Thereby, the cross section—not only in the film—becomes a medium that makes it possible to grasp and understand the abstract concept of time *metaphorically*.

Another project that uses trees to materialise abstract concepts is Natalie Jeremijenko's piece *Tree Balance* (see fig. 43). Two genetically identical trees are placed in a balance which shows their relative gain in weight. Although the trees are genetically identical, phenotypically they show differences, which are caused by a different interaction with the environment in which they grow. The piece can be regarded as a model of the difference between the role of genetic information and environmental information in determining the concrete and individual characteristics of an organism. The project makes it possible to grasp the difference between genotype and phenotype through this simple model by *showing* the difference in terms of the relative gain in weight.<sup>43</sup>

These material metaphors allow one to grasp abstract concepts and ideas by making them tangible and experienceable. However, they do not illustrate them, but rather change the concepts and even produce concepts themselves. The *Doomsday Clock*, for example, created an entirely new way of talking about potential catastrophic global events, so that the phrase “minutes to midnight” became a common saying to describe these potential dangers. As models, they are furthermore abstractions of the complex concepts and ideas that they represent, which nevertheless make it possible to understand them (i.e. doomsday, time or phenotype/genotype) through their selected features.

### Role Models and Material Portraits

Models that exhibit behaviours, attitudes, features or skills that seem worth adopting can be conceived as *aspirational role models*. Both real humans as well as fictional characters can become role models for others. These models, however, are often portrayed as ideal humans against whom other humans can be judged, whereby their behaviour obtains a normative moral and ethical dimension as they are exemplars of preferable behaviour and attitudes—both as positive and negative examples that show a more or less desirable way of life.

42. The cross section was relabelled in the early 1990s and the signs now read: 909 A.D. A tree is born; 1100 Building of cliff dwellings begins, Mesa Verde; 1325 Aztecs begin construction of Tenochtitlan, Mexico; 1492 Columbus Sails to America; 1607 Jamestown, VA founded by English colonists; 1776 Declaration of Independence; 1849 California Gold Rush; 1908 Muir Woods National Monument established, 1930 Tree Falls.

43. Cf. Steve Dietz, “Public Sphere\_s,” MedienKunstNetz, [http://www.medienkunstnetz.de/themes/public\\_sphere\\_s/public\\_sphere\\_s](http://www.medienkunstnetz.de/themes/public_sphere_s/public_sphere_s) (accessed February 23, 2013); Alter Nature: We Can, Exhibition Catalogue (Hasselt: Z33 Huis voor actuele kunst, 2010), 22–23.

But not only other humans can serve as role models for human behaviour—objects too can be seen as role models when they *embody* a certain behaviour that emerges in an interaction with the object. Objects can thus become models for a certain type of behaviour; for instance, digital cameras that only take photographs of smiling people, wash basins that require people to wash their hands after using the toilet, telephones that call attention to one's way of speaking, telephones that analyse the truth of the statements made by the interlocutor, or cars that can only be driven with seat belts fastened.<sup>44</sup> Here, certain behaviours, attitudes and even morals are embedded in these objects whereby they become role models for a certain kind of behaviour that needs to be adopted by the user. Objects can then be regarded as role models as they shape human behaviour and thereby as models for human behaviour; however, they can also be seen as models of human behaviour which is embedded and thus modelled in the object.

According to George Herbert Mead, this is not only true for objects that directly influence human behaviour or actions, but generally for any object with which humans interact. Any interaction with an object changes human behaviour and for this reason the forms of behaviour that an object requires can be conceived as models for that behaviour. Objects can thus have similar socialising effects that shape one's personality as other people have. Material objects play an important role in the formation of characters and the self, the socialisation of humans and the constitutions of societies.<sup>45</sup> Furthermore, as Mihaly Csikszentmihalyi and Eugene Rochberg-Halton point out, a person's character partly emerges through an interaction with physical objects and their characteristics; in reverse, an object then also has the "ability to reveal social goals and expectations through its use."<sup>46</sup> The interaction with objects can have a strong socialising effect when things are used in their culturally appropriate way. This is particularly visible in the pretend play of children when they are using toys to adopt certain roles, such as soldier, knights, pirates, princesses, nurses, doctors, shop keepers, postal clerks or housewives. For Csikszentmihalyi and Rochberg-Halton "already existing goals reified in toy objects attract the child's attention and restructure it in conformity with the toy's intended use and ultimately with the societal norms. If socialization is successful, the child will grow by internalizing societal expectations, which reciprocally make a differentiated self possible."<sup>47</sup> The objects children play with are thus not neutral objects, but can have a socialising effect and are part of the appropriate model provided to a child in any given society. However, not only children's toys but all sorts of everyday objects have an embedded set of behaviours and when used accordingly, they have a conditioning effect on humans.<sup>48</sup>

According to Csikszentmihalyi and Rochberg-Halton, objects can not only model the behaviours of their users, they are also used as signs and representations for certain

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44. Cf. Latour, "Where are the Missing Masses?"; B. J. Fogg, *Persuasive Technology: Using Computers to Change What We Think and Do* (San Francisco: Morgan Kaufmann Publishers, 2003), 45–47; Dunne, *Hertzian Tales*, 66.

45. George Herbert Mead, *Mind, Self, and Society: From a Standpoint of a Social Behaviourist* (Chicago: University of Chicago Press, 1967), 154n2.

46. Csikszentmihalyi and Rochberg-Halton, *The Meaning of Things*, 51.

47. *Ibid.*, 51.

48. See pp. 54–58, 64–70.

norms, behaviours and ideologies.<sup>49</sup> They can thus be regarded as *conceptual role models*, that is, as models for thinking about oneself and the world through certain objects. Here, models can be seen as frameworks of understanding; for example, I may understand freedom in terms of an automobile, a mobile phone, a holiday or money. Freedom is then understood in terms of something else whereby these objects become conceptual metaphors for understanding freedom. In other words, freedom *is understood as* the possibility to use these objects or to engage in these activities. Thereby, the metaphorical relation of these objects is largely concealed, the objects become role models for freedom and one thinks about freedom *through* them. To give another example, one can think about settling down and living a family life in terms of buying a house, whereby the house becomes the role model for this lifestyle.<sup>50</sup> These material metaphors thus both lead to a metaphorical understanding of the world and serve as models for a certain behaviour.

Since models can function as signs for the values, world-views, ideologies, self-conceptions, hopes, fears, wishes or dreams of individuals and societies, they can furthermore be considered as *material portraits* of them. They are often understood retrospectively as models of these values, as they *reflect* a certain model (or role model) that individuals or societies had of (or for) themselves. For example, when encountering a “lost” civilisation, archeologists and anthropologists are often faced with the problem that the particular society has not “left” any written documents. They then have to build a model of the society based on the material artefacts that they encounter, such as tools, buildings or images; and consequently, these material artefacts can be seen as models or portraits of that society, although they were not intentionally designed for this purpose but for everyday or ritual use. However, if one sees these artefacts as models of that society one can try to deduct their functions as role models within that respective society and the resulting behaviours or world-views.<sup>51</sup>

These portraits can thus be considered as a form of communication, and may help when the use of language is impossible. The design proposals for the burial sites of nuclear waste that will be hazardous for at least 100,000 years are examples for this approach. The problem the designers are faced with is how to indicate the dangers of the buried material without the use of language, as it is very unlikely that humans in such a distant future will speak any contemporary language, and since contemporaries are already unable to comprehend the language of many ancient civilisations in much more recent history. The task here is to find a universally understandable indication of “danger” in order to be able to communicate with future human societies (see fig. 44).<sup>52</sup> To think about and even design such a

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49. Ibid., 51–52.

50. Cf. Lakoff and Johnson, *Metaphors We Live By*, chaps. 1, 21, 25, 30.

51. Cf. Carl Knappett, *Thinking Through Material Culture: An Interdisciplinary Perspective* (Philadelphia: University of Pennsylvania Press, 2005).

52. See Human Interference Task Force, *Reducing the Likelihood of Future Human Activities That Could Affect Geologic High-Level Waste Repositories* (Columbus, OH: Office of Nuclear Waste Isolation, 1984); Michael Brill, *Site Design to Mark the Dangers of Nuclear Waste for 10,000 Years* (Buffalo: The Buffalo Organization for Social and Technological Innovation, 1991); Andrew Moisey, “Considering the Desire to Mark Our Buried Nuclear Waste: Into Eternity and the Waste Isolation Pilot Plant,” *Qui Parle: Critical Humanities and Social Sciences* 20, no. 2 (2012): 101–125; Peter C. Van Wyck, *Signs of Danger: Waste, Trauma, and Nuclear Threat* (Minneapolis, MN: University of Minnesota Press, 2005); *Into Eternity: A Film for the Future*, directed by Michael Madsen, Dogwoof Pictures, 2010.



form of communication is also always a philosophical inquiry into the limits of communication and interaction itself.

The messages attached to the Pioneer and Voyager space probes, the *Pioneer Plaques* and the *Voyager Golden Record*, designed by a team surrounding Carl Sagan, furthermore attempt to establish a communication not only with future humans but with (“intelligent”) alien life-forms. The *Pioneer Plaques* (see fig. 45) are gold-anodized aluminum plaques attached to the space probes Pioneer 10 and Pioneer 11. The identical plaques contain a pictorial message showing nude figures of a human male and female as well as several symbols that would make it possible to decode the message and its origin. The coding is based on the hyperfine transition of neutral hydrogen as the transition between two energy levels and the resulting wave length and frequency that are used as reference units in the other diagrams on the plaque. The relative position of the sun is then given in relation to 14 pulsars and their frequency as well as the centre of the Milky Way. A schematic depiction (see fig. 46) of the planets of the solar system indicates the origin of the space probe whose outline is furthermore displayed in proportion behind the two human figures. The raised hand of the man is supposed to be a friendly greeting gesture.<sup>53</sup>

Although it is very unlikely that the plaque will ever be found—let alone understood and used to establish a communication with humans—it had its most profound implications on earth as an object of much controversy. Much of the disagreement was generated by the pictorial representation of humans which caused many to take offence at the nudity of the humans represented—and particularly the presentation of genitals of the female—which was considered an inappropriate message to send out into space. Furthermore it led to discussions about the role of men and women, as the depicted woman seems to stand behind the man and it is the man who greets; as well as a discussion of race, as the two depicted humans are arguably Caucasian; and even about the anthropocentricity of the message. But even the abstract map indicating the origin of the spacecraft caused controversy as this could lead potential invaders straight to earth.<sup>54</sup>

The follow-up project *Voyager Golden Record* (see figures 47–48) contained a more complex message including images and sound on a gold-plated copper record. The decoding system is similar to the *Pioneer Plaques* and included instructions on how to decode and “play” the record. The content of the record comprises 116 analogue coded images, followed by audio files, greetings in several languages, sounds of wind, animals, machines and the like, and finally several musical compositions. It furthermore includes a message of the Secretary-General of the United Nations and the then-President of the United States, Jimmy Carter: “This is a present from a small distant world, a token of our sounds, our science, our images, our music, our thoughts and our feelings. We are attempting to survive our time so we may live into yours. We hope someday, having solved the problems we face, to join a

53. Carl Sagan, Linda Salzman Sagan, and Frank Drake, “A Message from Earth,” *Science* 175, no. 4024 (1972): 881–884.

54. Carl Sagan and others, *Murmurs of Earth: The Voyager Interstellar Record* (New York: Random House, 1978), 57–59; Mark Wolverton, *The Depths of Space: The Story of the Pioneer Planetary Probes* (Washington, DC: Joseph Henry Press, 2004), 79–83; Eva Schürmann, “Darstellung einer Vorstellung: Das Bild der Welt auf der Pioneer-Plakette,” in *Atlas der Weltbilder*, ed. Christoph Marksches, Ingeborg Reichle, Jochen Brüning, and Peter Deuffhard (Berlin: Akademie Verlag, 2011), 378.

communication of galactic civilizations. This record represents our hope and our determination, and our good will in a vast and awesome universe.”<sup>55</sup>

The images mainly show planet earth, human anatomy, habitat and culture (see figures 49–50). Surprising, however, is the complete absence of natural or human destruction, war, pollution or diseases. The project was therefore criticised because it shows a distorted image of humanity. Sagan argued that such images were excluded as they may evoke wrong intentions of human contact and may also show humans in a less favourable light. Instead they wanted to include the best of humanity. “Is it a mistake to put our best face to the cosmos? We tried to send our best music. What not a hopeful rather than a despairing view of humanity and its possible future?”<sup>56</sup> The selection of images, sounds and music can be seen as an idealised model of humanity. Besides these intentions, it furthermore seems to be impossible to picture “humanity” in one or a even a series of images as it is itself an abstract concept that cannot be represented completely.<sup>57</sup> One image, however, was deliberately altered in order to avoid the controversy created by the nudity of the human figures on the *Pioneer Plaque*. The photograph of a naked male and a naked pregnant female that was initially proposed for inclusion was excluded and replaced by a schematic drawing (see fig. 51).<sup>58</sup>

In some sense, these messages sent into space are less messages for an alien civilisation, but rather a medium for thinking about the long term prospects of humanity within the universe. As Sagan acknowledges, even if the messages will never be recovered by an alien civilisation, “making the record [has] provided us with a unique opportunity to view our planet, our species and our civilization as a whole, and to imagine the moment of contact with some other planet, species and civilization.”<sup>59</sup> Furthermore, it is an attempt to leave in the universe a mark by the contemporary human civilisation, should Earth cease to exist. “Billions of years from now our sun, then a distended red giant star, will have reduced Earth to a charred cinder. But the Voyager record will still be largely intact, in some other remote region of the Milky Way galaxy, preserving a murmur of an ancient civilization that once flourished—perhaps before moving on to greater deeds and other worlds—on the distant planet Earth.”<sup>60</sup> They are thus not only messages but portraits of humanity and thereby models of a certain self-conception—an attempt to condense humanity into a single coherent portrait. Thereby, they reflect the values and world-views of the team around Sagan more than they represent humanity. Although the message was elaborately designed to be potentially “understood” by “intelligent” alien life-forms as the creators or senders intended, these messages are rather messages to humans than to aliens. They are looking-glasses that show how humans would like to see themselves.<sup>61</sup> The messages attached to the space probes are

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55. Sagan and others, *Murmurs of Earth*, 28.

56. *Ibid.*, 40.

57. Schürmann, “Darstellung einer Vorstellung: Das Bild der Welt auf der Pioneer-Plakette,” 380.

58. Sagan and others, *Murmurs of Earth*, 74.

59. *Ibid.*, 41.

60. *Ibid.*, 42.

61. However, the impossibility to use mathematics (and therefore “science”) as a “universal language” as it is based on human anatomy has been shown by George Lakoff and Rafael E. Núñez, *Where Mathematics Comes From: How the Embodied Mind Brings Mathematics Into Being* (New York: Basic Books, 2000).

thus declarations of human presence in the universe rather than forms of communication in the strictest sense. They are time-capsules that preserve a piece of human existence and in some sense a message both to the future and the present, as they are manifestations of the senders' faith that there will be a future.<sup>62</sup>

These artefacts are snapshots of a certain time and can be regarded as portraits and models of that time. In an attempt to create such a snapshot, Trevor Paglen selected a set of 100 images for his project *The Last Pictures* (see fig. 52), which were nano-etched onto an ultra-archival silicon disc encased in a golden disc and placed on board of the geostationary communication satellite EchoStar XVI that was launched in summer 2012. Besides the microfilm-like images, the casing also included a decoding message similar to the *Pioneer Plaque* using the hyperfine transition of neutral hydrogen and additionally, a pictorial representation of the continental-drift to indicate the temporal origin of the "message." Unlike the messages attached to the space probes, this message will however be bound to Earth as it will orbit the planet potentially forever. In this regard, it is less a message and more a time capsule that houses a visual snapshot of human civilisation long after life on Earth has become extinct and all artefacts have disintegrated. Although the "message" was designed to be potentially read by some distant human or alien society, the focus was less on the correct understanding of the message—and it is doubtful whether this would even be possible given the misunderstandings already present among contemporary humans—but rather to use the message as a medium to *investigate* contemporary society. Paglen selected the images during the course of four years "through a process of interviews, conversations, archival research, formal considerations, and aesthetic sensibility"<sup>63</sup> that aimed to understand and engage with the character and contradictions of contemporary society. He did not want to fall into the trap of "universal communication" based on mathematics and science, but rather left the interpretation of the images open by turning them into questions:

The things that most threaten us are those for which there are no images. What does a picture of global warming look like? (A terrified polar bear on a piece of melting ice?) What does rampant resource depletion look like? (A clear-cut rain-forest?) What sort of picture signifies ecological destruction? (An areal image of an oil spill?). What is a photograph of economic inequality? (Portraits juxtaposing the lives of rich and poor?) What does a picture of capitalism look like? (A factory spewing filth into the sky? A day trader in front of a computer terminal?)<sup>64</sup>

Paglen did not attempt to compress humanity or human civilisation into a single coherent or ideal image but created and embraced an incoherent image or portrait based on visual fragments, which may or may not be interpreted by a future recipient in a way unimaginable to the contemporary sender. His starting point for this approach is the inability of contemporary humans to understand and correctly interpret cave paintings, for example, the approximately 17,300 year old paintings in the Lascaux Cave (see fig. 53). The difference, however,

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62. Wolverton, *The Depths of Space*, 3.

63. Trevor Paglen, *The Last Pictures* (New York: Creative Time Books, 2012), 25.

64. *Ibid.*, 13.

is that these contemporary messages are *intentionally* directed at future human or alien recipients with a radically different cognition and are designed in such a way that they can—at least theoretically—be understood based on the mathematical and scientific premises.

The main recipient of all these artefacts, however, is the contemporary human society rather than a distant human or alien society. They are artefacts of imagination, as they are not physically available to humans *as* artefacts, but as thinking things, that is, as conceptual models and material portraits of human dreams, hopes and fears.

### Models as Mediating Instruments

Models, however, are not just objects that can be looked at or touched, they are fundamentally objects that can be *used*; and it is through the use of models—through *modelling* and *manipulating* models—that understanding is created. According to Mary Morgan and Margaret Morrison, models create understanding based on: (1) their *construction*, as models are not just copies of the world or a theory, but rather *mediate* between the world and theories about the world. Hence, they sit outside the world/theory axis in order to mediate between both; (2) their *functioning* as a tool or instrument, meaning that they can be used like tools and can be applied to different tasks or problems, thereby, like tools, they facilitate an intervention in the world; (3) their *representation*, as they are not just media, tools or instruments but are themselves objects that can illuminate aspects about the object that they represent.<sup>65</sup> Models thus “function not just as a means of interpretation, but also as a means of representation. It is when we manipulate the model that these combined features enable us to learn how and why our interventions work.”<sup>66</sup> Models are thus not passive objects but objects that allow one to change how to think about something. To make a model is not only to make a model of what one knows already but rather a thinking process about something that is unknown. Modelling is a form of “thinking something through” whereby the object in question is constructed and becomes more comprehensible. Both *constructing* and *using* a model is crucial, as models only reveal their potential when put to work, that is, when they are used or manipulated.<sup>67</sup>

However, for Morgan and Morrison, models should not be seen as representations but rather as *representatives* of the objects that they model. Although understanding a model primarily means to understand the model-world, “learning about and from the model’s own internal structure provides the starting point for understanding actual, possible and physically impossible worlds.”<sup>68</sup> This, however, also determines the limits of models in terms of understanding, as the conclusions that are reached in the model-world cannot be transferred one-to-one into the real world, that is, insights gained within the model-world are first of all insights about the model-world and not the real world. The extent to which these insights can be applied to the real world is often highly questionable as models are worlds in

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65. Mary S. Morgan and Margaret Morrison, “Models as Mediating Instruments,” in *Models as Mediators: Perspectives on Natural and Social Science*, ed. Mary S. Morgan and Margaret Morrison (Cambridge: Cambridge University Press, 1999), 10–11, 32–33.

66. *Ibid.*, 12.

67. *Ibid.*, 32.

68. *Ibid.*, 33.

themselves and often radical abstractions of the real world—scientific experiments, for example, are executed under controlled and thus abstracted conditions within a laboratory.<sup>69</sup> In this regard, all models are fictional worlds in relation to reality. But often they can be used as heuristic fictions as they make it possible to transfer insights from the model-world into the real world when the model is *applied* to reality and used in the real world rather than the model-world.

But models do not necessarily need to be considered in scientific or constructive terms in order to learn something from them. Models can also be media for inquiry, conceptual exploration or critique, for example, by modelling underlying structures in order to reveal them. For instance, the project *Google Will Eat Itself* (see fig. 54) by the group Übermorgen, in collaboration with Alessandro Ludovico and Paolo Cirio, is an attempt to buy up Google through an elaborate automatic self-cannibalising system. The idea is to buy up Google shares with the money paid through the company's AdSense programme, which pays for clicks on advertisements placed by Google on a website. When the advertisements are clicked, Google pays the owner of the website on which the advertisement is placed a certain percentage of the advertising money, based on the number of clicks generated; thus, Google only pays money for successfully clicked advertisements. For the project the artists set up a hidden network of websites on which hidden advertisements were placed. A visitor to a site would then automatically trigger internet bots to click the hidden advertisements on all sites within the network and thus generate revenue for the owners of the sites. The internet bots were designed to emulate human clicking behaviour in order not to arouse suspicion by Google as the company considers these clicks "fraudulent clicks." These are clicks that involve no human attention span and thus do not result in a potential purchase. From a technical point of view, however, the system can only register clicks and not the actual attention span of a user. The revenue generated by these clicks is then automatically transferred to a bank account and is used to buy Google shares when enough money is available, thus establishing a system that automatically buys up Google. Thereby, Google finances the purchase of its own shares. The idea is then to distribute the shares to the public and thereby turn Google into a publicly owned company. This process, however, is very slow and *Google Will Eat Itself* is only able to acquire a fraction of the shares. A complete takeover would take an extraordinary amount of time, rendering the goal almost impossible to achieve, not to mention that not all of the company's shares are available on the market. Of course, the project sits mainly in the realm of conceptual art and activism and is not a practical plan to turn Google into a publicly owned company. Rather it aims to show how the

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69. Cf. Helen Elizabeth Ross, *Behaviour and Perception in Strange Environments* (London: Allen and Unwin, 1974). This is, for example, the case with various models of the atomic and subatomic world. By using these models, one first and foremost learns something about the model-world that is created by them. Although these models are in some sense related to reality as they can be applied in order to manipulate reality, they are necessarily abstractions or models of reality and not reality itself. In other words, atomic and subatomic models are worlds in themselves rather than (accurate) representations of reality. Models furthermore seem to create a certain reality of which they themselves are models. Harry Harlow's "Pit of Despair," for example, is a device for inducing depression in rhesus monkeys. It is basically an upside down pyramid out of which the monkey cannot escape. Harlow, who suffered from depression himself, described this device as a manifestation of how it feels like to be depressed. In some sense, the apparatus is both a (physical) model for depression and a device that produces depression.

Google business model works—based mainly on the advertising model which itself is based on keywords—and to short-circuit the advertising system and thereby drive it *ad absurdum*. In some sense, this project deconstructs Google’s business model. Subsequently, Google has issued a letter to the artists stating that the project violates the terms and conditions of the AdSense programme and that Google considers taking legal actions should the project continue. Following their letter, Google closed several AdSense accounts associated with the project.<sup>70</sup>

The aim of the project, however, was not necessarily to criticise Google, but to *show* Google’s business model as a model.<sup>71</sup> *Google Will Eat Itself* can thus be considered a model of the system that provides the means to understand the system—not through an illustration of it but through a working model that can be *used* to interfere with the system. That is, the project does not only show the system conceptually but also practically whereby the audience can *experience* the working process. As a model, it is an autonomous tool that mediates between theory and practice as it interferes with the “real world” and causes consequences for Google. Thereby, it reveals not only the working process of Google but also the absurdity of the Internet economy, in which humans seem to be reducible to website visits and clicks and thus become disembodied and digitised entities. The model is furthermore not only a description or representation of the system but a tool that can change it and interfere with it—one that can be experienced and one that has consequences.

Apart from showing Google as a model, the project raises several philosophical questions. For example, it asks the audience to consider the difference between real humans and the abstracted humans based on website visits and clicks. For Google and other systems that automatically generate recommendations based on previous internet activity, persons seem to be identical with their recorded behaviour. However, when visiting these sites, it becomes obvious that there is a mismatch between the range of my real interests and the recommendations that I am offered. These recommendations are not identical with my real interests, or, in other words, I am not my recommendations. This sometimes leads to amusing and interesting results when trying to figure out what the machine “thinks” what kind of person you are.<sup>72</sup> However, if the system cannot differentiate between real persons and abstracted persons based on clicks, these clicks cannot really be “fraudulent” as the system only records clicks and not humans or human attention. But can an automated system producing these clicks count as cheating then? Would it make a difference if these clicks were executed by humans without paying attention to the content that they click on? *Google Will Eat Itself* makes it possible to think about these issues by modelling them. Furthermore, it is

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70. Google Will Eat Itself, <http://www.gwei.org> (accessed December 7, 2012); Raffael Dörig, “Subversive Übernahme,” Artline Kunstportal, March 29, 2006, <http://www.artline.org/index.php?p=detail&id=5341&back=search&L=0> (accessed December 7, 2012); Derivart, [http://www.derivart.info/index.php?s=derivados\\_bernhard&lang=en](http://www.derivart.info/index.php?s=derivados_bernhard&lang=en) (accessed December 7, 2012). *Google Will Eat Itself* has acquired 819 shares worth approximately 560,367.99 USD by December 9, 2012.

71. Daniela Tomasovsky, “Google: Suchmaschine frisst sich selbst,” *Die Presse*, July 6, 2006, [http://diepresse.com/home/kultur/news/91990/Google\\_Suchmaschine-frisst-sich-selbst](http://diepresse.com/home/kultur/news/91990/Google_Suchmaschine-frisst-sich-selbst) (accessed December 9, 2012).

72. Cf. Jeffrey Zaslow, “If TiVo Thinks You Are Gay, Here’s How to Set It Straight,” *The Wall Street Journal*, November 26, 2002, <http://online.wsj.com/article/SB1038261936872356908.html> (accessed April, 16 2008); Pariser, *The Filter Bubble*.

a model that can interfere with the system and thereby reveal details and working processes of the system. In this regard, it is a mediating instrument that makes it possible to understand the system by interacting with it.

But models can also mediate by making the issues they present directly experienceable. Oscar Bony's piece *The Worker's Family* (see fig. 56), for example, is a piece that displays the working class family of Luis Ricardo Rodríguez to an art audience in a gallery. The family responded to an advertisement in the local newspaper and agreed to be displayed on plinths in a gallery for eight hours a day accompanied by recordings of sound from their home environment. In return Rodríguez would earn twice his monthly salary. The label on the display read: "Luis Ricardo Rodríguez, a professional die-caster, is earning twice his usual wages for just staying on show with his wife and son." Although the photographic documentation of the work shows the family sitting immobile on the plinths, during the exhibition they were changing positions, and were smoking, eating and chatting and trying to avoid the gazes of the largely well dressed middle-class audience visiting the exhibition.<sup>73</sup> On a *conceptual* level, the piece can be understood as a *presentation* of the family as the specific family that it is; or as a *representation*, type or model of working class families in general. On an *experiential* level, however, the piece creates an experience both for the family on display and the audience. On the one hand, both the family and the audience need to decide if they see the piece as a presentation of the specific family or as representation of a family-type. On the other hand both the family and the audience experience themselves as viewers and as viewed.<sup>74</sup>

On another level, the audience experience the use of humans as art objects and models. The worker is not displayed as a worker, that is, neither in his "natural" work environment nor in his "natural" domestic environment—similar to human zoos that displayed foreign cultures in their "natural" environment for entertainment and scientific purposes in Europe and North America during the late 19th and early 20th century—but is displayed in an abstracted and estranged situation. Furthermore, the worker is not paid for his regular work but for being displayed. The piece thus takes the commodification of labour seriously, in which everyone is for sale to the highest bidder and in which specific skills do not matter anymore. However, it is difficult to view the piece as a form of exploitation in economic terms as the worker is paid and has agreed to be displayed by answering an advertisement. It rather seems to be an exploitation in terms of dignity as it seems to create a certain uneasiness in the audience about economic exchange, perhaps through a radical and unmediated confrontation. The audience can enter into an empathic relationship with the worker's family—and workers' families in general—, which are often absent from their world *as* workers. Rather they are present in the form of the products that they produce and the services that they provide (or as fellow citizens). Here, however, the economic relationship is short-circuited and workers directly work for the audience *as* workers and not as workers producing

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73. Claire Bishop, *Artificial Hells: Participatory Art and the Politics of Spectatorship* (London: Verso, 2012), 113–114.

74. Cf. *Ibid.*, 114.

something or providing a service. Though this estrangement the family becomes visible as a working-class family and, in this sense, as a model for the larger economic system.

The piece can thus be regarded as a mediating instrument between abstract conceptions of equality, labour and economic relationships within a society and their concrete and material implications. It shows this relationship neither abstractly (for example, through statistics) nor concretely (for example, through the images of concrete and individual conditions) but rather experientially in a way that the situation becomes immediate and inescapable for the audience. Of course, the piece sits usually within the framework of conceptual art, but for design as philosophical inquiry it is interesting, as it shows how an audience can enter a thought-provoking relationship with an idea. As Elisabeth Schellekens has observed, the cognitive value of conceptual art lies in its ability to make an idea graspable phenomenologically and thereby make ideas experienceable—to yield knowledge not in the form of a proposition but as an experience.<sup>75</sup> However, in order to understand these conceptual pieces, one needs to “have a ‘personal first-hand experience’ of the idea central to a piece. That is to say, we ought to ‘undergo’ the idea rather than merely think of it (as we tend to do when it is expressed by a mere proposition).”<sup>76</sup> Nevertheless, Bony’s piece can also be “experienced” for its qualities as a model without being physically present and still create experiential knowledge.

These two conceptual models create philosophical knowledge and insight not by presenting an issue in form of a perspective (a view on the issue) but by providing a framework in which these issues can be experienced. Since abstract issues and concepts are hard to grasp, making them experienceable through conceptual approaches is a way to create a space for a more engaging philosophical reflection and thus perhaps a more consequential reflection that takes material and real world experience into account, and thereby mediates between the model-world and the real world.

## Conclusion

Models and modelling are important for many forms of inquiry, as models are not just illustrations of what one already knows, but rather tools for modelling the unknown. They can be considered as representations, representatives or as presentations of actual or possible objects. As heuristic fictions they allow one to see the world from a different point of view by using metaphors and analogies that are treated as if they were the object they refer to. Models furthermore show what they explain whereby one can see explanations and implications immediately in material and concrete form. In this regard, models are not only objects that make one think, they are tools for thinking both by modelling and by using them.

For design as inquiry, three functions of models can be used to explore philosophical questions. First, models can be understood as *material metaphors* that can lead to new ways of thinking and talking about something. They can lead to the formation of new concepts or to the reevaluation of existing ones by materialising them and making them experi-

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75. Schellekens, “The Aesthetic Value of Ideas,” 83.

76. Ibid., 86.



enceable. Second, models can be understood as aspirational and conceptual *role models* and as *material portraits* of individuals and societies that permits one to understand conceptual, ethical and ideological aspects of societies in a new way. Third, models can be understood as *mediators* between different perspectives and different areas of knowledge, such as lifeworld and science, description and explanation, representation and intervention or practice and theory. They can facilitate a mediation between particular circumstances and general cases and thus ground theories empirically in the world.<sup>77</sup>

As material objects, they make it possible to relate abstract ideas to the concrete and experienceable reality and thereby to ground philosophical questions in everyday experience.<sup>78</sup> This can create a dialogue both between the various fields of knowledge and between philosophy, science and everyday life. Material objects, especially when grounded in everyday reality, seem to enable people to form a view and opinion on something, which is an outcome that abstract theories rarely achieve.

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77. Köchy, *Biophilosophie*, 91.

78. Turkle, *Evocative Objects*, 8.



## Chapter 7: Staged Situations

In contrast to fictions or models, situations are concrete environments in which one is involved. Thus they are experienced not only intellectually but also bodily. Designed situations, however, could be seen as inauthentic and acts of deception, especially when create experiences that increase consumption. Such experiences are often carefully staged in order to create a simulation that is experienced as if it were “real” rather than “staged.” A designed environment can therefore be regarded as a simulated environment, in which designed and constructed experiences replace “real” or “authentic” experiences. Environments, such as shops, restaurants, theme parks or holiday resorts, are often carefully designed to control the experiences and behaviours of the audience. The cities Las Vegas or Celebration, for example, could be considered as cities that stage a certain type of society and thus as inauthentic since they were designed rather than grew organically.

These types of staged situations, however, do not aim for reflection and contemplation, but for entertainment or unreflective experience. Design as philosophical inquiry would thus need to create situations for reflection rather than for entertainment (or perhaps to create entertaining situations that lead to reflection). Reflection seems to require the maintenance of a critical distance to the sensual experience of a situation, which may prove problematic due to the apparent incompatibility of sensual experience and reflection. Since a situation is a temporal event, one can *immerse oneself into* a situation and *disinter oneself from* a situation, that is, the reflection can occur at a certain point of the experience or after the experience.<sup>1</sup> Using staged situations as a medium for inquiry would then create knowledge and understanding through first-hand and bodily experience and thus *experiential knowledge*.

In this chapter, I will argue: First, that philosophical inquiry may be most fruitful when it focuses on concrete and everyday situations and not on the abstract and general. Second, that constructing situations for reflection can be a medium for philosophical inquiry when one realises the nature of the situation as situated and not as reality. Third, that these staged situations can be regarded as simulations that permit one to access a previously inaccessible perspective on the world. Fourth, that re-enactments are ways to experience the world from the point of view of others.

### Philosophical Situations

Situations can play an important role for a philosophical inquiry as they make one focus not on the abstract and general but on concrete, individual and everyday lived experience. Humans do not exist in an abstract realm but always in concrete situations as they are always involved in particular situations. They can thus not be understood without their circumstances as they are defined by the situations they are in.<sup>2</sup> When I am involved in a situ-

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1. See pp. 92–96, 168.

2. Or, as José Ortega y Gasset claims: “I am myself plus my circumstances.” José Ortega y Gasset, *Meditations on Quixote*, trans. Evelyn Rugg and Diego Marín (New York: W. W. Norton & Company, 1963), 45; cf. *Ibid.*, nn4–5, 8.

ation I cannot observe it passively, but need to act, decide and orient myself.<sup>3</sup> Situations can thus be seen as that what humans have to deal with and what is important in any particular moment. Thereby humans do not orient themselves *about* a certain situation—objectively from the outside as it were—but also from within as they are also always *in* this particular situation.<sup>4</sup> Concrete situations thus determine perception, orientation and action.

How a situation is *perceived* depends both on the context of the situation and the background of the perceiver in terms of knowledge and experience. To understand a situation is to perceive a situation in a particular way. Thereby, a situation does not emerge from an assembly of assorted facts and objects, but instead facts and objects are understood accordingly in a particular situation. In other words, a situation is not an assembly of unrelated things but rather an environment that creates the background for understanding the objects within. According to Martin Heidegger, this can be described as an “environmental experience,” that is, as an experience of a situation or environment (*Umwelt*) as a coherent world that “surrounds” me. He illustrates this with an example of perceiving and understanding a lectern in a lecture theatre. On the one hand, the perception and understanding of a lectern *as* a lectern depends on the situation (lecture theatre) and the background of the perceiver (lecturer, student, etc.). On the other hand, the perception of the lectern is immediate and not a gradual process whereby the perceiver “builds up” the lectern from its components, as it were. When “students” enter a lecture theatre they perceive the lecture theatre *as* a lecture theatre instantly and not as an assembly of unrelated facts from which a lecture theatre slowly emerges. To do this, the perceiver needs to have a concept of “lecture theatre” and “lectern” in order to see and understand them as such.<sup>5</sup>

In the experience of seeing the lectern something is given *to me* from out of an immediate environment [*Umwelt*]. This environmental milieu (lectern, book, blackboard, notebook, fountain pen, caretaker, student fraternity, tram-car, motor-car, etc.) does not consist just of things, objects, which are then conceived as meaning this and this; rather, the meaningful is primary and immediately given to me without any mental detours across thing-oriented apprehension. Living in an environment, it signifies to me everywhere and always, everything has the character of world.<sup>6</sup>

For Heidegger, situations are thus not static moments but processes and events. As I am involved in a situation and it necessarily relates to me; and as being involved in a situation, I

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3. Cf. Michael Großheim, “Erkennen oder Entscheiden: Der Situationsbegriff zwischen theoretischer und praktischer Philosophie,” in *Internationales Jahrbuch für Hermeneutik 1*, ed. Günter Figal (Tübingen: Mohr Siebeck, 2002), 282.
  4. Werner Stegmaier, “Einleitung,” in *Orientierung: Philosophische Perspektiven*, ed. Werner Stegmaier (Frankfurt am Main: Suhrkamp Verlag, 2005), 16.
  5. Martin Heidegger, *Towards the Definition of Philosophy* (London: Continuum, 2002), 59–61 (GA vol. 56/57, pp. 70–72). Wittgenstein observes a similar process in the perception of aspects *as* something, for example, the *Duck-Rabbit*. Wittgenstein, *Philosophical Investigations*, pt. 2, sec. xi. See pp. 140–144. People from different backgrounds, however, who perhaps have not studied for a degree in a university, may not understand the situation instantly and therefore not see the “lectern” or the “lecture theatre” as such, but as something else. The interpretation of a situation is therefore not a neutral process but depends on my background and the particular situation. Cf. Großheim, “Erkennen oder Entscheiden,” 284–286.
  6. Heidegger, *Towards the Definition of Philosophy*, 59–61 (GA vol. 56/57, pp. 70–72).

am in some sense indistinguishable from that situation as it is an environment that surrounds me and in which I exist.<sup>7</sup>

Similarly, James Gibson has argued that I am always surrounded *by* an environment (or rather that I am always *in* an environment). Thereby, he views environments as *environmental reality*, which already includes meaning that can be discovered, as opposed to a *physical reality*, which is a mere assembly of facts onto which meaning needs to be projected. Similar to Heidegger, Gibson tries to overcome subjectivism and objectivism by locating meaning neither in the subject nor the object, but rather in between them. Meaning emerges when a subject acts in a certain environment, whereby the environment *affords* certain actions, thoughts and behaviour.<sup>8</sup> According to Gibson, “affordance is neither an objective property nor a subjective property; or it is both if you like. An affordance cuts across the dichotomy of subjective-objective and helps us to understand its inadequacy. It is equally a fact of the environment and a fact of behavior. It is both physical and psychical, yet neither. An affordance points both ways, to the environment and to the observer.”<sup>9</sup> Environments or situations thus impose certain possibilities and restrictions on the person in the situation. How a situation is understood is thereby partly in the situation itself and partly in the perceiver or actor. Meaning is located neither in the environments or objects nor in the perceiver, but emerges when both come together through perception and action.

Being in situations is therefore not a process of “passive” perception but rather a process of understanding, acting and decision making as situations require *orientation*. Thereby, I orient myself *about* a situation while being *in* the situation. Situations in which humans “find” themselves always have certain conditions that are seldom (fully) determined by the person entering it. Many situations are not made, but found and one has to deal with a situation through orientation, understanding and action. Thereby, a situation is not a set of fixed conditions (*Bestände*) but rather a set of particular circumstances (*Umstände*) that may change. A situation, however, also changes when I start to orient myself about a situation, as I am also always in the situation that I am dealing with.<sup>10</sup> Here, orientation can also be regarded as a form of inquiry. John Dewey, for example, considers an inquiry as a way of figuring out a situation and turning it from an indeterminate into a determinate one.<sup>11</sup> Being confronted with situations and figuring out how to deal with them can be regarded as a form of philosophical inquiry when these situations require a *philosophical orientation*—to find (new) concepts for understanding and/or to decide how to act. Situations thus pose questions and tasks, require to take a stance and to make decisions. One cannot be neutral towards a situation, as one needs to understand a situation in a certain way and from a certain point of view. A situation asks one to deal with the particular situation and calls for action and making decisions.<sup>12</sup>

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7. Ibid., 174 (GA vol. 56/57, p. 206).

8. Gibson, *The Ecological Approach to Visual Perception*, 33, 43. See page 106.

9. Ibid., 129.

10. Werner Stegmaier, *Philosophie der Orientierung* (Berlin: Walter de Gruyter, 2008), 153–156.

11. Dewey, *Logic*, 104–105. See pp. 89–92.

12. Cf. Großheim, “Erkennen oder Entscheiden,” 291.

Situations play an important role in existential philosophy. For Karl Jaspers, for example, any philosophical inquiry starts with humans “finding” themselves in certain situations. When being in a situation that I need to explain (at least) for myself, philosophical inquiry will never come to an end as humans will always be in a particular situation both in their own lives and in human history. Humans can never step outside of being-in-situations. Therefore, every situation is in some sense unique and requires new orientation (although it is often based on prior experience). It both includes the past and the future in terms of possibilities which are enacted through orientation and *action*.<sup>13</sup> Heidegger similarly observes that humans beings are always thrown into a situation (the world) that both shapes their existence and at the same time is open for orientation which is the basis for freedom. In situations, humans throw themselves into the future, and thereby design their lives and create possibilities.<sup>14</sup> Jean-Paul Sartre similarly relates situation to the realisation of freedom. According to Sartre, “there is freedom only in a situation, and there is a situation only through freedom. Human-reality everywhere encounters resistance and obstacles which it has not created, but these resistances and obstacles have meaning only in and through the free choice which human-reality is.”<sup>15</sup> On the one hand, humans are defined through situations, for example, through birth or by accident, and, on the other hand, humans can or must transcend these situations in order to realise their freedom and themselves. That is, not to give in to the situation and being defined by it, but distancing oneself from it in order to gain a perspective on it, which allows one to transcend or rather change the situation (and thereby oneself). It is not only a situation that defines humans, but it is also humans who give meaning to a situation through decisions and actions. For Sartre, being in a situation means to have “chosen” the situation. I can thus decide to view a situation differently by distancing myself from it. According to Sartre, in every situation I am free to decide what to think about it and what to do in it, and thereby, to *choose* the situation I am in. Every situation can be seen differently than it first appears whereby different courses of action and possibilities open up. Realising these possibilities is secondary to *seeing* these possibilities, as this lets one *see* the world differently, that is, from a different perspective, whereby the situation changes.<sup>16</sup>

Sartre, furthermore outlines his approach to situations in relation to art and especially theatre. In theatre, he argues, situations can be constructed that confront the protagonists with the necessity to act and to make decisions through which they make themselves as humans. According to Sartre, these fictional situations can be used to show the possibilities and the freedom that humans have in any particular situation. In such situations humans not only react to a given situation, but rather make themselves through these actions. Here, the discussion about human freedom and becoming is realised through fictional characters in theatre, literature or film. However, situations can not only be used to confront the audience with fictional characters that can make them realise something; they can also be used

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13. Karl Jaspers, *Philosophie I: Philosophische Weltorientierung* (Berlin: Springer-Verlag, 1956), 1–4, 56.

14. Heidegger, *Being and Time*, §§ 12, 29, 60, 65. See note 33 on page 32.

15. Sartre, *Being and Nothingness*, 489.

16. *Ibid.*, 481–489. Cf. Großheim, “Erkennen oder Entscheiden,” 297.

to confront the audience itself. Here, situations can be created that require the audience to make decisions and to act, whereby a first-hand experience can be created that makes it possible to get a perspective on how a situation and the issues involved feel like—perhaps to make a philosophical experience.<sup>17</sup>

When being confronted with a particular situation, I become involved in the situation, whereby I gain experiential knowledge about this *particular* situation rather than propositional knowledge about *such* situations in general. This knowledge is based on first-hand experience of being involved in the situation. Furthermore, this knowledge cannot really be separated from me who has the experience of being or having been in the situation and is therefore only partially generalisable.<sup>18</sup> Situations are experienced and require orientation, whereby one needs to develop a perspective on the situation and has to deal with it through actions and by making decisions. Situations can therefore lead to *knowledge through decisions*; that is, on the one hand, one needs to decide how to understand a certain situation, which may be disengaged and contemplative; and on the other hand, one needs to decide how to behave in a certain situation, which requires direct involvement. Only through making these decisions I can understand a situation and can gain knowledge about it (and myself). Thereby, situations are experienced as a whole, that is, not only as an assembly of facts but as an environment in which my actions have consequences. This process is thus related to practical philosophy which aims to fathom how to make *good* decisions.<sup>19</sup>

Staging situations can thus be used for a philosophical inquiry as they make it possible to create understanding through experience, orientation and action. They allow one to confront the object of inquiry in a specific or concrete situation and thus to experience it physically or bodily. Situations—that is, *being in* a situation or being *confronted with* a situation—requires one to think and act in that concrete situation and not in the abstract or general. On the one hand, *situating* the object of inquiry is to make it concrete, specific and tangible, which lets a designer enter a conversation with the object/situation.<sup>20</sup> On the other hand, *situations* permit an audience to experience the object of inquiry in a concrete situation that relates it to the material and everyday reality. Situations thus provide the means to situate the object of inquiry and to stage situations for experiencing this object, and thus to ask concrete and experiential questions: “What is it like to ...?” “How does it feel to ...?” “What would it mean if ...?”

### Staged Situations as Forms for Reflection

For situations to function as forms of philosophical inquiry, they need to be constructed in such a way that they can be understood *as* situations, meaning that they can be seen as situations in which one can take a perspective on the situation. In everyday life most situations—and humans are always *in* situations—do not facilitate this critical distance as they

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17. Jean-Paul Sartre, “For a Theatre of Situations,” in *Modern Theories of Drama: A Selection of Writings on Drama and Theatre 1850-1990*, ed. Günter Figal (Oxford: Oxford University Press, 1998), 43.

18. See pp. 78–83.

19. Cf. Großheim, “Erkennen oder Entscheiden,” 290–292, 299–300.

20. See pp. 83–89.

are seen as life itself with its necessities rather than as situations in which one may realise oneself. Here, situations are often something that “sucks one in” or something one “goes along with” but rarely something one reflects on. The question, however, is how to construct situations that lead to philosophical questions or and exploration?

In relation to aesthetic objects this phenomenon has been described by Immanuel Kant, who distinguishes between objects for use and entertainment and objects for reflection as they create the necessary critical distance.<sup>21</sup> Art objects can, however, also lead to a loss of this distance when they tend to draw one into the narrative, such as literature, theatre and film. In order for the audience not to lose the critical distance to what is presented, strategies can be employed that *alienate* the audience from the objects. According to Bertolt Brecht, in theatre alienation effects (*Verfremdungseffekte*) can be used to hinder the audience from associating themselves with the characters in the play. What Brecht calls epic theatre—in contrast to dramatic theatre—creates an atmosphere, in which the audience never “forgets” that they are watching a fictional story. The audience is thus never in a passive mode of “entertainment” as the fictionality of the play is always disclosed and the viewer is forced to engage with the piece critically and analytically. Political issues, for example, are not presented so that they “disappear” in a fictional world but are presented as actual social or political issues that require attention. For Brecht, this strategy prevents automated perception as the audience needs to reflect on what is presented in the moment of presentation. The aim of this form of theatre is thus not to create an illusion of an actual or possible world, but to make the audience think and question the world.<sup>22</sup>

The strategy, however, is not limited to theatre, but is also used in art and design.<sup>23</sup> Carsten Höller’s and Rosemarie Trockel’s installation *A House for Pigs and People* (see figures 57–58), for example, can be considered as a situation that uses such a strategy to make the audience think. It is a spatial arrangement that consists of an outside area for pigs separated into areas for eating, drinking, breeding and exercising, and an indoor space for humans from which they can observe the animals. The two spaces are separated by a one-way mirror that permits the humans to see the animals but not vice versa. This barrier furthermore blocks off sound and smell as well as any other form of interaction. The viewing-space of humans is a bare concrete room with a slope on which the audience can lay down on mats and watch the animals outside. The design of the room renders the experience disengaged, contemplative and reflective rather than entertaining. It is a somewhat alienating experience as the situation is not that of visiting a zoo or a farm, but rather that of observing a scientific experiment or police interrogation taking place on the other side of the mirror—

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21. Kant, *Critique of the Power of Judgement*, 184–185 (AA, 305–306). See page 92.

22. Bertolt Brecht, *Brecht on Theatre: The Development of an Aesthetic*, trans. John Willett (New York: Hill and Wang, 1978), chaps. 24, 29, 31. The strategy of defamiliarisation or estrangement, has first been described by Viktor Shklovsky to distinguish poetic from practical language. Since poetic language is more difficult to understand it counteracts automated perception and requires critical reflection. Viktor Shklovsky, “Art as Technique,” in *Literary Theory: An Anthology*, ed. Julie Rivkin and Michael Ryan (Malden, MA: Blackwell, 1998). The quality of poetic language to make things unfamiliar, however, was already described by Aristotle. Aristotle, *De Poetica*, 1458a–1458b (chap. 22).

23. In design, for example, Anthony Dunne has argued for defamiliarisation or estrangement as strategies for a more reflective engagement with artefacts. Dunne, *Hertzian Tales*, 38–42; see page 56.



which almost seems to be a window into a different world. Humans can contemplate how the pigs go about their lives independent from human observation. The situation facilitates not the experience of watching the pigs but rather the experience of experiencing oneself watching them. Therefore, the situation not only creates a perspective on the creatures in front of the mirror but also a perspective on the viewer's relationship with them.<sup>24</sup> The audience is not a mere spectator but is confronted with a situation as they become part of the installation. The separation from the animals, however, is perhaps the most comfortable position for the human observers, as they are not physically confronted with the gaze of the animals—which, after all, are bred only for their meat and mainly fed with garbage. In the context of the exhibition, the space can thus be considered as a metaphor of the human separation from nature, in which humans sit inside and look out into the natural world, whereby nature is considered as that what is outside. The situation thus facilitates the experience of this separation in order to gain a perspective on it.<sup>25</sup>

The audience of a situation, however, can also be more actively involved in the production of the situations and thus not only reflect through perception and contemplation but also through orientation and action. The challenge, however, is to construct a situation that engages people actively and participatively and at the same time allows them to reflect on the situation and their actions. In other words, how can a critical distance be maintained when one is directly involved in something?

For Steven Duncombe, such situations need to be considered as “ethical spectacles” that aim not to lure the participants into a system of passive consumption but to engage them “with reality while asking what new realities might be possible.”<sup>26</sup> According to Duncombe, this form of spectacle must have four features: First, it needs to be *participatory*, that is the people participating must be producers of the spectacle rather than consumers of it. Second, although a spectacle necessarily needs to be planned and guided in some way, it needs to be *open* to the participants so that they may reshape its course and outcome in the course of the event. Third, it needs to be *transparent*, that is, it needs to be seen and experienced *as* a spectacle and not as reality. For Duncombe, “the goal of the ethical spectacle is not to replace the real with the spectacle, but to reveal and amplify the real through the spectacle.”<sup>27</sup> This could be achieved through some form of estrangement. Finally, it needs to be *dreamy*, that is, it should not only be based on what seems to be immediately achievable but also on the real dreams and desires of people regardless of how trivial or unachievable they may seem.<sup>28</sup>

Such strategy has been used by the *Occupy Wall Street* protest movement that occupied the privately owned but publicly accessible Zuccotti Park in New York City in 2011 by setting up a camp including tents, barbers, kitchens, libraries and class rooms. One of the most surprising thing about the protest was that they did not seem to have clear demands—

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24. Cf. Emily Martin, “Pigs as People; People as Pigs,” in *Ein Haus für Schweine und Menschen / A House for Pigs and People*, ed. Carsten Höller and Rosemarie Trockel (Köln: Walter König, 1997), 18–19.

25. Cf. Giovanni Aloï, “Ein Haus – A House for Pigs and People,” *Antennae* 12 (2012), 9.

26. Duncombe, *Dream*, 126.

27. *Ibid.*, 154–155.

28. *Ibid.*, chap. 6. For Duncombe's conception of the aspect of dreams in social and political debate see page 135.

or even contradictory demands—nor a clear leader or group of leaders, which perhaps made it initially difficult to integrate the protests into an existing framework. But was the protest really a protest in the traditional sense? According to Duncombe, these protests should be seen not as traditional protests but rather as a form of activist art, as it focuses strongly on the aesthetic qualities of protest. Furthermore, it is not a form of protest that *demands* a different society but one that *shows* a different society by temporarily *enacting* it. Although, as Duncombe argues, the community of the protest camp did not work in a strictly functional sense, it nevertheless shows that a different society is or could be possible. It thereby sparks imagination about different forms of society.<sup>29</sup>

The occupation established “temporary autonomous zones,” in which existing laws and orders were locally and temporarily suspended, and in which new spontaneous relationships between people could emerge. Such zones were, in a sense, a way to test and *experience* alternative worlds and social systems temporarily without the need for establishing them permanently.<sup>30</sup> If the occupation was more a form of political art than a demonstration or revolution, it created a situation for asking philosophical questions; it allowed one to reflect on the possibility of change and the shape of a different social and political system.

Situations, however, do not necessarily need to be political in a direct sense in order to explore a different type of society or system; they can also explore these in more conceptual terms. *Food Facility Amsterdam* (see fig. 59) by Martí Guixé, for example, is a non-descriptive “restaurant” space fitted with tables and plastic garden chairs but has no kitchen. The audience/customers, however, can order food from a selection of local take-out places, which is then delivered to the restaurant with scooters. Waiters advise the audience/customers on the quality of the food, give information about estimated delivery times, order the food from the take-out, and serve the delivered food once it has arrived. Although one can choose from a variety of different national cuisines, the generic nature of the restaurant creates a mismatch between a specific food and a non-specific environment.<sup>31</sup> The restaurant thus pushes the idea of outsourcing so far that it deconstructs the concept of what a restaurant is. The audience/customers are both confronted with the situation and participate in creating it. However, since the situation is staged, it makes these mechanisms and their economic and social implications visible in a different way than a home delivery service would, although the result is essentially the same.

In the project *Solar Kitchen Restaurant* (see fig. 60), Guixé explores similar conceptual issues. In an outdoor restaurant solar cookers are used to prepare food, whereby the

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29. Stephen Duncombe, “The Art of Activism: Protest Politics as an Aesthetic Practice” (lecture, Design as Politics / Politics as Design, University of Applied Arts Vienna, May 22, 2012). Duncombe himself held some of his university seminars at the protest camp. Eventually, students joined in spontaneously and Duncombe thus decided to open up his seminars for a larger interested audience. Cf. Carla Blumenkranz, Keith Gessen, Mark Greif, Sarah Leonard, Sarah Resnick, Nikil Saval, Eli Schmitt, and Astra Taylor, eds., *Occupy!: Scenes from Occupied America* (London: Verso, 2011). The book contains articles originally published as a newspaper in connection with the Occupy Wall Street movement *Occupy! The OWS-Inspired Gazette*, <http://nplusonemag.com/occupy> (accessed April 25, 2013).

30. Hakim Bey, *T.A.Z.: The Temporary Autonomous Zone, Ontological Anarchy, Poetic Terrorism* (Brooklyn, NY: Autonomedia, 1991), 95–96.

31. “Food Facility: Take Out, with a Twist,” Mediamantic, <http://www.mediamatic.net/298/en/food-facility> (accessed January 28, 2011); “Post-Google Food – Martí Guixé talks about Food Facility,” Mediamantic, <http://www.mediamatic.net/page/9883/en> (accessed January 28, 2011).

time for the preparation of the food depends on the currently available sunlight. The system of the restaurant thus depends directly on the natural conditions to which both the chef and the audience/customers need to adapt, which may result in longer waiting times for the latter or the use of sunglasses as part of their working clothes for the former.<sup>32</sup> The project thus creates a situation, in which the working principles of the restaurant become visible and experienceable: not only is the kitchen in plain sight, but also its working mechanisms can be comprehended, that is, I can see why I have to wait for the food. The project thus shows how the experience of dining at a restaurant changes when this technology is employed for the preparation of food. Lunch or dinner may take an indeterminate amount of time, which may lead to a different conception of dining time that is not based on the mechanical clock but on the weather condition—one does not eat when it is time to eat, but when it is possible to eat.<sup>33</sup> The project thus discloses the relationship between eating and the sun's energy and by experiencing this disclosure it may lead to philosophical reflections.<sup>34</sup> Additionally, the “restaurant” only exist in the form of solar cookers and tables placed on an outline painted on the floor, thus using a similar form of visual estrangement as did Lars von Trier in his film *Dogville* (2003), in which a village is only represented through a painted floor plan.

By situating these issues in a concrete environment, designers can explore them in an experimental setting that allows them to investigate the particulars of that situation, that is, both the material condition of the situation and the engagement with the situation. These situations can be regarded as forms of philosophical inquiry, as they allow the audience to experience an ethical and conceptual questions in a concrete and bodily way rather than in a contemplative and abstract way. Thereby, the situation sets both the context for the issues and at the same time constructs them. This can be achieved through strategies of estrangement and defamiliarisation whereby the situations make it possible for the audience to newly see and experience the world. In order to achieve a form of reflective experience in a situation, the situation must not be confused with a real situation but needs to be seen *as* a situation for reflection.

### Simulations as Forms for Reflection

Simulations are in some sense similar to models as they refer to something else, that is, to an object that the simulation is a simulation of.<sup>35</sup> However, in contrast to models, simulations are less abstract and usually involve a bodily experience of a concrete situation. Simulations can thus be regarded as staged situations that have some distinct features: First, they can feign the appearance or existence of something, for example an illness which I actually do not have. Second, they can resemble the appearance of something and can thus stand for an original (and may even be confused with it). Third, they can be devices for training purposes by simulating a process or a situation. These forms of simulations aim to give the user

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32. Solar Kitchen Restaurant, <http://www.solarkitchenrestaurant.com> (accessed September 20, 2014).

33. Cf. Mumford, *Technics and Civilization*, 14–17. See page 53.

34. Cf. Heidegger, *Being and Time*, 65–67 (§ 15). See page 55.

35. See pp. 140–144.

first-hand experiences which aim to resemble the original situation as closely as possible and for preparatory purposes. These may, for example, be training apparatuses or simulations of events, which a person may encounter in reality at a later point in time. Fourth, they can be first-hand experiences not for the purpose of training a real situation, but to simulate experiences which someone could not have otherwise due to physical, moral or monetary limitations, and thus do not necessarily need to resemble a real situation.<sup>36</sup> Simulations therefore do not automatically need to be seen as copies or fakes, but can lead to new viewpoints and understanding.

In philosophy, simulations have often been conceived in terms of illusions that prevent gaining insights and knowledge.<sup>37</sup> Jean Baudrillard, however, has a more differentiated conception of simulations in relation to understanding. For Baudrillard reality is never experienceable in an unmediated way but always through the mediation of sign systems and media technologies. Instead of perceiving pure reality humans only perceive various types of simulacra (signs) as reality. These simulacra may add up to a simulation (a simulation of reality) and the more coherent the simulation becomes the more real it gets, eventually becoming reality. In other words, for Baudrillard the real and the fictional collapse into a simulation (hyperreality), since signs no longer refer to any real objects outside the simulation but have become self-referential—they only refer to other signs in an infinite regress. He sees the disappearance of the real and the rise of simulation as the result of three successive phases within a proliferation of different layers of signs, which he calls the “three orders of simulacra.”<sup>38</sup> The first order of simulacra is produced through the proliferation of counterfeits since the Renaissance. These objects may resemble real objects but gradually become more important than the originals. They are, however, clearly recognisable as counterfeits and are not confused with reality. These counterfeits include objects such as decorative elements, stucco, angels, automata, imaginary islands and utopias. The second order of simulacra is produced through the proliferation of products since the Industrial Revolution. These objects cannot be characterised as fictional or unreal as they do not refer to any real or natural objects. They are conceived in order to be to their reproducible as identical copies in large quantities and series. Therefore, they refer to “types” and “models,” that is, to serial differentiation and not to differentiation with regard to reality. These signs are not a counterfeit of an original anymore, but refer to other signs. Apart from industrially produced products, the robot is characteristic for this stage as it—unlike the automaton—abolishes all resemblance to an original. The third order of simulacra is produced through the proliferation of media and communication technologies. Simulacra of the third order are cybernetically controlled environments that make it impossible to distinguish between model and original. It is the stage of binary codes and information which can be recombined infinitely. According to Baudrillard, this stage can be characterised by the clone or android, which is not human but may very well pass as one. In this stage, it is no longer possible to differenti-

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36. Cf. Simpson and Weiner, *OED*, s.v. “simulate.”

37. See page 126 ff.

38. Cf. Paul Hegarty, *Jean Baudrillard: Live Theory* (London: Continuum, 2004), 49.

ate between reality and fiction. The simulation itself has become reality and does not simulate any reality outside of itself.<sup>39</sup>

For Baudrillard this third order is the simulation he conceives as hyperreality.<sup>40</sup> In this stage, simulacra hide the fact that there is no reality outside of the simulation. Rather, the simulation produces reality. Baudrillard illustrates this by noting the difference between simulating and dissimulating an illness.

To dissimulate is to feign not to have what one has. To simulate is to feign to have what one hasn't. One implies a presence, the other an absence. But the matter is more complicated, since to simulate is not simply to feign: 'Someone who feigns an illness can simply go to bed and pretend he is ill. Someone who simulates an illness produces in himself some of the symptoms' [...]. Thus, feigning or dissimulating leaves the reality principle intact: the difference is always clear, it is only masked; whereas simulation threatens the difference between 'true' and 'false', between 'real' and 'imaginary'. Since the simulator produces 'true' symptoms, is he or she ill or not? The simulator cannot be treated objectively either as ill, or as not ill.<sup>41</sup>

A simulation is thus not a reproduction of an object or a reality, but its production. It does not need to refer to something existing but can produce an entirely new reality. For Baudrillard simulations therefore have a dual function: they produce reality and they conceal the fact that there is no reality. To illustrate this, he uses Disneyland as an example for the simulation and the three orders of simulacra. Although Disneyland is clearly understandable as a fictional world, it does not refer to any reality beyond itself. It is thus a reality in itself and can be seen as a microcosm depicting the American society in terms of mass culture, artificiality and infantility. According to Baudrillard, it is a fictional and infantile world that renders the outside world more real and grown up. In fact, he argues, Disneyland conceals that America is a fictional country.<sup>42</sup> Following Baudrillard's argument, simulations are not just copies of reality, but rather constitute reality. The production and experience of simulations can thus lead to understanding and knowledge, not in terms of truth but in terms of experience.

In art, simulations are thus often considered as virtual experiences, that is, as experiences that I can make by experiencing the experience of others. Literature, theatre or film turn the experiences of a character into experiences for an audience. Although the audience experiences reading a book or watching a film or play, they furthermore can

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39. Jean Baudrillard, *Symbolic Exchange and Death*, trans. Iain Hamilton Grant (London: Sage, 1993), 50–58.

40. Jean Baudrillard, "The Precession of Simulacra," in *Simulacra and Simulation* (Ann Arbor: University of Michigan Press, 1994; reprint, 2006), 1.

41. *Ibid.*, 3.

42. *Ibid.*, 12–13. On the other hand, simulated places such as Disneyland can perhaps also be understood as heterotopias. According to Michel Foucault, heterotopias "are something like counter-sites, a kind of effectively enacted utopia in which the real sites, all the other real sites that can be found within the culture, are simultaneously represented, contested, and inverted. Places of this kind are outside of all places, even though it may be possible to indicate their location in reality." Michel Foucault, "Of Other Spaces," in *The Visual Culture Reader*, ed. Nicholas Mirzoeff (London: Routledge, 2002), 231. Simulated spaces may thus be understood as temporarily enacted utopias that make it possible to break out of the reality of everyday life, as they are governed by different laws and rules and can perhaps be understood as places for compensation. Martina Löw, *Raumsoziologie* (Frankfurt am Main: Suhrkamp Verlag, 2000), 165.

experience the experience of a character emotionally. Whereas Brecht thinks that this engagement with the characters prevents the necessary distance and thus, critical reflection,<sup>43</sup> Aristotle contends that it is exactly the immersion into the characters that can have a positive effect. For Aristotle this permits one to (virtually) experience aspects of life, such as pity and fear, without actually having to go through them oneself; a process which can have a purifying or cleansing effect he calls *katharsis* (κάθαρσις).<sup>44</sup> However, the aim is not to produce a simulation for the purpose of entertainment but for intellectual and moral clarification.<sup>45</sup> The advantage of virtual or simulated experience over actual experience is that it not just happens, but that it can be made to stand still and be re-experienced. Thus, artworks understood as simulations can provide knowledge not only about what certain situations may feel like that cannot or should not be experienced first-hand, but also because they can be critically evaluated and analysed in detail.<sup>46</sup> However, these simulations do not create knowledge about what an actual situation feels like (as they are often fictional or fictionalised) but rather knowledge about possibilities and, in this sense, conceptual knowledge that may lead to moral and practical clarification.<sup>47</sup>

In design, simulations are often employed to anticipate a certain reality in the form of models and prototypes as well as empathy tools to understand the viewpoints and realities of others. On the one hand, models, mockups and prototypes are used to simulate a particular reality that allow an audience to enter this reality and interact with it—to feel how the simulated reality feels like. Particularly in participatory approaches to design, these simulations play an important role for prototyping experiences as they provide designers and audiences with the means to have a sensory experience of the reality and consequences created through design objects. These experiences then make it possible for them to judge and negotiate this reality.<sup>48</sup> On the other hand, simulations allow one to see the world differently by empathically adopting the perspective of others either through playing a role or through devices that mediate one's perception of the world. This lets designers get first-hand experience and see the world from the point of view of those for whom they are designing.

This approach to design was pioneered by the industrial designer Patricia Moore, who transformed herself with the help of a make-up artist from a 26-year-old woman into a woman around 80 years old by using bandages to stiffen her joints, baby-oil to blur her vision, gloves to simulate the effects of arthritis and ear-plugs to dull her hearing. Transformed in this way, she explored the urban environments of North American cities over the course of three years to get a first-hand experience of what it is like to be old. She had positive

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43. Brecht, *Brecht on Theatre: The Development of an Aesthetic*, chaps. 24, 29, 31.

44. Aristotle, *De Poetica*, 1449b (chap. 6).

45. See Donald Keese, "On Some Recent Interpretations of Catharsis," *The Classical World* 72, no. 4 (1978–1979): 193–205; Elizabeth S. Belfiore, *Tragic Pleasures: Aristotle on Plot and Emotion* (Princeton, NJ: Princeton University Press, 1992), chap. 10.

46. Walsh, *Literature and Knowledge*, 91, 105. See page 93.

47. Hilary Putnam, "Literature, Science, and Reflection," in *Meaning and the Moral Sciences* (London: Routledge & Kegan Paul, 1978), 90–92.

48. Cf. Pelle Ehn and Morten Kyng, "Cardboard Computers: Mocking-it-up or Hands-on the Future," in *Design at Work: Cooperative Design of Computer Systems*, ed. Joan M. Greenbaum and Morten Kyng (Hillsdale, NJ: Lawrence Erlbaum Associates, 1991); Marion Buchenau and Jane Fulton Suri, "Experience Prototyping," *DIS '00 Proceedings of the 3rd Conference on Designing Interactive Systems: Processes, Practices, Methods, and Techniques* (2000): 424–433.

experiences but also many negative ones, from adverse reactions of people in the street to the designed obstacles that she had to overcome, such as crossing the street during a green phase, taking down groceries from top shelves, reading small print on packaging and opening bottle caps. However, according to Moore, this approach permits designers to immerse themselves into the physical and psychological experiences of the people they are designing for.<sup>49</sup> These experiments allowed Moore to get a new perspective and thereby a better understanding of the elderly and their image and role in society, which enabled her to design more appropriate products for them.<sup>50</sup> Many simulators have been designed ever since her experiments that provide an experience of the effects of aging, impairments or disabilities, such as clouded vision, sight or hearing loss, or arthritis through special suits, gloves or glasses.<sup>51</sup> Although many of these simulators aim to create an empathic understanding of other people, they mainly focus on bodily functions and less on the emotional state of others. In contrast, Moore not only experienced the bodily perspective of elderly people but also adopted their roles over a long period of time and immersed herself in their everyday situations.

These techniques and simulators can lead to experiential knowledge of how situations feel like for another person. However, besides improving one's understanding of other people, simulations can also create experiences that facilitate philosophical reflections through experiences. Don Ritter's interactive installation *Vox Populi* (see fig. 61), for example, provides the means for the audience to experience what it might be like to give a speech before a large crowd. The piece consists of a lectern with a voice-activated teleprompter that randomly displays speeches of people, such as John F. Kennedy, Martin Luther King Jr. and George W. Bush. The audience has to deliver this speech to a virtual crowd projected in front of the lectern. While a person is speaking, the speech is analysed in terms of tempo, volume and interruption. Depending on the speaker's performance, the crowd directly reacts with various levels of approval and disapproval, from yelling "speech, speech" to "I never heard such crap in my life." Furthermore, the teleprompter goes blank for a few seconds when switching from one speech to another so that the speaker has to improvise in order not to lose the audience. According to Ritter, the piece asks questions about the necessary qualities of a leader, if all it takes is to read a prepared text eloquently. It furthermore explores "the idea of who's controlling who in a leadership context. In the piece, the virtual audience controls the speaker and vice versa, but in a philosophical sense you can make a case that crowds can control speakers in the real world."<sup>52</sup> The installation is consequently more than an advanced karaoke machine—it is rather a simulation that makes it

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49. Pat Moore and Charles Paul Conn, *Disguised: A True Story* (Waco, TX: Word Books, 1985).

50. *Ibid.*, 68, 150–157. Moore uses the method of participant observation for her research and even discussed the validity and ethics of deception in a seminar with Stanley Milgram. *Ibid.*, 92–96.

51. Cf. Helen Hamlyn Centre for Design, Empathy Tool, <http://designingwithpeople.rca.ac.uk/methods/empathy-tool> (accessed May 2, 2013).

52. Gilbert A. Bouchard, "Do you have what it takes to be a leader – or a demagogue?" *Edmonton Journal*, March 27, 2006, [http://aesthetic-machinery.com/documents\\_pdf/ritter\\_vox\\_edmonton.pdf](http://aesthetic-machinery.com/documents_pdf/ritter_vox_edmonton.pdf) (accessed May 6, 2013); Dottie Indyke "Surrounded By Art; SITE Santa Fe Show Makes Work Personal for Viewers," *Albuquerque Journal*, September 23, 2005, [http://aesthetic-machinery.com/documents\\_pdf/Ritter\\_DottieIndyke.pdf](http://aesthetic-machinery.com/documents_pdf/Ritter_DottieIndyke.pdf) (accessed May 6, 2013).

possible to reflect on these questions through experience, that is, it places the audience into a position in which they can gain a perspective on these issues through experience.

Another somewhat more extreme simulation is Shona Kitchen's and Noam Toran's installation *Buried Alive* (see fig. 62). It consists of a custom-made coffin, in which Kitchen was temporarily buried alive. The audience was able to (re-)experience this event by lying in the same coffin, watching a video including sound that she filmed from her point of view while being buried (see fig. 63). The design object is a simulator that facilitates to (re-)experience the uncanny event of being buried alive and thus lets one contemplate on this experience. In both installations simulations offer new perspectives through experiencing situations, which were previously inaccessible (for whatever reason). They generate new experiences and thereby new (experiential) knowledge for the audience.

Simulations thus provide first-hand bodily knowledge through creating experiences. Thereby they allow one to form new perspectives on the world by undergoing the experience of "what it feels like." The simulation is thus the medium through which the experience is created. However, since it is a "simulated experience" and not a "real experience" the simulation makes it possible to maintain a cognitive distance and thus to reflect on the experience. The simulation can thus lead to a philosophical reflection as it offers a "perspective" on something rather than merely an "experience" of something.

### Re-enactments as Forms for Reflection

Whereas simulations let one see and experience the world from a different viewpoint, they do not necessarily permit one to understand the personal experiences and thoughts of others. Although it seems to be impossible to understand someone else completely, (re-)experiencing someone's experiences and (re-)thinking someone's thoughts may enhance one's understanding. This may then not only allow one to see the world from the point of view of someone else but also to understand how that person may experience this perspective, that is, how it may feel like to be this person (in a specific situation). Arguably, to a large extent the humanities (including history, sociology, anthropology, ethnography and philosophy) are concerned with this form of understanding—from understanding people in their actual and historical life-situations, interpretation of texts and artefacts to questions of mind and consciousness.<sup>53</sup>

For Wilhelm Dilthey, for example, the humanities or the human sciences (*Geisteswissenschaften*) are concerned with lived human experience and aim to understand it both through articulating one's own experience and through interpreting the objectifications of the lived experience of others.<sup>54</sup> For him, this articulation sits within the interrelation of the experience (*Erleben*) of human states, the expression (*Ausdruck*) of these experiences and the interpretative understanding (*Verstehen*) of these expressions. Understanding is consequently always a form of self-understanding.<sup>55</sup> According to Dilthey, lived experi-

53. See page 49.

54. Zalta, *The Stanford Encyclopedia of Philosophy*, s.v. "Wilhelm Dilthey."

55. Wilhelm Dilthey, *Der Aufbau der geschichtlichen Welt in den Geisteswissenschaften*, vol. 7 of *Gesammelte Schriften* (Leipzig: Verlag von B. G. Teubner, 1927), 86–87, 213–216.



ence is interpretatively understandable in terms of concepts, judgements and actions as well as (life-)expressions in the form of artefacts and artworks as objectifications of lived experience.<sup>56</sup> For Dilthey, understanding the lives and life-expressions of others requires a transposition (*Hineinversetzen*) of these experiences, that is, making the life-context of the person present by bringing it back to life through immersing oneself into this life (by means of the articulated life-expressions, such as texts, artefacts and so on). Furthermore, it requires a re-creation (*Nachbilden*) and a re-experiencing (*Nacherleben*) of these experiences, that is, to understand the life-context and milieu by actively re-creating and re-experiencing the events that took place. Thus it is not a passive form of understanding but an active and forward-directed form that enacts and thereby transports the experiences into the here and now. It involves bringing together the various parts imaginatively into a more or less coherent story thereby enacting a past or alternative reality and thus creating a kind of virtual experience. Dilthey, however, acknowledges that this form of understanding requires that someone has made similar experiences as it seems to be impossible to re-create feelings and experiences that one has not made oneself.<sup>57</sup>

A similar approach has been developed by R. G. Collingwood, for whom re-enactment is the general method both for understanding historical persons and events as well as other minds in general. Re-enactment, for Collingwood, is a form of re-creating the past by re-thinking the thoughts of someone in one's own mind and thereby imagining the situation in which decisions were made as well as envisioning possible alternatives to fully understand why specific decisions were made or specific thoughts were thought. In some sense, one needs to re-create the original situation and problems, and figure it out oneself. Collingwood is aware that this form of re-enactment is not really a re-experiencing of the past but rather an experience of the present. However, according to Collingwood, any form of understanding is always a form of re-experience and re-thinking and thus it is as close as one can get. Re-enactment is thus a critical evaluation of one's own thoughts as history is enacted in present thought.<sup>58</sup> It is thus reflective or critical re-enactment.

The limitations of understanding others by re-creating or re-experiencing their lives has been articulated by Gilbert Ryle, who argues that understanding can only be imperfect and is particularly problematic with regard to historical persons as one always re-enacts them within one's own world-view and therefore cannot fully adopt their point of view as this would require one to *be* this person in a specific moment in time.<sup>59</sup> Georg Simmel has furthermore pointed out that understanding in terms of language first and foremost means that one understands a speech but not necessarily the speaker. Additionally, he thinks, understanding seems to be difficult, if one has not made the same experiences oneself as the framework for reference would not exist that permits one to understand these experiences.<sup>60</sup>

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56. Ibid., 205–207.

57. Ibid., 143, 196.

58. R. G. Collingwood, *The Idea of History* (Oxford: Clarendon Press, 1946), 219, 282–292.

59. Ryle, *The Concept of Mind*, 57.

60. Georg Simmel, *Die Probleme der Geschichtsphilosophie: Eine erkenntnistheoretische Studie*, 3 ed. (Leipzig: Verlag von Duncker & Humboldt, 1907), 29–31.

Nevertheless, re-enactment seems to be a way—perhaps the only way—to understand others and their outlook on the world. By using artistic approaches, re-enactment can actually re-create situations in a physical sense, which may provide a more experiential engagement with the point of view of others—not only for historical purposes, but as forms of philosophical inquiry. Re-enactment can be seen as a body-based inquiry that re-creates a situation through physical and psychological experience and gives first-hand experiential knowledge. The aim, however, is not to provide knowledge in form of generalisable propositions but experiential knowledge about how a particular situation and viewpoint may feel.<sup>61</sup> Understanding is thus mediated through the body and the physical and psychological experiences made in the re-enactment. This makes the perspectives easily accessible as it does not depend on special knowledge but is rather based on a common ground shared by all humans.<sup>62</sup> Using the body as the medium for creating the philosophical perspective and thereby understanding, is a form of self-reflection of one's experience and thereby on the experiences of others in a similar situation.

The *Milgram Re-enactment* (see figures 64–65) by Ron Dickinson is a re-enactment of Stanley Milgram's *Obedience to Authority Experiment* (see figures 66–67) conducted at Yale University between 1960 and 1963. The original experiment aimed to test people's willingness to obey authorities and to follow their orders. It was an attempt to comprehend how the holocaust was possible in Nazi Germany, that is, to understand how so many people could be involved in the murders and seemingly suspend their moral consciousness. The experimental setting involved three people, a scientist, a learner and a teacher. The former two were actors, the latter was recruited through an advertisement placed in a local newspaper (see fig. 68) and direct mailing, calling for participants in a study on memory. At the beginning of the experiment, the learner was introduced to the teacher. Both were told that the experiment would test the improvement of learning and memory by using electric shocks. The teacher then saw how the learner was strapped into a chair that could administer the necessary electric shocks. In one version of the experiment, the learner even mentioned having a heart condition. The teacher was then guided into a separate room from which he could not see the learner. During the experiment the teacher was asked to administer electric shocks to the learner upon wrongly memorising the order of words that he read to him. The answers were given via a display but the teacher could also hear the learner's voice through a speaker. The electric shocks increased during the experiment and ranged from a mild shock of 15 Volts to a potentially lethal shock of 450 Volts. The scientist also assured the teacher that he would take full responsibility for the experiment. In the case that the teacher would doubt or question the experiment, the scientist would give instructions in the following order: (1) "Please continue," or, "Please go on;" (2) "The experiment requires that you continue;" (3) "It is absolutely essential that you continue;" (4) "You have no other choice, you *must* go on." Of course, no electric shocks were actually administered

61. Cf. Vanessa Agnew, "Introduction: What is Reenactment?," *Criticism* 46, no. 3 (2004): 330–331.

62. Jennifer Allen, "'Einmal ist keinmal.' Observations on Reenactment," in *Life, Once More: Forms of Reenactment in Contemporary Art*, ed. Sven Lütticken (Rotterdam: Witte de With, Center fo Contemporary Art, 2005), 181.

to the learner, as the true purpose of the experiment was to test the teacher's willingness to obey to the authority of the scientist (who was marked by his laboratory coat). With the increasing intensity of the supposed electric shocks, the learner acted more and more hysterical, started to scream and demanded the termination of the experiment. However, the majority (more than 60%) of tested people (teachers) continued the experiment, even if they expressed concerns about it, administering potentially deadly shocks under the authority of the scientist.<sup>63</sup>

In Dickinson's re-enactment of the experiment (which itself can already be considered as a sort of re-enactment of the situation in Nazi Germany), all participants were actors, so no one was fooled in the situation. Apart from that, the re-enactment followed the original in every detail from the procedure to the equipment and spatial layout. Unlike the original experiment, the re-enactment had an audience watching the scene from behind semi-mirrored viewing windows. Furthermore, the audience was not permitted to leave during the experiment, which lasted about 115 minutes, and was thus kept in a loop of tedious repetitions of the test with various teachers, especially since the outcome of the experiment was already clear from the outset. However, though this repetitive loop the audience was increasingly put in a state of self-reflection and confronted with the question of one own's views on the experiment and one's potential behaviour both in the experiment and in the real world.<sup>64</sup>

Dickinson's re-enactment is somewhat similar to a stage play—for example, plays by Samuel Beckett or Bertolt Brecht—in which the play is regarded as a means for self-reflection by the audience. However, it is also an re-enactment for the actors and thereby a form of role-play or historical re-enactment with the aim of adopting the point of view of the enacted character and thus to get a better understanding of what it feels like to be in this particular situation. The re-enactment is thus a sort of simulation of the original experiment with the aim of understanding the situation and the decisions made by the original test subjects. It is a critical re-enactment both for the audience and the actors that eliminates the safe distance between them and the participants in the original experiment—perhaps even between them and the people that Milgram tried to understand. The re-enactment thereby transforms abstract knowledge into personal experience through a direct involvement of the audience in a situation that turns them into participants.<sup>65</sup>

Although re-enactments may have limitations, they nevertheless establish of a common ground for understanding through bodily experience. This however, seems to have

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63. Stanley Milgram, *Obedience to Authority: An Experimental View* (London: Pinter & Martin, 1997). Milgram makes explicit reference to the trial of Adolf Eichmann discussed in Hannah Arendt, *Eichmann in Jerusalem: A Report on the Banality of Evil* (London: Penguin Books, 1994). Arendt, however, attributes the "banality of evil" directly to the person Eichmann and does not extend this banality to the general population. Perhaps, evil can here be understood as the absence of empathy, as in Milgram's experiments it is the failure of the teacher to empathise with the learner that makes these tests so appalling. Simon Baron-Cohen, *Zero Degrees of Empathy: A New Theory of Human Cruelty* (London: Allen Lane, 2011).

64. Vivienne Gaskin, "Subjects in Search of an Author," in *The Milgram Re-Enactment: Essays on Rod Dickinson's Re-Enactment of Stanley Milgram's Obedience to Authority Experiment*, ed. Steve Rushton (Maastricht: Jan van Eyck Academie, 2004).

65. Inke Arns, "History will Repeat Itself," in *History will Repeat Itself: Strategies of Re-enactment in Contemporary (Media) Art and Performance*, ed. Inke Arns and Gabriele Horn (Frankfurt am Main: Revolver, 2008), 59–61.

serious limitations for comprehending non-human forms of life. Originally investigating problems of consciousness, Thomas Nagel has explored these issues by asking, “what is it like to be a bat?” Even if one tries to imagine being a bat, one involuntarily imagines being a bat within the frame of reference of being human, that is, having a human body and sensory apparatus. Therefore, the question cannot be answered, as one would need to *be* a bat in order to answer this question (with the consequence of not being human anymore, or not being human in the first place).<sup>66</sup> Thus, according to Nagel, the “reflection on what it is like to be a bat seems to lead us, therefore, to the conclusion that there are facts that do not consist in the truth of propositions expressible in a human language. We can be compelled to recognize the existence of such facts without being able to state or comprehend them.”<sup>67</sup> This however, does not mean that one cannot try; and perhaps finding a common ground in bodily experience is the only way to understand other life forms at all.<sup>68</sup>

A project that explores this possibility by means of re-enactments and analogies is Rachel Mayeri’s project *Primate Cinema*. The project consists of a series of films that aim to utilise cinema as a form of interspecies communication, particularly as a way to understand what it may be like to be another species, for example, a chimpanzee or a baboon.<sup>69</sup> The first project in the series, *Baboons as Friends* (see fig. 69), is a two-channel installation that juxtaposes footage of mating baboons in the wild (directed by Deborah Forester) with a re-enactment of their behaviour by human actors shot in a film-noir-style bar scene. The film shows a female sitting at a bar who is approached by a male. Another male is sitting at the bar and a third male arrives. When the female starts to flirt with the newly arrived male the first starts to make threatening gestures towards the other two. This results in a fight and while the first two males are chasing each other, the third male approaches the female. For Mayeri, the project is an attempt to enable humans to understand the behaviour of the animals through re-enacting it. The aim is to understand the animals not by directly anthropomorphising them but by re-scripting the animal world in the human world and thereby using the human experience as an analogy to understand the animals. According to Mayeri, it is “a tale of lust, jealousy, sex, and violence [that] transpires simultaneously in nonhuman and human worlds. Beastly males, instinctively attracted to a femme fatale, fight to win her,

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66. Or as Wittgenstein said: “if a lion could speak, we could not understand him.” Wittgenstein, *Philosophical Investigations*, 223e.

67. Nagel, “What Is It like to Be a Bat?”, 441. Imagining to be a bat in terms of being human would be similar to the descriptions of Gregor Samsa being transformed into a “monstrous vermin” (most likely some kind of giant bug or insect) in Franz Kafka’s novella *The Metamorphosis*. Here, it seems like being a human inside the animal rather *being* the animal.

68. Most attempts for interspecies communication have attempted to teach animals human language and forms of communication, such as sign language, in order to communicate rationally with them. For example, John C. Lilly, *Man and Dolphin* (London: Victor Gollancz, 1962); *Project NIM*, directed by James Marsh, Red Box Films, 2011. Another approach would be to regard the forms of communication that animals already use. These, however, are difficult, if not impossible, to translate into human language. In some sense, the only way to understand other species then seems to be to anthropomorphise them and to judge their behaviour in relation to human emotions and intentions. Volker Sommer, “Apes like Us: Towards a Radical Evolutionary Anthropology” (lecture, Human Nature and Self Design, IZEW, Tübingen University, July 31, 2009); Jutta Hof and Volker Sommer, *Menschenaffen wie wir: Portraits einer Verwandtschaft / Apes Like Us: Portraits of a Kinship* (Mannheim: Edition Panorama, 2010). However, if humans cannot empathise with another species and if these species have a radically different anatomy and sensory perception than humans an empathic conclusion seem to be hard or even impossible to draw.

69. Rachel Mayeri, “Pornos for Primates: My Experiments in Non-Human Cinema,” in *Strange Attractors: Investigations in Non-Humanoid Extraterrestrial Sexualities* (Pittsburgh, PA: Encyclopedia Destructiva, 2012).

but most are doomed to fail. The story of sexual selection is presented across species, the dark genre of film noir re-mapping the savannah to the urban jungle.<sup>70</sup> For Mayeri, the genre of film noir, in which femmes fatales often ruin men, is thus particularly well suited to investigate how gaze and body can link humans to primates.

In the second project in the series, *How to Act like an Animal* (see fig. 70), Mayeri asked participants in a workshop to reenact the behaviour of chimpanzees from a wildlife documentary (directed by Jane Goodall). The documentary shows chimpanzees hunting and eating a red colobus monkey. In a two-channel video installation, the audience sees the footage of the documentary juxtaposed with a video of the performances that re-enact the behaviour of the apes in three variations. It starts with the performers watching and re-enacting the documentary; subsequently the performers “act” like the chimpanzees and finally each performer is assigned the role of an individual chimpanzee.<sup>71</sup> This leads to a understanding of the animals by immersing oneself bodily into their world.

The third project in the series, *Big Brother v. Animal Planet* explores how reality television can be regarded as a human zoo. For the project, Mayeri asked primatologists to analyse the behaviour of humans in the show in terms of primate behaviour, and thus do gain a new perspective on human behaviour by interpreting human behaviour in terms of animal behaviour.

Whereas in the first two projects, the aim was to understand the animals through forms of re-enactment and thereby use human behaviour as a model or analogy for this understanding, the fourth project in the series, *Apes as Family* (see fig. 71) is a film for chimpanzees in captivity. According to Mayeri, zookeepers frequently show videos to chimpanzees and report that they respond to wildlife documentaries and hospital dramas. The project is a two-channel video installation, one showing the film made for the chimpanzees, the other showing the chimpanzees watching the film. The film is a kind of “indoor wildlife documentary” that follows a young female chimpanzee meeting and befriending other chimpanzees, which are all played by human actors in chimpanzee costumes. In order to appeal to a primate audience, the film “depicts social dramas surrounding status, territory, sex and food.”<sup>72</sup> According to Mayeri, the film creates a lense through which humans can attempt to see the world through the apes’ eyes and thereby imagine how—or even what—they may feel and think. Each individual projects of *Primate Cinema* use strategies of enactment and re-enactment as a medium for enabling one to adopt the point of view of nonhuman primates by relating them to one’s own experience. Although it seems to be impossible to ever fully understand the animals, these strategies may at least provide a certain degree of understanding.

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70. Rachel Mayeri, “Primate Cinema: Baboons as Friends,” *Proceedings of MutaMorphosis: Challenging Arts and Sciences*, November 8–10, 2007, <http://mutamorphosis.wordpress.com/2009/03/01/primate-cinema-baboons-as-friends> (accessed December 24, 2012).

71. Rachel Mayeri, “Primate Cinema: How to Act Like an Animal,” <http://www.rachelmayeri.com/projects/how-to-act-like-an-animal> (accessed December 23, 2012).

72. Rachel Mayeri, “Primate Cinema: Apes as Family,” October 5, 2011, <http://www.rachelmayeri.com/projects/primate-cinema> (accessed December 23, 2012); cf. *The Making of Primate Cinema: Apes as Family*, directed by Rebecca Rowles, The Arts Catalyst, 2011, MP4 File, <http://vimeo.com/34073861> (accessed December 23, 2012).

Re-enactment is a form of understanding through bodily experience whereby one's own experience is the framework of reference. Re-enactment is not a form of passive understanding of a provided predefined experience or perspective, but rather an active engagement with the situation. The situation is actively (re-)created by (re-)enacting it; it is thus not a matter of experiencing a past experience or the experiencing of someone else, but rather experiencing one's own experience. Re-enactment is therefore a form of understanding through self-reflection and a form of philosophical inquiry through bodily experience as it provides a new perspective on the world.

### Conclusion

As media for inquiry, staged situations, simulations and re-enactments provide the means to make bodily first-hand experiences and thus to gain understanding and knowledge through experience. The experience of these concrete situations is thereby the medium for inquiry and philosophical reflection. *Staged situations* require that I orient myself within the situation, that is, I need to deal with the situation by making decisions about what to think about it and how to act in it, whereby I develop a perspective on the situation. However, since the situation is staged I can distance myself from the situation since I do not confuse it with reality. *Simulations* create a kind of virtual experience of how something may feel through a predefined experience that I can experience through a simulation. Since the experience is virtual rather than real, it allows me to reflect on my experience and is thus more a perspective on something and less an experience of something. In *re-enactments*, my own experience becomes the framework for understanding others, that is, other points of view and experiences. These experiences need to be created actively by me and are not predefined experiences or perspectives. Thereby, re-enactments are a form of reflection through self-reflecting on one's own experience.

The design of these situations, that is, of design objects in form of situations, situates the object of inquiry in a concrete and particular setting that facilitates to investigate their implications. This "what-it-is-like experience" can materialise philosophical questions through a direct involvement in a situation. As a result, the audience does not reflect on philosophical questions from the outside by looking at an object that materialises them, but from the inside by being part of a philosophical question. These situations thus literally materialise questions, and designing and experiencing them can be considered as a material philosophy. The experiences, however, are staged as they are not actual situations but possible situations that create an environment for philosophical reflection, for example, on political or social issues, the relationship to other creatures, historical events or alternative realities.

## Conclusion

This thesis has established a theoretical framework that makes it possible to view design as a form of philosophical inquiry, whereby designing is the mode of inquiry and design objects are the media for inquiry. Design objects are thus not illustrations of philosophical questions, concepts and ideas but the media for and the results of a philosophical inquiry. On the one hand, design objects need to be seen in terms of their consequences, that is, in terms of the material and conceptual worlds that they give (or could give) rise to. On the other hand, designing needs to be seen as a form of understanding and a way of asking questions rather than solving problems: it needs to be seen in critical and reflective rather than functional terms.

The scope of this thesis was to establish this framework argumentatively and to explore it theoretically rather than empirically. The purpose of the framework is to reconceptualise design in order to make it possible for designers (including me) to explore philosophical questions through designing. A practical exploration of the framework could then also lead to further insights on the relationship between design and philosophy as well as additional ways to conceive design as a philosophical inquiry. In addition, the thesis has explored the relationship between design and philosophy from the perspective of design as the aim was to consider designing and design objects themselves as a mode of and media for a philosophical inquiry. An exploration from the perspective of (academic and non-academic) philosophy, however, may lead to different or additional conclusions about designing and design objects within a philosophical exploration and thus may result in a further development of this framework.

In concluding, I will lay out the argument by discussing the main points of the preceding chapters. This will comprise, first, the *conceptual foundations* in terms of the relationship of design to philosophy, knowledge and technology, and, second, the *conceptual approaches* for design as a philosophical inquiry by using fictions, models and situations. I will summarise and discuss these foundations and approaches on the basis of *The Toaster Project* (see figs. 19–20) by Thomas Thwaites.<sup>1</sup> Although all discussed projects can be seen as philosophical investigations that exemplify material and visual approaches to philosophical questions, this project is particularly suited to examine all aspects of the proposed theoretical framework. Finally, I will reflect on the achievements of this thesis, the extent to which the research questions have been addressed and answered, as well as the prospects for design as a material philosophy.

### Design as a Material Philosophy

Design can be regarded as a philosophical inquiry when it problematises the everyday material and technological world. Thereby, design is not a matter of finding answers or solutions but a matter of questioning, problematising, visualising and materialising issues. It is

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1. See page 112.

thus a *mode of understanding*. The aim of design as philosophical inquiry is not to envision or project a different world to be realised, but to develop tools through which alternative worlds can be materialised for reflection and understanding as well as tools through which the existing world can be seen differently. This form of design regards philosophy as a form of reflection, questioning and problematising and not as a matter of making true statements about something. This form of philosophy can perhaps be understood in terms of, first, showing the world in a different light and problematising everyday reality and thereby, defamiliarising the world; second, a specific way of life and thus as experiencing philosophical problems first-hand; third, an inquiry into and production of concepts and thus as invention of new possibilities for thinking and living. If design is mainly concerned with the production of material reality, design as philosophical inquiry is fundamentally concerned with *ethical* and *conceptual* questions, as it examines the way people could live and think. It is therefore above all concerned with *existential* questions. However, whereas philosophy usually investigates these questions in an abstract and general sense, design as philosophical inquiry can investigate these questions within the concrete, particular and everyday reality and can thus be considered as a material philosophy. Here, design objects are media for investigation and reflection for both the designer and the audience and are thus media for thinking as well as communication. Design objects are used to materialise different perspectives on human existence and on possible worlds. In this regard, they are arguments for or against a certain world—a certain way of life or thinking—in the form of perspectives that an audience can adopt, reject, discuss or develop further. However, design objects are not simply illustrations of possible worlds but rather media through which both the designer and the audience can gain a perspective on possible worlds in the first place. Design objects thus not merely facilitate a debate and discussion of (existing) philosophical questions and concepts, but rather produce (new) philosophical questions and concepts. To become perspectives, design objects need to be seen as objects for reflection rather than objects for practical use, as they would otherwise disappear within the fabric of everyday life and the context of use.

Design as philosophical inquiry produces experiential knowledge in the form of perspectives, meaning that design objects are used to materialise certain perspectives on the world that can be *experienced* in an intellectual and/or bodily sense. On the one hand, the designer establishes a different perspective by imagining a different world or by experiencing the world differently. The design object is then the materialisation of this perspective and thus a concrete theory about a different world or a different form of existence. On the other hand, design objects make it possible for an audience to enter into this perspective, that is, to reflect on the worlds and forms of life made possible by design objects. The design objects make these perspectives intersubjectively accessible and the knowledge created is thus the reflection on one's experience while adopting or rejecting a perspective. The knowledge generated sits within the concrete and particular reality of everyday life and cannot entirely be abstracted, generalised or objectified.

The subject matter of design as philosophical inquiry are the mediating effects of technology, that is, the worlds and modes of existence created by design objects. Artefacts,



technologies and systems are not neutral entities but create and change the world for humans. The objects of inquiry are thus not the artefacts themselves but rather their effects, that is, the interactions and experiences that they create. Consequently, the question of design as inquiry is not what kind of artefacts to produce, but what kind of humans and worlds are produced by artefacts in terms of *experience*, *action* and *thought*. Routinely, the material and technological world is taken for granted and its development seems to progress naturally and inevitably. However, through strategies of defamiliarisation this world can be made strange whereby the specific artefacts, technologies or systems can appear as objects that permit the study of their context and consequences. In the terminology of Martin Heidegger, they become occurrent and can be investigated—however not necessarily in an analytical, but in an experiential sense, that is, in terms of experiencing their effects and reflecting on this experience. Design as philosophical inquiry then essentially investigates the possible interactions, worlds and ways of thinking that new artefacts and technologies may permit or cause, whereby design objects (material artefacts and technologies) themselves are the media for this reflection.

Let me illustrate these findings and ideas based on *The Toaster Project*. For Thwaites the toaster was the medium for inquiry. His aim was not to build a working toaster, but, through the process of building a toaster by himself, to investigate the technological reality in which humans live, and their inability to individually build and understand the technological objects surrounding them. In this process, the difficulty and complexity of producing such a seemingly simple device emerged, whereby the project became an investigation of this complexity. Thwaites is at the centre of the process and it is through him and his experiences, that the audience can reflect on this complexity. In this, the project is a (humanistic) inquiry and exploration that creates understanding by intersubjectively communicating these experiences, rather than a (scientific) research process that delivers results and answers, for example, about how to build a toaster from scratch, or the impossibility thereof. The written documentation of the project is thus not a research report that shows the process and findings, but is more a (self-)reflection on the decisions and difficulties involved. The “toaster” itself is the manifestation and result of the inquiry as well as its conclusion.

Thwaites reaches this conclusion through designing and building the toaster and reflecting on this process. An understanding of the issues and questions involved is thus generated by the designer through experiencing the process of building the toaster. The resulting “toaster” is also the medium through which the audience can gain a perspective on these issues. They can furthermore gain understanding and knowledge through experiencing this perspective and reflecting on it: they can, for instance, reflect on Thwaites inability to produce a toaster whereby the toaster is the manifestation of this inability. Although one may already suppose that it is impossible to build such an object by oneself and from scratch, this knowledge is rather theoretical and abstract. Thwaites, however, does not only show this impossibility empirically, but presents a medium that allows these issues and questions to arise in the first place, as one usually does not think about these issues, nor does the usual everyday relationship with technical objects allow space for such questions.

This project is thus an investigation of the relationship between humans and technology. Technical artefacts as well as the technological sphere in which humans live are often invisible and unproblematic when they function well. The attempt to build a toaster by oneself from scratch problematises this relationship and allows one to see and reflect on the underlying mechanisms and dependencies. Thwaites breaks down the unproblematic fabric of everyday life, in which one just buys a toaster from the shelf, and creates a setting in which one is faced with firstly understanding the material and technical aspects of a toaster, and secondly sourcing necessary materials and assembling them into a toaster. Whereas in an unproblematised situation one may even assume that one *could* actually build a toaster by oneself (not unlike the fictional character Thwaites is quoting), the problematised situation makes the dependencies of such an undertaking visible and experienceable. By turning a device into a focal thing, Thwaites opens the black-box that a normal toaster represents, whereby a complex network of relationships emerges that shows a new perspective on the complexity of a seemingly simple device.

With this project, Thwaites conducts a philosophical exploration and experiment. The project is philosophical for the following reasons: first, Thwaites aims to understand through experience by exploring the impossibility of building a toaster not only theoretically through contemplation, but also practically through making; second, by he problematises an apparently unproblematic object by making the world seem strange, which allows him (and subsequently the audience) to gain a new perspective on the world; third, he uses design objects to criticise and explore concepts, such as materials and functions, including the question whether the object produced can actually be regarded as a toaster; fourth, he uses design objects to produce new concepts, as the toaster manifests his inability to build a simple technical appliance from scratch, which is furthermore a metaphorical concept for our inability to build anything (from scratch) ourselves.<sup>2</sup>

Design conceived as a material philosophy is thus a technological, ethical and conceptual inquiry. As a *technological* inquiry it investigates the human relationship with technologies and their mediating effects. As an *ethical* inquiry it investigates the effects of material artefacts, technologies and systems, that is, the world to which they give rise. It is thus an inquiry into alternative worlds and forms of existence, though not in a normative but in an explorative sense. As a *conceptual* inquiry it investigates how material artefacts and technologies change concepts, thinking and understanding. Combined, these forms of inquiry may be regarded as an *existential* inquiry. Design objects can make these issues existentially relevant and thereby facilitate a reflection on the experience of these issues.

### Approaches for a Material Philosophy

For design as philosophical inquiry, design objects are not primarily the result as much as the media for exploration and communication. They are tools for thinking both for the designer and for the audience. (Although any designer necessarily always thinks about the world when designing objects, these objects are often only the result of this process rather

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2. For these definitions of philosophy see page 105.

than media for investigating the world and ethical and conceptual issues.) In this thesis I have laid out three conceptual approaches that permit viewing design as a medium for inquiry and that provide the means to create perspectives and experiences for this form of inquiry: fictions, models and situations.

As *material thought experiments*, fictional design objects make it possible to contextualise questions and to show perspectives on possible worlds. Thought experiments are conceptual experiments that permit one to investigate objects not accessible through actual experimentation and to clarify one's understanding of something or one's attitude towards something by asking "what if ...?" Whereas philosophy and the sciences ask these questions mainly in an abstract and general sense, design approaches them in a concrete and particular way and facilitates the experience of these questions through design objects. These questions are thereby placed in a real world and everyday context, enabling one to investigate the context and consequences. Material thought experiments are not abstract but dramatic hypothetical explorations of these questions. Thus, they are not mere illustrations or materialisations of philosophical or scientific thought experiments, but rather explorations in their own right that lead to original conclusions and an understanding of the material and technological world by providing an experiential perspective for reflection. Design objects are furthermore embedded into the fabric of everyday reality and therefore can have more direct effects than similar dramatic hypothetical experiments in literature or film. They create a certain ambiguity as they are fictional objects entering into and intervening in the real world, that is, they are *real fictions*. However, they are not visionary objects anticipating a potential, probable, possible or preferable future but rather *poetic objects* that show an alternative world. They are tools for investigating possible forms of human existence and for exploring the social, political or moral implications and consequences that material artefacts, technologies and systems may cause in these worlds. Thus, fictional design objects have heuristic functions as they are the media through which these worlds are materialised and made experienceable.

As *thinking things*, design objects are models that make it possible to understand something through use and to think about something through modelling. They are not illustrations or materialisations of something one already knows, but rather tools to explore and understand something through metaphors and analogies. Models furthermore show what they explain, that is, they do not need to be translated into something else but are themselves forms of knowledge as they allow one to see implications and consequences directly and materially. Furthermore, models are mediating instruments, as they bring together different realms, such as the abstract and concrete, the general and the particular, theory and practice, or the scientific and the everyday world. As a result, material models are dialogical objects that let one form an opinion on an issue—something that abstract theories rarely achieve.

As *staged situations*, design objects create concrete and bodily first-hand experiences that can lead to new perspectives. When involved in a situation one is required to orient oneself and to make decisions about how to think about the situation and how to act in the situation. They not only ask "what if ...?", but also "what would it be like if ...?" and

“how would it feel to ...?” by constructing particular and concrete conditions. However, these situations need to be staged so as not to be confused with reality. Through the strategies of alienation, simulation or re-enactment, they may then lead to reflection. The experience created by a situation in this case is the medium for reflection, that is, one can reflect on something by reflecting on one’s experience of the situation. Staged situations—and particularly re-enactments—are thus powerful tools for understanding the perspectives of others by re-experiencing their experiences. The experience one has in these situations are actual experiences—nevertheless they are better described as “virtual” experiences rather than “real” experiences.

Again, let me illustrate these approaches and ideas based on *The Toaster Project*. The project can be seen as a material thought experiment in which Thwaites explores the possibility of building a toaster by himself, using only preindustrial production techniques. The experiment sits within the context of the production of everyday technical appliances and consumer goods. Through the experiment, Thwaites reaches the conclusion that it is impossible (at least for him) to build a toaster from scratch, which is materialised in resulting design object. The accompanying visual and textual documentation allows the audience to follow his process of inquiry, reflection and reasoning. The larger issue that the experiment addresses is then the impossibility of producing everyday technical appliances and consumer goods without the complex, interconnected and largely invisible system of industrial production. This system and its dependencies is problematised and made visible through the toaster. In contrast to a hypothetical and abstract exploration of these issues, Thwaites uses a dramatic form of exploring them, which allows him to show the implications of his suppositions in a specific and concrete context. The project can furthermore be seen as a fictional and poetic exploration, as Thwaites’ aim was not to build a toaster but to explore an alternative world in which the industrial system of production cannot be used as a resource and in which making the technological world depends on whatever means one has at hand. The toaster is thus an object from a strange, perhaps even post-apocalyptic, world that the audience can enter through a material, visual and narrative presentation. It is furthermore an ambiguous object as it sits within the actual world and thus may be regarded as a serious attempt and undertaking.

In this respect, the toaster can be seen as constituting a model for the impossibility of understanding and building many of our seemingly simple everyday technical devices. Thwaites’ attempt to build a toaster can be seen as modelling this impossibility, which becomes evident in the resulting design object that does not function as a toaster but rather as a model. The toaster thus becomes an instrument that mediates between theory and practice, that is, it mediates between his attempt to reflect on the possibility of building technical devices himself, and his actual attempt to build a toaster. The toaster is thus both a manifestation of this inability and a model for it.

By actually attempting to build the toaster, Thwaites furthermore created a situation that required him to make conceptual and practical decisions, such as: what constitutes a single material; which materials to select; how to source and process them; how to assemble these materials into a toaster; and how to proceed when the project got stuck. He

immersed himself into an unknown situation, in which he had to orientate himself by making decisions. Thus he produced knowledge about what it is like to build a toaster from scratch. The experiment, however, can also be regarded as a simulation of building a toaster, as Thwaites did not attempt to build an actual toaster in a functional sense, but to explore the context of this attempt. The experiment is thus somewhat staged and allows Thwaites to focus on the reflection of his experience of exploring the context, rather than the experience of building an actual toaster in a functional sense. Within this setting, the experiment can additionally be regarded as a re-enactment of preindustrial conditions of production.

In all three conceptual approaches, design objects are used as media for inquiry, contemplation and understanding. They are tools for philosophical inquiry as they enable both the designer and the audience to see the world differently by adopting new perspectives through speculation, modelling and experience. They make it possible to investigate technological, ethical, conceptual and existential questions by constructing a possible world that is grounded in concrete and particular situations and thus can serve as a mirror for the actual world. These approaches are not interdependent, but, as seen in *The Toaster Project*, they can complement each other: situations are fictional whenever they divert from reality and are models if they allow one to see something else in them; fictions are situative in that they always create a concrete context for the exploration of philosophical issues. These strategies are thus tools for philosophical inquiry that allow one to gain a perspective on philosophical questions—not by abstract reasoning but by producing an experience for reflection.

### **Prospects for a Material Philosophy**

Design as philosophical inquiry needs to be an autonomous form of inquiry that is not driven by commercial interests and motivations but rather by philosophical ones. It thus necessarily sits outside of mainstream design, which is usually associated with the marketplace and the production of goods and services, or even seen entirely as a marketing tool. It is not a form of critical practice that requires designers to be socially and morally more aware and responsible, but entails a more fundamental shift from production to inquiry and the viewing of design as a form of problematising that leads to reflection and understanding. Autonomy, however, should not be understood in terms of a self-referential form of design (i.e. design for design's sake), but rather in terms of establishing own goals and agendas for inquiry, as do the sciences and humanities. Design then also becomes self-reflective and thus philosophical, as philosophy can be seen as the self-reflective part of any discipline.

This thesis has shown that designing and design objects can be conceived as a mode of and media for philosophical inquiry, as designing can be seen as a form of reflecting on philosophical questions through the production of design objects. Thereby, design objects are used as media for both inquiring into issues and communicating the results. Thus they become tools for reflection rather than practical use. Since design objects sit within the reality of everyday life and are understood in terms of factual or hypothetical use, they can provide more direct, consequential and experiential insights into philosophical questions than arguments and concepts that are abstracted and generalised and thus

removed from this reality. However, since design as philosophical inquiry is tied to concrete and particular contexts, this at the same time sets the limits for this form of inquiry. It cannot investigate philosophical questions in an abstract way or make general arguments, or rather, it can do this only indirectly as material objects can point to abstract and general issues or these issues may materialise in the form of concrete objects. Furthermore, in order to facilitate philosophical reflection, design objects need to be seen as media for reflection rather than practical use, which often requires the material objects to be embedded in some kind of visual or textual narrative in order to be understood properly.

In this thesis, the subject matter of design as philosophical inquiry is conceived as the technological reality in the widest sense. Design as philosophical inquiry uses design objects as tools for reflection and critiques and questions the material and technological, and thus the social and political reality. Consequently, the subject matter of this inquiry lies “outside” of design and does not ask questions primarily about what “design” is or could be, but rather how the “world” is or could be. Although designing could perhaps inquire into natural phenomena, it is the artificial phenomena produced by design objects that seem to be particularly interesting as here, design objects themselves give rise to epistemological, conceptual, ethical and existential questions. These questions necessarily include metaphysical and ontological questions, but since these questions often transcend the world of experience, they are only addressed indirectly.

This thesis has argued that philosophical knowledge, insight or reflection can be generated through designing and design objects, as they provide the opportunity of new experiences and new perspectives on the world. Philosophy is thus conceived as a way to understand the world by experiencing new perspectives on the world and reflecting upon these experiences; that is, these new perspectives are not formed by contemplation and reflection alone, but also through experience. Designing is a mode of philosophical inquiry that engages with philosophical questions through reflecting on the experience of designing objects that address philosophical issues. Design objects are thus philosophical reflections, as they are the result of the philosophical experience and reflection of the designer, and they are the media through which an audience can engage with these experiences and reflections. This, however, is not an argument for separating experience and reflection or contemplation. Instead, I argue that experiencing design objects can facilitate a reflection and contemplation that would not be possible without them. The result of the philosophical inquiry is thus not only presented as a reflection in the form of arguments, but as a reflection mediated through design objects that leads to a reflection through experience. These objects thereby ground philosophical questions and issues in the world of experience and thus allow one to engage with them on an experiential level, which may lead to insights on the implications of philosophical questions and issues in the context of everyday life. Here, it is especially a concrete and particular context that allows the investigation of the implications of philosophical issues and questions for everyday life, which may subsequently give rise to new questions and issues that would not emerge in a general and abstract realm. The context of experience thus allows on to investigate philosophical questions and issues in richer and more nuanced way.

The prospect for a material philosophy then lies in reconnecting thinking and making (designing) as well as abstract ideas and their concrete implications (design objects). To design something is not the execution of an abstract plan, but a form of philosophical inquiry into values and concepts within the reality of concrete situations. Design as material philosophy connects the world of abstract ideas with the reality of everyday life and thus has the ability to “bring philosophy down to earth,”<sup>3</sup> as it were.

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3. Turkle, *Evocative Objects*, 8.





## Illustrations



Figure 1. Superstudio, *Life/Supesurface*, Nomads, 1972. From the project: *Five Fundamental Acts: Life, Education, Ceremony, Love and Death*, 1972–1973. Source: Superstudio, “Life, Education, Ceremony, Love, Death: Five Tales by Superstudio, 2 [Vita, educazione cerimonia, amore, morte: Cinque storie del Superstudio, 2],” *Casabella* 366, 1972, 18. Copyright held by: Superstudio.

Figure 2. Superstudio, *Life/Supesurface*, Happy Island, 1972. From the project: *Five Fundamental Acts: Life, Education, Ceremony, Love and Death*, 1972–1973. Source: Adolfo Natalini, ed., *Superstudio: vita, educazione, cerimonia, amore, morte: cinque storie del Superstudio*, Exhibition Catalogue, Neue Galerie am Landesmuseum Joanneum, Graz (Firenze: Litocromo, 1973), 19. Copyright held by: Superstudio.

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Figure 5. Peter Eisenman, *House V-X*, 1972–1982. *Source*: Peter Eisenman, *House X* (New York: Rizzoli, 1982), 25, 27. *Copyright held by*: Eisenman Architects.

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Figure 10. Rem Koolhaas / AMO, *Roadmap 2050, Eneropa*, 2010. Source: The Office for Metropolitan Architecture and the ECF, *Volume 3: Graphic Narrative*, Roadmap 2050: A Practical Guide to a Prosperous, Low Carbon Europe, European Climate Foundation (ECF), [http://roadmap2050.eu/attachments/files/Volume3\\_FullBook.pdf](http://roadmap2050.eu/attachments/files/Volume3_FullBook.pdf) (accessed December 9, 2010), 148. Copyright held by: OMA/AMO.

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Figure 12. Natalie Jeremijenko, *Feral Robotic Dogs*, 2003. Students with Feral Robotic Dogs explore former gas plant locations for contaminants in January 2003 on the Bronx River in New York, NY. *Source*: Garnet Hertz, "Art After New Media: Exploring Black Boxes, Tactics and Archaeologies," *Leonardo Electronic Almanac* 17, no 2 (2012): 179. *Copyright held by*: Natalie Jeremijenko.

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Figure 14. Eduardo Kac, *Free Alba!*, 2001–2002. Folha de São Paulo (left), New York Times (right). *Source:* <http://www.ekac.org/freealba.html> (accessed August 17, 2013). *Copyright held by:* Eduardo Kac.



Figure 15. Arthur Koestler, *Bisociation and Operative Fields*. Koestler explains the diagrams and thus his concept of bisociation as follows: “S represents the starting point given by the problem, the slings and arrows represent the various trains of thought within the [operative] field of geometrical routine, and  $T$  the target [...], which, unfortunately, is located outside that field. [...]  $F_1$  is the original field of the problem [...];  $F_2$  is the field of habitual associative contexts [...];  $m$  stands for the many ‘missed opportunities’ for connecting the two fields on previous occasions;  $f_2$  is the actual thought train within the context of  $F_2$  [...]; and  $J$  the junctional link which effects bisociation of the two fields.” According to Koestler for a bisociation the junction may be a verbal concept or a visual percept but it is crucial that both fields ( $F_1$  and  $F_2$ ) are simultaneously active. *Source*: Arthur Koestler, *Insight and Outlook: An Inquiry into the Common Foundations of Science, Art and Social Ethics* (London: Macmillan, 1949), 252–253. *Copyright held by*: Macmillan Publishers Ltd.

Figure 16. Ludwig Wittgenstein, *Haus Wittgenstein*, 1928. The photograph is taken from Wittgenstein's personal *Fototaschenbuch* [*Photo Pocket Book*]. Source: August Sarnitz, *Die Architektur Wittgensteins: Rekonstruktion einer gebauten Idee* (Wien: Böhlau Verlag, 2011), 115. Copyright held by: Wittgenstein Archive, Cambridge. Photographer: Moritz Nähr.

Figure 17. Plato, *Analogy of the Cave*. Illustration by Axel Weiß. Source: Franz-Peter Burkard, Franz Wiedmann, and Peter Kunzmann, *dtv Atlas Philosophie* (München: Deutscher Taschenbuch Verlag, 2005), 40. Copyright held by: Deutscher Taschenbuch Verlag.

Figure 18. Henry David Thoreau, *Walden Cabin*. Drawing by Thoreau's sister Sophia. *Source*: Henry D. Thoreau, *Walden: Or, Life in the Woods* (Boston: Trickner and Fields, 1854), 1 (detail). *Copyright held by*: Public Domain.

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Figure 22. The Long Now Foundation, *Clock of the Long Now / 10,000 Year Clock*, 1999. This first prototype is on display in the gallery *Making the Modern World* at the Science Museum, London. *Source:* <http://blog.sciencemuseum.org.uk/collections/files/2013/07/Clock-of-the-Long-Now-By-Rolfe-Horn-courtesy-of-the-Long-Now-Foundation.jpg> (accessed June 29, 2014). *Copyright held by:* Long Now Foundation. *Photographer:* Rolfe Horn.



Figure 23. The Long Now Foundation, *The Long Now*. Source: <http://media.longnow.org/files/2/LongNowDiag.jpg> (accessed June 28, 2014). Copyright held by: Long Now Foundation.

Figure 24. NASA, *The Blue Marble*, 1972. Photograph of the Earth, taken on December 7, 1972, by the crew of the Apollo 17 spacecraft, at a distance of about 45,000 kilometres. *Source:* NASA Johnson Space Center image number AS17-148-22727, <http://grin.hq.nasa.gov/IMAGES/LARGE/GPN-2000-001138.jpg>. *Copyright held by:* NASA; Public Domain.

Figure 25. Norman Bel Geddes, *Futurama*, Spectators, General Motors Pavilion, New York World's Fair, 1939. Source: Donald Albrecht, ed., *Norman Bel Geddes Designs America* (New York: Abrams, 2012), 345. Copyright held by: General Motors LLC; GM Media Archives.

Figure 26. Norman Bel Geddes, *Futurama*, "I Have Seen the Future," Pin, General Motors Pavilion, New York World's Fair, 1939. *Source*: Donald Albrecht, ed., *Norman Bel Geddes Designs America* (New York: Abrams, 2012), 298. *Copyright held by*: General Motors LLC, GM Media Archive.

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Figure 32. War of the Worlds Monument, Van Ness Park, West Windsor Township, New Jersey, 1988. *Source:* [http://commons.wikimedia.org/wiki/File:Landingsite\\_statue.jpg](http://commons.wikimedia.org/wiki/File:Landingsite_statue.jpg) (accessed June 28, 2014). *Copyright held by:* Public Doamin. *Photographer:* ZeWrestler.

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Figure 51. NASA, *Voyager Golden Record*, Image 32, 1977. Illustration by Jon Lomberg.  
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Figure 55. Übermorgen, Alessandro Ludovico and Paolo Cirio, *Google Will Eat Itself*, Installation, 2005. The Premises Gallery, Johannesburg. Source: [http://www.hansbernhard.com/X/pages/projects/images/gwei\\_joburg\\_exhibition1.jpg](http://www.hansbernhard.com/X/pages/projects/images/gwei_joburg_exhibition1.jpg) (accessed December 9, 2012). Copyright held by: Übermorgen.

Figure 56. Oscar Bony, *La Familia Obrera [The Worker's Family]*, 1968. Audience during 'Experiencias 68', Instituto Torcuato Di Tella, Buenos Aires. *Source:* Claire Bishop, *Artificial Hells: Participatory Art and the Politics of Spectatorship* (London: Verso, 2012), 114. *Copyright held by:* Oscar Bony Archive.

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Figure 63. Shona Kitchen and Noam Toran, *Buried Alive*, Film Still, 2004. Exhibited at the Royal College of Art, London, December 8–14, 2004. *Source:* <http://www.shonakitchen.com/buriedalive> (accessed August 21, 2013). *Copyright held by:* Shona Kitchen and Noam Toran.

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Table 1. Conceptions of Design and Philosophy<sup>1</sup>

attitude	activity	object	discipline	person
philosophically	to philosophise	philosophy	Philosophy	philosopher
philosophical		philosophies		
<i>philosophōs/</i>	<i>philosophos/</i>	<i>philosophia/</i>	<i>philosophia/</i>	<i>philosophos/</i>
<i>φιλοσόφως</i>	<i>φιλόσοφος</i>	<i>φιλοσοφία</i>	<i>φιλοσοφία</i>	<i>φιλόσοφος</i>
<i>philosophon/</i>	<i>philosophēō/</i>	<i>philosophiai/</i>		
<i>φιλόσοφον</i>	<i>φιλοσοφῶ</i>	<i>φιλοσοφίαι</i>		
designedly	to design	design	Design	designer
designerly <sup>2</sup>		designs		
designed				

1. Cf. Ritter, Gründer, and Gabriel, *HWPPh*, s.v. "Philosophie, C. Aristoteles." In the work of Aristotle the word "philosophy" is used in these different conceptions: (1) As an attitude it means the philosophical or theoretical life and the joy of concerning oneself with theoretical things and leading a theoretical life, for example, as opposed to the life of a practical or political person; Aristotle, *Politica*, trans. Benjamin Jowett, vol. 10 of *The Works of Aristotle*, ed. David Ross (Oxford: Clarendon Press, 1921; reprint, 1952), 1334a23. (2) As an activity it is used as philosophising about something as an intellectually ingenious activity in the sense of inventing, conceiving, devising, or constructing and thinking about general practical questions of life, organising society, making laws, education; *Ibid.*, 1272a22, 1279b12, 1329a41, 1331a16. (In this sense one could say as design, as figuring something out an making plan/conception of the good life and figuring out he means of how these could be achieved, That is structuring the world according the aims one wants to achieve.) Furthermore it is used as a way of talking about something in a philosophical or non philosophical way; Aristotle, *Ethica Eudemia*, trans. J. Solomon, vol. 9 of *The Works of Aristotle*, ed. David Ross (Oxford: Clarendon Press, 1925), 1216b. In a more narrow sense it is used as inquiring something scientifically and fundamentally which is not only concerned with practical things; Aristotle, *Ethica Eudemia*, 1279b12. (3) As a discipline he makes a distinction practical and producing disciplines and distinguishes philosophy as a form of theoretical knowledge from these other disciplines; Aristotle, *Metaphysica*, 980a–993a (bk. A[1]). (4) As an object in form of a doctrine or school here Aristotle uses philosophy and philosophies, for example, the philosophy of Plato; *Ibid.*, 987a29.
2. Cf. Nigel Cross, "Designerly Ways of Knowing," *Design Studies* 3, no. 4 (1982): 221–227.





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