

- 1** Herbert A. Simon. *The Sciences of the Artificial*. MIT Press, Cambridge Massachusetts 1996 [1969] (p. 111). Simon wrote this book in the *zeitgeist* of cybernetics, which understood itself as epistemic watermark and believed itself capable of perceiving in all possible and hitherto heterogeneous fields of knowledge the same laws of information, feedback, and Boolean logic. Cybernetics lay claim to validity as a new universal science of the freshly emerging information age, as a science for living things as well as for machines, for economic processes as well as for psychological ones, for both sociological and aesthetic phenomena. See for instance Claus Pias. "Elektronenhirn und verbotene Zone. Zur kybernetischen Ökonomie des Digitalen" [Electronic Brain and the Forbidden Ground: On the Cybernetic Economy of the Digital]. In: Jens Schröter, Alexander Böhnke (Eds.) *Analog/Digital—Opposition oder Kontinuum? Zur Theorie und Geschichte einer Unterscheidung*. Transcript Verlag, Bielefeld 2004 (pp. 51–66).
- 2** Cf. for instance the cartographic representation of empirically measured regions and areas in contemporary design research by Elizabeth N. Sanders in her article for the first issue of the journal *DesignResearch Quarterly*, Vol. 1, Nr. 1, 2006, entitled "Design Research in 2006." Or see for instance Richard Buchanan's proposal of a historical survey: Richard Buchanan. "Myth and Maturity. Toward a New Order in the Decade of Design." In: Richard Buchanan, Victor Margolin. *The Idea of Design*. MIT Press, Cambridge Massachusetts 1995 (pp. 75–85). See also the suggestion of GK VanPatter for a classification according to the various network levels and organizational principles in the practice of design, which he described with the labels Design 1.0, Design 2.0 and Design 3.0: [www.nextd.org](http://www.nextd.org) (September 20<sup>th</sup> 2007); also, there are various theories on how to completely dissociate design from an actual disciplinary field [Gegenstandsgebiet in German], and relocate it onto a specific epistemic level as "design thinking" or as "designerly ways of thinking." See for example Nigel Cross. *Designerly Ways of Knowing*. Springer Verlag, Berlin 2006.
- 3** For the problematic self-image of design between the utopian ideas of a "reshaping of things and of the environment" on the one hand and the powerful mechanisms of global capitalism on the other hand, see for example Beat Schneider. *Design - eine Einführung. Entwurf im sozialen, kulturellen und wirtschaftlichen Kontext*. Birkhäuser Verlag, Basel and Boston 2003 (cf. especially pp. 257ff., here p. 263).

PSEUDOPODIA

PROLEGOMENA TO A DISCOURSE ON DESIGN

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### xDESIGN

One usually experiences a particular feeling of certainty with regard to the subject of design and art, even up to the present day. Yet their respective conceptual landscapes have recently been undergoing strong shiftings, disruptions, and deferrals, which have already brought about radical transformations. These are the subjects of this book.

Whenever the changes and transformations exceed a certain level, they cause conflicts or crises of dissociation, and above all they reveal semantic unclarities and vagueness where clearly defined and fully mapped out objects of study used to be located. One of the most widely quoted and accordingly recognized definitions of design today is the one put forward by Herbert Simon. In his book *The Sciences of the Artificial* from 1969, he defines design as any one operation that transforms an encountered situation into a desired situation: “*Everyone designs who devises courses of action aimed at changing existing situations into preferred ones.*”<sup>1</sup> On the basis of such a generalizing attempt at delineation, it is of course difficult to plead for a specific and meaningful systematization or even classification of the subject. The actual problem—the notorious difficulties in positively defining the concept of “design”—is insufficiently summed up by the suspicion of strategic positioning errors. Instead, we assume that the attempt at delineating and defining the conceptual landscape into territories has itself become problematic. In the context of this assumption, we regard already suggested categorizations and identifications<sup>2</sup> first and foremost as signs for the current hyper-emancipation of design not only from its technical tradition in the crafts but also from its modernist ideological function.<sup>3</sup> Against this background, the current popularity of Simon’s

- 4** Simon wrote his "Sciences of the Artificial" almost at the same time as he was contributing to the research project "The General Problem Solver," where together with Allen Newell he wanted to develop a piece of software that would simulate human thought. Meanwhile, the project is considered to have failed. See A. Newell and H.A. Simon (1969). "GPS, a program that simulates human thought". In: E. Feigenbaum and J. Feldmann (Eds.). *Computers and Thought*. AAAI Press, 1995. In the contemporary context of Simon's renewed popularity within a still largely uncharted theory of design, this context should certainly be considered from the viewpoint of media science and the philosophy of technology, and must be relativized historically. For a historical discussion of cybernetics see for instance: N. Katherine Hayles. *How We Became Posthuman. Virtual Bodies in Cybernetics, Literature, and Informatics*. The University of Chicago Press, Chicago 1999. See particularly her discussion of the Macy Conferences (pp. 50ff.).
- 5** Cf. especially John Thackara. *Design after Modernism. Beyond the Object*. Thames and Hudson, London 1988, as well as John Thackara. *In the Bubble. Designing in a complex world*. MIT Press, Cambridge Massachusetts 2005.
- 6** Cf. conversation between Jeff Conklin, Min Basadur, and GK VanPatter entitled "Rethinking Wicked Problems." In: NextDesign Leadership Institute. *NextD Journal. ReRethinking Design*. Issue 10, Conversation 10.1. [www.nextd.org](http://www.nextd.org) (September 20<sup>th</sup> 2007).

systemic definition of design might be considered as ambivalent, because even though it does point out the focus on complex systemic contexts, the formulation undoubtedly remains a statement of the zeitgeist, reflecting cybernetic fantasies of feasibility and control.<sup>4</sup> Meta-modern design, or design after modernism,<sup>5</sup> would dedicatedly prioritize the inquiry into the problem horizon itself as a set of conditions for the solvability of specific problems, at the expense of the competent development of *good* solutions.<sup>6</sup> With regard to the dissociation from modernism, Simon's definition of design remains ambiguous.

The mere recourse to new (linguistic) habits may smack of naturalistic fallacy: what can indeed be perceived on the phenomenological level should not prompt the false assumption that the things observed must basically be as they seem, or that the significance or structure of what is taking place can be clearly discerned. Therefore we suggest the pre-positioning of a variable X to stand for the social phenomenon of an enlarged sphere of influence for design concepts and thought-images, X also suggesting eXtended. In this book and the texts it contains, we will try to foreground some attributes of this variable. To that end, we have opted for a comparative perspective which brings together statements that go beyond existing disciplinary boundaries, and which are offered as relational network or *pre-specific state of affairs* for further analysis. We are thereby following a total of three vectors which we assume to be active in the deep structure of the empirically observable phenomena, and which might prove to be significant as preconditions for the possibility of a meta-modern discourse around design: as a yet to be delineated *principle of availability* that has been transformed against the background of a swiftly establishing *dispositive of the digital*, and that carries itself through to the

- 7** Philippe Lemoine. "The Demise of Classical Rationality."  
In: John Thackara. *Design After Modernism. Beyond the Object*.  
Thames and Hudson, London 1988 (p. 187–196).
- 8** Peter Galison. "Aufbau/Bauhaus: Logischer Positivismus und  
architektonischer Modernismus." [Construction/Bauhaus:  
Logical Positivism and Architectonic Modernism] In: *Deutsche Zeitschrift  
für Philosophie*, Nr. 4 1995.
- 9** See also the interview "Tangible Objectivity" with Fiona Raby  
and Anthony Dunne in this volume. (pp. 225ff). The project's website:  
[http://www.michael-burton.co.uk/HTML/future\\_farm.htm](http://www.michael-burton.co.uk/HTML/future_farm.htm)  
(October 3<sup>rd</sup> 2007).

remotest regions by the self-induced and far-reaching waves of a *relativistic materialism*.

### PRAXIS AND FUTURE:

#### AN ALTERED PRINCIPLE OF AVAILABILITY

As a collectively anchored concept, design itself is grounded in modernity, which is why from its very beginnings design has been geared intensely to the modernist principle of optimization, i.e. the idea of a positivistically interpreted controllability of the world<sup>7</sup>; the circles ran from Vienna to the Dessau Bauhaus also on the personal level.<sup>8</sup> Today we are witnessing a shift of meaning, which separates the principle of an optimizing availability from a new availability principle that points to a radical openness. The new availability no longer presents itself primarily as a cybernetically optimizing availability within a certain set of possible contiguities, for which “best solutions” are developed within an unquestioned frame of reference. Rather, the new availability refers to an openness in the possibility of experimenting with the choice of reference systems themselves. However, if the dissolution of reference systems thematizes the otherwise self-evident background to our actions, to the point where it loses this fundamental self-evidence, precarious borderline experiences appear as a mark of those basic transformations, events which in fact affect us today, enveloped as we are in contemporary *technoculture* and *technoscience*. The following five concrete examples may illustrate this claim:

1. The Master’s Degree project “Future Farm” by Michael Burton at the Institute for Design Interactions at the Royal College of Art in London looks among other things at how deposits of fat inside the human body can be used for a product-oriented biosynthesis.<sup>9</sup>

- 10** The name of the company refers to the 23 pairs of chromosomes in the human genome. [www.23andme.com](http://www.23andme.com) (September 20<sup>th</sup> 2007).
- 11** Quoted after Bruno Latour. "Von Tatsachen zu Sachverhalten." [From Facts to States of Affairs] In: Henning Schmidgen, Peter Geimer, Sven Dierig (Hg.) *Kultur im Experiment*. Kulturverlag Kadmos, Berlin 2006. (pp. 17–36, here p. 25).
- 12** See the contribution of Marcel A. Niggli "Questions of Form and Design in Jurisprudence" in this volume (pp. 87ff.).
- 13** Translated from German: [Wir sind also innerhalb der Denkformen selbst mit der Relativismusproblematik konfrontiert [...] die Möglichkeit, Axiomensysteme umzumodeln, gar gänzlich neue zu entwickeln, verlangt, eine formale Kreativität ernst zu nehmen.] Hans Poser. "Strukturen als Denkformen." [Structures as Shapes of Thought] In: Karen Gloy (Ed.). *Rationalitätstypen*. Bouvier-Verlag, Bonn 1998, quoted here from the abridged version in: *Information Philosophie*, August 1998 (pp. 7–21, here p. 17).
- 14** Peter Sloterdijk. "Minima cosmetica—Versuch über die Selbsterhöhung." [Minima Cosmetica: An Essay on Self-Aggrandizement] In Peter Weibel (Ed.). *Der ästhetische Imperativ* (pp. 318ff.).

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2. “*Genetics is about to get personal—we can help put your genome into the larger context of human commonality and diversity*”—using this slogan, the American company *www.23andme.com* speaks for the free availability of our genetic information,<sup>10</sup> which it plans to publicize in the manner of Google, while Google in fact has recently been added to the list of its most prominent investors.

3. “*Herbivores are herbivores.*” This statement by Jacques Chirac,<sup>11</sup> which the former French president uttered in connection with the BSE crisis, calls forth and illustrates the necessity of design beyond the suspicion of tautological meaninglessness.

4. “*Law produces stability by permanently changing it.*” Philosopher of law and professor of criminal law Marcel A. Niggli (Fribourg, Switzerland) hereby implies the fundamental negotiating mode on which the law system itself is based.<sup>12</sup>

5. “*Within shapes of thought themselves we are confronted with the issue of relativism [...] the possibilities of reshaping axiomatic systems or even of developing new ones demands that a formal creativity be taken seriously,*” writes philosopher Hans Poser on “structures and shapes of thought.”<sup>13</sup>

The novel availability in experimentation requires a new prospective responsibility for the future, so to speak. It places us in the actually uncanny situation of having to “*increasingly take up responsibilities for facts that are not as yet established,*” as Peter Sloterdijk puts it. “*Contemporaries are more often than not involved in a futurized practice which forces them to consider facts before they actually come into being.*”<sup>14</sup>

**15** See also the interview "Tangible Objectivity" in this volume (pp. 225ff.).

**16** See especially: Michel Serres. *Hominescence*. Le Pommier, Paris 2001.

**17** See for instance Elisabeth List. *Grenzen der Verfügbarkeit. Die Technik, das Subjekt und das Lebendige*. Passagen Verlag, Wien 2001. Or the somewhat polemical manifesto by Norbert Bolz: *bang design. Ein Design Manifest für das 21. Jahrhundert*. Trendbüro Hamburg, Hamburg 2006.

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Design activities have so far fulfilled a primarily pragmatic, complementary role to the abstracting tendency of theoretical reflection. Design is mainly preoccupied with fabrication (even if within the abstract), with the instantiation of abstract concepts, plans, ideas in manifest, concrete forms, in “tangible objects,” as Fiona Raby and Anthony Dunne point out.<sup>15</sup> Before this new challenge of a future-in-the-present, the possibility emerges of redefining this relation. For technological developments cast doubt even on the nature of things that could only be approached philosophically, and which are increasingly falling into our domain of availability and become issues on which decisions must be taken: it is no longer self-evident today that cows are herbivores, as Jacques Chirac’s statement on mad cow disease clearly illustrates. Together with the idea of the self-mediation of nature by human analysis, another dimension of originality comes to the fore. A new concept of technology thereby ensues, whose relation to nature manifests itself in a radically new form. Technology as a means and instrument to optimize and empower the “natural capacities” of man against elementary dangers—from the development of the first tools up to optimized agriculture and urban planning, from the beginning of the telematic effectiveness of early weaponry to the extremely violent power of atomic bombs—seems to be approaching a borderline where a critical, flash-over-like change in the appearance of “natural” structures and power relations begins to take shape, if it has not already taken place.<sup>16</sup> As it is often emphasized today, many elementary natural forces seem to have become so profoundly analytical and systematized in operable elements,<sup>17</sup> that these natural forces themselves are relegated to the field of influence of techno-

**18** Martin Heidegger. *Die Technik und die Kehre*. Klett-Cotta Verlag, Stuttgart 1962. Cf. also Martin Heidegger. *The Question Concerning Technology and Other Essays*. Harper & Row, New York 1977.

**19** See for example Christoph Hubig. *Die Kunst des Möglichen. Technikphilosophie als Reflexion der Medialität*. Transcript Verlag, Bielefeld 2006.

**20** In Western Cultures, we are used to thinking that the ability to fantasize and imagine mainly derives from an initial and irreducible lack. Against the pattern of this complementary relation, Deleuze and Guattari in "Schizophrenia and Capitalism I + II," delineated the theory of a productive creativity which is not energized by scarcity, but by an initial overabundance. Gilles Deleuze, Felix Guattari. *Der Anti-Oedipus. Kapitalismus und Schizophrenie I*. Suhrkamp Verlag, Frankfurt am Main 2000 [1977]; Gilles Deleuze, Felix Guattari. *Tausend Plateaus. Kapitalismus und Schizophrenie II*. Merve Verlag, Berlin 1992 [1980]. A cultural model that also considers creativity as following upon an initial overabundance was recently developed by Peter Sloterdijk. Peter Sloterdijk. *Sphären III*. Suhrkamp Verlag, Frankfurt am Main 2004. See especially his chapter "Auftrieb und Verwöhnung. Zur Kritik der reinen Laune" [Boost and Indulgence: On the Critique of Pure Mood] (pp. 671ff.). Also from Peter Sloterdijk: *Im Weltinnenraum des Kapitals*. Suhrkamp Verlag, Frankfurt am Main 2005, especially the chapter "Umwertung aller Werte: Das Prinzip Überfluss" [The Revaluation of All Values: The Principle of Overabundance] (pp. 349ff.); Peter Sloterdijk. *Zeit und Zorn*. Suhrkamp Verlag, Frankfurt am Main 2007, especially the chapter "Vollendeter Kapitalismus: Eine Ökonomie der Generosität" [Consummate Capitalism: An Economy of Generosity] (pp. 50ff.).

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logical synthetization. It will suffice here to name the keywords of some highly topical fields of study: the advised topos of an absolute safety; the artificial reproduction of intelligence and life; the production of new materials which can no longer be considered “inert” (e.g. *active materials*, *smart materials*, distributed intelligence in pervasive IT infrastructures); the technological reproduction of our atmosphere to populate the universe. Before the possibility of such technological feasibility, the question arises as to what order could be used for orientation. Concerning the idea of “technological progress,” a new reflexivity comes again to the fore, which Martin Heidegger most enduringly pointed out in his text “Die Technik und die Kehre” [Technics and the Turning Point] (1962).<sup>18</sup> Technological developments have long taken place under the influence of the unchallenged and increasingly more powerful idea of optimization. Today it is becoming more and more unclear in a growing number of fields what this order is, or what could be interpreted as such, that would be able to give the optimization process its *telos*, its direction. Technology itself is no longer described today as self-evidently progressive; instead, an awareness is growing as to the variety of paths that this relentless progress may take—as well as to its potential consequences.<sup>19</sup> To put it more trenchantly, if we were capable of doing anything, how would we then decide to do something in particular?<sup>20</sup>

The current principle of availability can no longer stand for the concept of “optimization,” as it was still characteristic of modernity with its widely acknowledged and massively supported efforts toward renewal qua improvement. The current principle of availability is a relativistic one. At the beginning

**21** In the article "Space and Time: Inertial Frames" of the Stanford Encyclopedia of Philosophy, an inertial system is described as: "A dynamical account of motion leads to the idea of an 'inertial frame,' or a reference frame relative to which motions have distinguished dynamical properties. For that reason an inertial frame has to be understood as a spatial reference frame together with some means of measuring time, so that uniform motions can be distinguished from accelerated motions." Einstein's relativization concerned the possibilities for determining an inertial system that would be essential for cognizance: "In an epistemologically sophisticated theory, both of these problems would be solved at once: the new theory would only refer to what is observable, which is relative motion; it would admit arbitrary coordinate systems, instead of confining itself to a special class of system." DiSalle, Robert, "Space and Time: Inertial Frames," The Stanford Encyclopedia of Philosophy (Summer 2002 Edition), Edward N. Zalta (Ed.), <http://plato.stanford.edu/archives/sum2002/entries/spacetime-iframes> (August 27<sup>th</sup> 2007).

**22** In his evolutionary theory of understanding, Gerhard Vollmer elaborates on the view that the "epistemic" abilities of an amoeba are structurally similar to those of human beings, he maps out Popper's unchallenged premises, and considers possible implications for a theory of knowledge: Gerhard Vollmer. *Was können wir wissen? Die Natur der Erkenntnis*. Band 1. Hirzel Verlag Stuttgart, 1985 (pp. 44ff.). Especially in the revised version of Vollmer's evolutionary theory of understanding, the author is critical of the interpretation occasionally favored by Popper that animals also possess "knowledge," due to the fact that Popper did not sufficiently stress the difference between an evolution of knowledge abilities and an evolution of knowledge. However, Vollmer insists that for himself as well as for Popper it is only human beings, and not all organisms, that can be considered rational. See Gerhard Vollmer. *Wieso können wir die Welt erkennen?* Hirzel Verlag, Stuttgart 2003 (p. 76).

**23** "From the amoeba up to Einstein, the progress of knowledge is always the same: we try to solve our problems and reach reasonably useful temporary solutions through a process of selection." Popper argues here that all processes of understanding are based on a common strategy, namely the method of trial and error. Karl R. Popper. *Objektive Erkenntnis. Ein evolutionärer Entwurf*. Hoffmann und Campe, Hamburg 1984 (p. 274). Quoted in: Gerhard Vollmer: *Was können wir wissen? Die Natur der Erkenntnis*. Vol. 1. S. Hirzel Verlag, Stuttgart 1985 (pp. 53ff.). For an English edition cf. Karl Popper. *Objective Knowledge. An Evolutionary Approach*. Oxford University Press, Oxford 1972.

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of the 20<sup>th</sup> century, Albert Einstein clarified the significance of inertial systems as frames of reference for every form of perception and measurement, first in the context of physics and later also in that of epistemology. Within an inertial system, subjectively the same impressions can be reported; inside the moving train the ball falls equally perpendicularly as on the train platform. Likewise, the relativity stressed by Einstein does not refer to a set of arbitrary statements within a common frame of reference, but points to a fundamental dependency of basic quantities such as mass and time on the differential status of various inertial systems.<sup>21</sup> Karl Popper's construct of an evolutionary theory of science and his posited universal method of inquiry directly references the concept of the inertial system, inasmuch as the latter assumes that we can basically only perceive relative relations in the world. From the point of view of an evolutionary theory of science, the conditions for development and the structure of orders as lived constraints unfold in a relativistic fashion.<sup>22</sup> These systems may in principle be arbitrary, but they gain in stability from the commitment obtained by historical patterns of development. The significance of such a relativized foundation for the field of epistemology and a theory of science is perhaps best illustrated in Popper's assertion that within the empirical opposition between Einstein and the amorphous view of the world of an amoeba, there is no real, that is, no *categorical* difference.<sup>23</sup> But, if as a result of a new kind of availability, the historically rising socio-cultural inertial systems themselves no longer display an obligatory validity, as we have argued here, then what we are missing in this openness, phenomenologically speaking, is the very *horizon* of our experimentation. If we retain some

**24** See for instance: Johannes Lenhard, Günter Küppers, Terry Shin. *Simulation. Pragmatic Construction of Reality*. Springer, New York 2006.

**25** The prevalence of design as a term is undoubtedly more conspicuous than that of art. Yet it seems to be likely to fall back on the conceptual apparatus of art when a mechanistic rationality no longer seems sufficient or meaningful in explaining and describing certain activities; mechanistic rationality is still closely associated with the idiom of design, as footnote [19] exemplarily illustrates: Christoph Hubig. *Die Kunst des Möglichen. Technikphilosophie als Reflexion der Medialität* (2006) [The Art of the Possible. Philosophy of Technology as a Reflection of Mediality], when he speaks of the "Art of the Possible."

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humor in reading Popper's statement, then it acquires a meaning that it would otherwise lack. Perhaps our difference from amoebae were less categorical than we (in opposition to Popper) may have assumed, if the open and undifferentiated medium initiated by the displaced availability permitted the discovery of an amazing amorphous structure and habit of behavior known to biologists as *pseudopodia* or "false feet." They are used by amoebae and other mucus-born, mono-cellular beings for self-preservation, movement, and for organizing their milieu in a seemingly paradoxical manner via "open demarcations." We will return to this point later on.

## DESIGN-FICTIONS IN THE VALUE-ADDED

## PROCESS OF A VIRTUAL ECONOMY OF INTENTIONS

It may already be a commonplace that the electronic media are responsible for this extended availability through their standardizing operations based on universal encoding. What used to be considered a model *of* something is increasingly being perceived as a simulation *for* something, so that technical operationalization is increasingly dissociating from an understanding that could in any way be regarded as constitutive of this synthetic availability.<sup>24</sup> Within the paradigm of the digital, experiments take place *in real time*, the concepts of function and representability fall apart—things are calculated, generated, and carried out in the absence of any genuine understanding of the implied and complex functional connections, both of the calculated and the calculating "instance." The implications of this advance of the availability principle are only just beginning to reveal their wide-ranging effects, and seem connected with the extension of interest in art and design from within social fields such as science, politics, or culture in general.<sup>25</sup> The shift

- 26** At the core of this issue there is the semiotic question as to a comprehensive theory of meaning, equaling in its function that of an inertial system. It makes a significant difference for instance in the systematic derivations whether one starts from the premise of a dipolar sign concept in the tradition of de Saussure (signifier/signified) or from an irreducibly tripolar and integrally conceived sign concept like the one suggested by Charles Sanders Peirce (icon/index/symbol). For an account and discussion of theories of meaning as "inertial systems" for our thoughts, see Edwina Taborsky. *The Architectonics of Semiosis*. St.Martin's Press, New York 1998.
- 27** With this concept of an "economy of intentions" we are taking up an idea introduced and proposed by Nathan Brown in his contribution to this book, entitled "Δ: 21<sup>st</sup> century materialism" (pp. 185ff.).
- 28** Cf. for instance the conversation with Christian Pohl and Christoph Küffer on the status of design in transdisciplinary research in this book, entitled "Design and Transdisciplinary Research" (pp. 99ff.).

of meaning for the concept of availability today seems to connote elements of ambiguity and creativity, and it involves design including its reflected instantiation as over-arching cultural competence. And, one is tempted to say, nor does this come too late, since the new technological availability can no longer eschew issues of value. The potentially best possibility that can be achieved becomes the object of negotiations and can no longer be determined objectively nor individually.<sup>26</sup> Consequently, the stocks and the market value of art and design obviously increase. In a virtual economy of intentions,<sup>27</sup> the assets of art and design, together with those of rhetoric, are in high demand.

With a temporarily still pre-specific discourse on xDesign, we wish to expose as symbolic capital what this high demand seems to be directed at: the variety of methods specific to the various disciplines of design in processes of planning and modeling, the ability to pool various interests, visions, and concerns in heterogeneous contexts and to instantiate and translate them into concrete and vivid representations, and of course not least its rich experience in directing centrifugally configured design processes into acceptance with a quasi-rhetorical verve.<sup>28</sup> As soon as xDesigners begin to grasp the value of their competency as capital, the discourse around creative industries could shed its somewhat indefinite aftertaste and become truly interesting. Only at first sight is it surprising that the structure of corresponding markets clearly harks back to the volatility of the liquid markets dealing in derivative financial products. It is part and parcel of trading virtuals that the applied currency has to be negotiated situatively and is thereby contractual in nature, as Christian Zenkner, theorist

- 29** Christian Zenkner: "Thinking in Derivatives: On Designing Structured Financial Products" (pp. 147ff.) in this volume.
- 30** See the contribution of Sabine Junginger: "Product, Design, and Systems Change" (pp. 115ff.) in this volume.
- 31** Manfred Fassler: "Design 2020" (pp. 303ff.) in this volume.

of financial markets, elaborates in his contribution to this book.<sup>29</sup> Nothing else has emerged in the concept of the product put forward by the avant-garde of design.<sup>30</sup> Products are developed with an eye to their systemic efficiency and have long been employed as a means to energize strategic intentions also *within* organizations and companies. This paves the way for a changed relation between management and design, which already structurally counteracts the one-sided instrumentalization of design in the service of mere sales increase, quasi as the final polishing of an ultimately technologically constituted body, so to speak. In virtual markets, supply and demand also metaphorically align to *options*, *futures*, and wide ranges of *structured products*, whose worth is always repeatedly and situatively derived from the ongoing events of global markets. In the future, the object of study for xDesigners will appear similarly complex and volatile. As the cultural anthropologist and media scientist Manfred Fassler suggests in his contribution to this book,<sup>31</sup> it will increasingly be a question of how to symbolize the codes of various virtual contexts of material, biological, medial, cognitive, as well as technological origin in order to make them negotiable. The metaphorical framework of a virtual economy of intentions is therefore a conscious choice here. We would like to suggest that a possible future role of xDesign would consist in acting as *synthesizer for social issues*. In particular, the provocative works presented in the interview with the designers Fiona Raby and Anthony Dunne are a telling example in this respect. Their students at the *Institute for Design Interactions* at the Royal College of Art in London are translating as *design-fictions* for example the social implications of contemporary life sciences that they artisti-

- 32** Cf. also the book by Fiona Raby and Anthony Dunne: *Design Noir. The Secret Life of Objects*. Birkhäuser Verlag, Basel and Boston 2001.
- 33** Dunne & Raby regard their own work as "Critical Design." Further remarks on this topic can be found in *Design Noir*, see also footnote [32].
- 34** Pierre Lévy. *Becoming Virtual. Reality in Digital Age*. Perseus Books, New York 1998 (p. 26).

cally shape into design products, which as such are firmly anchored in the world as we know it today through the highly stylized characteristics they incorporate as a design product. The *design-fictions* can provide the per se overwhelming ethical questions of the partly abstract and clinically factual idioms with an immediate concreteness, which can supply an intercepting projection screen of narrative scenarios for the tendential normative overheating of social debates. Through their features as products, the design-fictions remain to a certain extent anchored in a *factual world of possibility*, and similarly to the genre of “film noir” they open up an alternative between dogmatism and cynicism by making the topic more concrete, accessible, and through that manageable, without stating it explicitly.<sup>32</sup>

#### ON THE DISPOSITIVE OF THE DIGITAL:

##### CALCULATING WITH THE INDETERMINATE

In our view, productive reflection on these issues calls attention to a structural perspective. From the tendency toward a dissolution of the boundaries of conceptual design, one can deduce how technology thematizes itself beyond purely instrumental considerations. Today, even a specific *criticism* of social themes seems to become possible through design,<sup>33</sup> and still it seems that the extent of the transformed availability can only be gauged fully in the context of a theory of virtuality. “*The virtualization of a given entity consists in determining the general question to which it responds, in mutating the entity in the direction of this question and redefining the initial actuality as the response to a specific question [...]*”<sup>34</sup> This is how Pierre Lévy defines the concept as a creative management of the frame of reference within which “a something” takes up its specific meaning. Lévy reaches this concept of virtuality as a continu-

**35** This seems to be a common interest also of the mathematician and philosopher Charles Sanders Peirce, who, together with Ferdinand de Saussure, is one of the fathers of semiotics as a systematical study of signs, as well as of American Pragmatism (along with his friend and colleague William James). In his non-determinist model of how ideas are capable of taking effects upon the future, he sketched a specific mode of being for abstract "entities" such as "laws," to which he ascribed the categorical status of an *Esse in Futuro*. For a discussion on Peirce's approach to the question of how the New may come into being, cf. Edwina Taborsky. *Architectonics of Semiosis*. St.Martin's Press, New York 1998, and also Helmut Pape (Ed.). *Kreativität und Logik. Charles S. Peirce und das philosophische Problem des Neuen*. Suhrkamp Verlag, Frankfurt am Main 1994. Cf also Peirce's own writings on his category theory, especially *Vorlesungen über Pragmatismus*. Meiner, Hamburg 1991, and there the chapter "Die universalen Kategorien" [The Universal Categories] (pp. 22ff.); or Charles Sanders Peirce. *Naturordnung und Zeichenprozess*. Suhrkamp, Frankfurt am Main 1988, especially the chapter "Das Gesetz des Geistes" [The Law of the Mind] (pp. 179ff.). For the original, English texts cf. Charles S. Peirce. *Collected Papers*. Vols. 1–6. Eds. C. Hartshorne and P. Weiss; Vols. 7–8. Ed. A. Burks. Harvard University Press, Cambridge 1931–1935.

**36** Cf. for instance Dan W. Smith. "Axiomatics and Problematics as Two Modes of Formalisation: Deleuze's Epistemology of Mathematics." In: Simon Duffy (Ed.). *Virtual Mathematics. The Logic of Difference*. Clinamen Press, London 2006 (pp. 145–168, here p. 145).

**37** With Deleuze, this function is fulfilled by the concept of the virtual. Cf. especially Marc Rölli. *Gilles Deleuze. Philosophie des transzendenten Empirismus*. Verlag Turia + Kant, Vienna 2003.

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ation and summary of the philosophy of Gilles Deleuze. The latter's image of virtuality contains an idealism, yet it is an idealism whose core harbors no eternally static ideas, but a *generic existence* of ideas beyond a strict dissociation between the ideal and the material.<sup>35</sup> Therefore, the methodology of such an idealism is with Deleuze only apparently paradoxical as primarily a radical empiricism and not, as philosophical idealism would lead us to assume, as a deductive-nomological form of rationality. Instead of the axiomatic method of formalization made significant over the history of philosophy, Deleuze opts for a problematizing method which he translates from the realm of mathematics into that of philosophy: "*The fundamental difference between these two modes of formalization can be seen in their differing methods of deduction: in axiomatics, a deduction moves from axioms to the theorems that are derived from it, whereas in problematics a deduction moves from the problem to the ideal accidents and events that condition the problem and form the cases that resolve it.*"<sup>36</sup> With this methodological transfer, Deleuze introduces a concept of "problem" that already contains its own solutions. Problems are within such a notion not logically anterior to solutions. When a problem is properly formulated, then this theory would suggest that the problem be solved already. Deleuze therefore refers to his philosophy as "transcendental empiricism." His philosophical thought-image of virtuality is concerned with finding a coherent way of speaking also about the *conditions for genesis* of a formal structure which in its turn determines our empirical experience.<sup>37</sup>

Historically speaking, the concept of virtuality goes back to the medieval Latin word *virtualis*, derived from the

- 38** Cf. for example Dan W. Smith. "The Conditions of the New." In: Ian Buchanan (Ed.). *Deleuze Studies*. Edinburgh University Press, London 2007. Vol. 1, Nr. 1 (pp. 1–21).
- 39** See footnote [37], and also: John Rajchman. *Constructions*. MIT Press, Cambridge, Massachusetts 1998, especially the chapter "What is abstract?" (pp. 55–75), which he begins with the striking statement: "It is, as though the *world* of abstraction had been reopened." (p. 55 [author's italics]).
- 40** Cf. the remarks of Marc Rölli on these here only roughly delineated trains of thought: Marc Rölli. "Begriffe für das Ereignis: Aktualität und Virtualität. Oder wie der radikale Empirist Gilles Deleuze Heidegger verabschiedet." [Concepts for the Event. Or How the Radical Empiricist Gilles Deleuze Breaks with Heidegger] In: Marc Rölli (Ed.). *Ereignis auf Französisch. Von Bergson bis Deleuze*. Wilhelm Fink Verlag, Munich 2004 (pp. 337–359, here pp. 343ff.).
- 41** For the targeted production of image worlds in contemporary branding communication, see especially the interview with Christopher P. Peterka in this book: "For a Hippocratic Oath in Design" (pp. 257ff.).
- 42** Cf. the statements of game designer Eric Zimmerman in this volume: "Tell Me, What is not a Fake Experience?" (pp. 129ff.).
- 43** Concerning the medial and cultural representation of the hitherto also fatal distinction between the digital and the analog see the essay collection of Jens Schröter and Alexander Böhnke (Eds.). *Analog/Digital—Opposition oder Kontinuum? Zur Theorie und Geschichte einer Unterscheidung*. Transcript Verlag, Bielefeld 2004. On the blackout of cybernetic epistemology in its conception of the digital see especially the essay by Claus Pias "Elektronenhirn und verbotene Zone. Zur Kybernetischen Ökonomie des Digitalen." [Electronic Brain and the Forbidden Zone: On the Cybernetic Economy of the Digital] (pp. 295–310). Through the basic opposition of digital and analog, cybernetics used the repression of a necessary third, such as a passage, a materiality, or whatever one chooses to call it, as the actual engine "of a function that is called observation." (pp. 307–308). See also Claus Pias. "Die kybernetische Illusion." [The Cybernetic Illusion] In: Claudia Liebrand, Irmela Schneider (Eds.). *Medien in Medien*. DuMont, Cologne 2002 (pp. 51–66).

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word *virtus*, which denotes *strength, potential, capability*, and refers to what scholastic philosophy has been introducing as something that exists in potential rather than in actuality. The concept of virtuality therefore stands in close proximity to concepts of possibility, while clearly distinguishing itself from the latter. For one of the central problems consists in how the concept of virtuality can help rethink that of possibility beyond probabilistic means as something inherently indeterminate and open.<sup>38</sup> By the same token, Deleuze suggests with his notion of a transcendental empiricism also a reconfiguration of the relationship between the abstract and the concrete.<sup>39</sup> For Deleuze, phenomena are founded on an ontological basis rather than an epistemological one. He thereby sketches a post-metaphysical phenomenology, while such *being of phenomena* cannot be equated with the *phenomenon of being*.<sup>40</sup> The exterior of abstraction, according to one of his central insights, cannot be contained by the logics of representation, let alone by that of media machines of illusion—even if digital apparatuses have modernized the availability of visual worlds. Meanwhile, visual worlds are popularized, standardized, reproduced, and even created for specific purposes.<sup>41</sup> However, more is at stake in virtualization than merely running riot into imaginary alternative worlds.<sup>42</sup>

At the core of the current digital dispositive there is, semiotically speaking, not the available code for the purpose of archiving, transmitting, duplicating, or some other manipulation of a fully determined, analyzed original in series of copies or, to put it cybernetically, in maps which can be used to navigate unknown or murky waters.<sup>43</sup> Rather, at the heart of the digital dispositive there is in fact a *rupture within the logics of*

- 44** These observations refer to the studies of Bernhard Siegert. *Die Passage des Digitalen. Zeichenpraktiken der neuzeitlichen Wissenschaften 1500–1900*. Brinkmann & Bose Verlag, Berlin 2003.
- 45** "An imaginary number is a complex number that has zero real part. An imaginary number can therefore be written as a real number multiplied by the 'imaginary unit'  $i$  (equal to the square root  $-1$ )." Eric W. Weisstein: 'Imaginary Number' *From MathWorld—A Wolfram Web Resource*, <http://mathworld.wolfram.com/ImaginaryNumber.html> (September 20<sup>th</sup> 2007).
- 46** Bernhard Siegert. *Passage des Digitalen. Zeichenpraktiken der neuzeitlichen Wissenschaften 1500–1900*. Brinkmann & Bose, Berlin 2003 (p. 16). Originally in German: ["Es ist der Riss einer im Denken der Repräsentation verwurzelten Ordnung der Schrift, der die Passage des Digitalen freisetzt und den Raum der technischen Medien eröffnet. Die elektrischen Medien basieren auf dem, was ein Vertreter der klassischen Leibniz–Wolffschen Analysis das "Nichtanalytische" genannt hätte, das Nichtberechenbare, Nichtdarstellbare, die Grenzen des Kalküls Überschreitende. Das moderne Analytische, das heisst die Analysis seit Euler, ist ein deterritorialisertes Analytisches."]
- 47** Cf. also: Simon Duffy (Ed.). *Virtual Mathematics. The Logic of Difference*. Clinamen Press, London 2006.

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*representation.*<sup>44</sup> This breach marks the onset of electronic media, and since the beginning of the 18<sup>th</sup> century it has been opening up a digital passage. From this passage spring the transformational energies for a new kind of availability. For the semiotic working principles of electronic media, as well as for the mathematical novelties they are based on, it is typical that signs are dealt with that are significant in the absence of any link to any physically real and therefore external point of reference. Imaginary numbers,<sup>45</sup> a class of numerical signs invented by Leonhard Euler, facilitated the emergence of electronic media in a deterritorialized space of the analytical, as Siegert puts it:

*“It is a crack within the order of scripture anchored in the concept of representation which liberated the passage of the digital and opened up the space of technological media. Electrical media are based on what a representative of the classical Leibniz-Wolff analysis would have termed the ‘non-analytical,’ that is the non-predictable, the non-representable, that which exceeds the limits of calculus. Modern analysis, that is analysis after Euler, is a deterritorialized one.”*<sup>46</sup>

*Deterritorialized* means pre-symbolic, ante-significant, not yet meaningful and literally unthinkable—post-Eulerian analysis thus facilitates calculations of the unimaginable. Consequently, and in a seemingly paradoxical manner, a deterritorialized analysis is an open field for poetical mathematics or for analytical self-justifications as *generic calculations*.<sup>47</sup> Here lies the close contact between digital principles and what in the context of media science is currently being thematized as virtualization: *“This ability of the brain to create and give birth to a kind of lasting self-reference, to hatch and nourish it, is what*

**48** Manfred Fassler. *Erdachte Welten. Die mediale Evolution globaler Kulturen*. Springer Verlag, Vienna 2005 (p.227).

**49** From an epistemological perspective, Siegert observes the appearance of this rupture within a logics of representation, from which and through which a passage of the digital can emerge and eventually install itself as a dispositive, with the mathematical calculus after Leonhard Euler (1707–1783), and especially also after Joseph Fourier (1768–1830) and Augustin Louis Cauchy (1789–1857). The first electro–technical media appear around 1820–1850, as for example with the invention of electromagnetic telegraphy and the respective Morse alphabet. Morses' and Vails' first telegraph station was in use since 1844. Carl Friedrich Gauss and Wilhelm Weber built and used electromagnetic telegraphy since 1833 in Göttingen, Germany. The first commercially successful transatlantic telegraph wire was put into operation on August 25<sup>th</sup> 1858. In our view, it only makes sense to speak of a "dispositive" once the epistemological premises start to spread on the level of infrastructures.

**50** Siegert (p. 16) (see footnote [44]). Originally in German: ["Darstellbarkeit ist nun nicht mehr eine transzendente, unbefragbare Voraussetzung der Analyse, sondern etwas, dessen Existenz die Analyse allererst und bevor ihr eigentliches Geschäft beginnt beweisen muss."]

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*I call the capability of virtualization.*"<sup>48</sup> The digital code allows for a far-reaching standardization of the operative management of calculi with operable elements, which represent no references outside of themselves. The same goes for Fassler's just mentioned mental "offsprings." These are not empirically motivated, but emerge from a rupture within the inner systematics, from the breach of a rule, the slackening of an axiom, and facilitate the long-term resistance to persistent attacks by established habits of thought. Virtualized objects enter a life of their own and cannot be subsumed by the order they have emerged from. With the appearance of the digital apparatus over 150 years ago,<sup>49</sup> an inversion of previously valid semiotic premises has actually come into effect. The significance of signs was no longer reflexively founded on an external reference. For formal operations, this meant that it is possible to do calculations with merely *postulated* functional relations, without requiring them to actually be representable. The possibility thus appeared that mathematics find not only empirical applicability, but also actual viability as an *experimental science of the abstract*. Analysis that no longer has to reference an external object supplies its own ground of significance through a generative self-reference, as Siegert elaborates:

*"Representability is no longer a transcendental, unchallengeable premise of analysis, but something whose existence must first of all be proved by analysis before it takes its actual course."*<sup>50</sup>

These mathematical fundamentals for the operative management of the pre-specific have already been used for some time in all kinds of scientific disciplines. What is rationally reasoned and demonstrated analytically is no longer rep-

- 51** Sybille Krämer. "Kalküle als Repräsentation. Zur Genese des operativen Symbolismus in der Neuzeit." [Calculus as Representation. On the Genesis of the Operative Symbolism in Modern Times] In: Hans-Jörg Rheinberger, Michael Hagner, Bettina Wahrig-Schmidt (Eds.). *Räume des Wissens. Repräsentation. Codierung, Spur.* Akademie Verlag, Berlin 1997 (pp. 111–122).
- 52** For example: Erich Hoerl, research project on "*Die Krise der 'Euklidischen Mentalität'—Studien zur Geschichte der Anschauung*" [The Crisis of Euclidian Mentality: Studies on the History of Conception] at the Ruhruniversität Bochum: [www.ruhr-uni-bochum.de/ifm/seiten/03institut/mitarbeiter/hoerl\\_anschauung.htm](http://www.ruhr-uni-bochum.de/ifm/seiten/03institut/mitarbeiter/hoerl_anschauung.htm) (August 16<sup>th</sup> 2007).
- 53** For example Oliver Simons. *Raumgeschichten. Topographien der Moderne in Philosophie, Wissenschaft und Literatur.* Wilhelm Fink Verlag, Berlin 2007.
- 54** Manfred Fassler. *Bildlichkeit. Navigationen durch das Repertoire der Sichtbarkeit.* Böhlau Verlag, Vienna 2002 (especially pp. 66ff.).
- 55** Philosopher of media and sciences Michel Serres attempted in his book "Atlas" to delineate maps for orientation in a changed world, which he describes from an impressive perspective: Since "*science and technology today are just as concerned with the possible as with the realized,*" Serres writes, "*today we no longer need to answer the question as to where we wish to head towards, but as to where we are right now.*" Serres thus formulates the perspective of a historically changeable mode of how we are in the world and what forms this *Dasein* takes and can take. See Michel Serres. *Atlas.* Merve Verlag, Berlin 2005 [1994].
- 56** With his label of a "real virtuality," Christoph Hubig for example points out the necessity of a change in the direction of our view: "*The most fundamental technologies are those that disappear. They connect with the structures of everyday life, until they can no longer be distinguished from them [...] The scandalon of such self-evidence, now hand in hand with a new kind of indeterminacy, lies, in Blumenberg's words, in the dismissal of reason in favor of a commitment to the technically-imagining understanding, an imagistic thinking, whose image of 'nature' overlooks the fact that this 'nature' is already the result of a relation with nature transformed by technology.*" Christoph Hubig. "Wirkliche Virtualität. Medialitätsveränderungen der Technik und der Verlust der Spuren." [Real Virtuality: Medial Transformations of Technology and the Loss of Traces] In: Gerhard Gamm and Andreas Hetzel (Eds.). *Unbestimmtheitssignaturen der Technik. Eine neue Deutung der technisierten Welt.* Transcript Verlag, Bielefeld 2005 (pp. 39–62, here p. 42).
- 57** Cf. the introduction to the chapter "*Creativity, Industries*" in this volume (pp. 197ff.).
- 58** Integral and differential calculus partly epitomizes the idea of the multiple in mathematics. In his remarks on the *Fundamental Theorem of Calculus*, Byers describes this as follows: "*The theorem says that there is in fact one process in calculus that is integration when it is looked at in one way, and differentiation when it is looked at in another.*" He continues on a more trenchant note: "*Another way of putting this is that without the Fundamental Theorem there would be two subjects: differential calculus and integral calculus. With it there is just the calculus, albeit with a multiple perspective.*" William Byers. *How Mathematicians Think: Using Ambiguity, Contradiction, and Paradox to Create Mathematics.* Princeton University Press, New York 2007, (pp. 50ff.). Cf. also the contribution to this book entitled "Models" by the mathematician Ben Schweizer, especially with regard to the relation between analyzing models and crafting models within applied mathematics (pp. 173ff.).

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resented or found, but calculated. Cultural theorist and media philosopher Sybille Krämer for example speaks of a *calculization of knowledge processes*,<sup>51</sup> and this without neglecting constructivist aspects. The radical implications of these semiotic practices remain, however, almost uncharted and have recently only begun to attract broader attention. In science studies, for instance, a *crisis of Euclidian mentality*<sup>52</sup> has been diagnosed, while cultural studies identify a *crisis of vision*,<sup>53</sup> and point to the necessity for a logics of *polymorphous visibility*.<sup>54</sup> With the advent of electronic media, the analytic is no longer the opposite of the synthetic. Digital processes facilitate *synthesizing analyses*, which both analyze and create new “originals.”<sup>55</sup> How these *mental “offsprings”* or *abstract things* may fit into the manifest systems of order of the world has not yet been often the focus of attention.<sup>56</sup> Whoever would like to actually make analyses productive, today, is confronted with the endless possibilities of their application within the fields of digitally mediated concreteness.<sup>57</sup>

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Analysis, the calculation with variables and functions, facilitates, according to the *fundamental theorem of calculus*,<sup>58</sup> an extensive scaling of the level of observation for the description of a dynamic system, in other words one can, to a certain extent, use differential calculations to zoom in when nothing can be perceived and, with the simulation of comprehensive systems that cannot be contained, to projectively zoom out through integral calculations on the tentative results, and then to verify them systematically. Analysis thereby facilitates an empirical vision within the abstract itself. What these quite abstract con-

- 59** See for instance the article in AD: "Calculus-Based Form. An Interview with Greg Lynn." In: *Architectural Design*. Special Issue: "Programming Cultures." Issue edited by Mike Silver. Vol. 76, Nr. 4 (pp. 88–95). John Wiley & Sons, Ltd., published online: August 10, 2006.
- 60** See for example *arch+ Zeitschrift für Architektur und Städtebau*: "Von der Box zum Blob und wieder zurück" [From the Box to the Blob and Back Again], Vol. 148, Berlin 1999; or: *arch+ Zeitschrift für Architektur und Städtebau*: "Die Architektur des springenden Universums" [The Architecture of the Jumping Universe], Vol. 141, Berlin 1998; also *Architectural Design*. "Hypersurface Architecture I + II." Profile Nr. 133 and 141, edited by Maggie Toy, Academy Editions, London 1998; 1999.
- 61** See the interview with Greg Lynn in this volume: "Generic Design. Mass-Produced One-of-a-Kind Objects" (pp. 245ff.)

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nections can produce in the concrete field of design today is illustrated by the contribution to this book by the architect and designer Greg Lynn. The study and experimentation with the role of design in the context of “*calculus-based forms*”<sup>59</sup> opens up the possibility of creating certain objects as part of larger series, which are each *mass-produced as unique items* (“reproduced” would be a misnomer here). Today’s parametric, process-based strategies of design should no longer deal with a blind, self-driven process of form-finding such as that which characterized the architectural avant-garde of the 1990s, engaged as it was with the concept of computer-generated form—as Greg Lynn self-critically suggests.<sup>60</sup> The digital calculation of forms by determining the shaping parameters does not discharge designers from their decisions, but distributes them onto a multitude of new levels belonging to various ensembles from which the identity and meaning of each individual part emerges. Greg Lynn’s self-image as the designer of these objects results from a sum of design decisions which he took within the purely abstract, and which he then modeled, illustrated, and “validated” in the concrete—countless times before he could completely establish the facilitating conditions, the constraints to the creation of this series of design objects as a whole. This presupposes a logic of classification beyond any simple conception of sets, within which “*infinite numbers of variations*” are possible, “*posing again lots of design questions.*”<sup>61</sup> To a certain extent and from a structural point of view, this undermines the platonic *idée fixe* of an object of design as a whole, as a closed entity, since the actual object of design here, the series as such, cannot be surveyed, nor is it available to us in any instrumental sense. Nonetheless, or precisely for this reason, Greg Lynn sees himself as author and



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designer of each and every one of the 50,000 unique items of the *Ravioli Chairs* which he created, realized and partly also actualized as part of the “Vitra Limited Edition 2007.” He takes up responsibility as a designer not only for “the original,” which here exists as a potentially endless “series of originals” that can be disseminated on an industrial scale, but sees each individual chair as a unique item—just as he regards the entire series as a unique item, as a solitonic ensemble, so to speak. The relation between the part and the whole is an open, generic one and would not be accurately described by the concept of a “system.” There are still relations of similarity that Greg Lynn, with reference to Wittgenstein, refers to as *family resemblances*, but there are not necessarily functional connections. The component “single chair” is still functioning within itself as we are used to expecting, but it is always also defined as a component, an individual part, a partial object, and thereby it always points to something beyond itself (in the “strict” sense), such as would never be possible with a mass-reproduced mass product in its desired lack of individuality. Such formal series symbolize discontinuous hierarchical relations and coexistent inner and outer rapports. Each observer must first consciously decide on a system of reference: Am I interested in this chair now? Or do I regard a chair within the entire series—how it is different? What sets it apart from the rest? Or do I consider the whole series in relation to other series by the same designer, and try to develop a sense for what Greg Lynn calls “*one’s signature in personal algorithms*”? The introduction of individuality within the object-like product allows for an element of temporality also *within* the field of objects, an element that modernism already claimed to have mastered and eradicated.

**62** Brown especially makes reference here to Jacques Rancière. *The Politics of Aesthetics: The Distribution of the Sensible*. Continuum Press, London 2004.

PSEUDOPODIA

VERA BÜHLMANN

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In full awareness of the new availability that we have sketched here, each of Greg Lynn's series from the *Embryological House Series* (1999), through *Tea & Coffee Tower Series* for Alessi (2003) up to *Duke and Duchess* and the *Ravioli Chairs Series* for Vitra (2007) has been exactly designed, composed, and put together in the light of the endless set of alternative possibilities. Against the background of the radical openness of a post-representational virtual economy of intentions, how do we orient ourselves in order to take concrete decisions? Especially since this openness is no longer the fantasy of *tabula rasa*, energized by the possibility of optimized and optimizingly conceived new creations. Also, it is no longer the openness of the lucky break in processes of form-finding. Beyond bland criticism from many designers themselves, who fear for the recognition of their professional competence against the background of an automatic modeling and shaping, as well as digitalized possibilities of production, the strategies of parametric design may turn out to be the beginning of a new *cultural technique* within the currently unfolding dispositive of digital availability, which may gain great significance in the future.

In his reflections on the surging materialism of the 21<sup>st</sup> century, Nathan Brown adds to his suggested concept of an "*economy of intentions*" a "*politics of the aesthetic.*"<sup>62</sup> When he analyzes the developments in material sciences through the eyes of a philosopher concerned with ontological themes, he addresses rather directly the new availability of experimentation with inertial systems. In his view, matter can no longer plausibly be characterized as inert and inactive. Formerly defined as essentially "inert," matter is currently exploding the frames of traditional classification through manipulations on

- 63** Stephen Wolfram. *A New Kind of Science*. Wolfram Media, Champaign, Illinois 2002; also: Stephen Wolfram. *Cellular Automata and Complexity*. Westview Press, Boulder, Colorado 2002.
- 64** Roland Barthes. *Mythologies*. Translated by Annette Lavers, Noonday Press, New York 1972 (p. 112).

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the molecular level on a nano-scale. It is just no longer possible to clearly distinguish between organic and inorganic, or even between living and not alive. In the case of new, technologically fabricated materials, quantum behavior comes into play and creates a constitutive indeterminacy and independent activity within matter itself. The economy of intentions, which Brown announces, includes bodies of any kind—human and animal, mineral and virtual. For beside the activation of materials, models of *synthetic sensibility* are also intensely investigated. From cognition studies and the theory of complexity for instance, Brown mentions the “discrepant cognitive agents” or the “distributed cognitive networks,” but also emerging self-organized systems such as some of Wolfram’s cellular automata<sup>63</sup> or other generic algorithms. Brown refers to the varied interaction of these bodies as “constrained indeterminacy.” The still not entirely unpopular cybernetic thought-images of controlling navigation and mechanical construction within and by complicated systems thereby finally reach the limits of their applicability. They dash against the by now pragmatically outdated status of the thought-image of totality, against the claim for an at least theoretically possible *survey* of the system as a whole beyond its historical transformation. Without the central function of such totality, at least as a quasi-metaphorical frame of reference, cybernetic models remain unoriented.

As early as the 1970s, Roland Barthes formulated the amazingly prescient sentence “*a little formalism turns one away from history*,” thereby pointing out that “a little formalism” suggests the possibility of true statements that can preserve their validity from a structural viewpoint and beyond their historicity, while “*a lot [of formalism] brings one back to it [history]*.”<sup>64</sup>

- 65** A formalism of purely nomologically–deductive origin cannot contain the conditions of its own applicability (Rosen 1991). If a formalism attempts to include these conditions, it produces deterministic, chaotic—i.e. generative or synthesizing—systems, whose simplest instances are the so–called Mandelbrot set, the Julia sets, or cellular automata. The structural variety of the Mandelbrot set is strictly deterministic, not limited, not arbitrary, and simultaneously not predictable, i.e. extremely complex. Benoît B. Mandelbrot. *The Fractal Geometry of Nature*. W. H. Freeman, San Francisco 1982. See also Robert Rosen. *Life Itself. A Comprehensive Inquiry into the Nature, Origin, and Fabrication of Life*. Columbia University Press, New York 1991.
- 66** Michel Foucault. *The Archaeology of Knowledge*. Routledge, London 1972 [1969].
- 67** Sabine Eggmann. "Culture Constructions. Or: In Search of Lost Foundations" (pp. 137ff.) in this volume.

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If one also considers the conditions for the specific timelessness of structural and abstract formulae,<sup>65</sup> one finds oneself again in the historicity of their concrete forms. As authoritative images or patterns of thought they resemble the infrastructures of a theoretical field of production and determine the prerequisites for problems and issues that are to emerge from it, that can be formulated and resolved. Nathan Brown's concept of a "*constrained indeterminacy*" delineates this model very fittingly and can be understood as a principle of a radical empiricism. Most relevant for this context is that Michel Foucault has developed a groundbreaking methodology under the title *Archaeology of Knowledge*<sup>66</sup> that he presented as the basis for a science of history conceived in a *materialistic* sense, which self-referentially applies historicity to history itself, thereby introducing the conceptual vocabulary of geology to make respective references by speaking of various co-existing sedimentations and stratifications of a plurality of "temporal continuities." Starting from this, for instance, Sabine Eggmann in her contribution to this book speaks about how she has empirically investigated in what way "culture" as an abstract concept is implemented and used in the various fields of European ethnology.<sup>67</sup>

Against the background of a relativistic materialism which makes formal elements appear in their aesthetic qualities, one can no longer approach questions of form from an apolitical perspective. The central step, an investigation of the constraining conditions for processes of formation on a multitude of coexisting levels, points to the possibility of multiscalar thinking and action on the basis of a generative and irreducible pluralism, which can neither be entirely unified with

**68** See for example Jean–Luc Nancy. *Being Singular Plural*. Stanford University Press, Stanford 2000.

**69** It is the again proclaimed perspective of the possibility of a "positive" normativity, which seems to be common to these developments. Departing from Michel Foucault's conception of an *Archaeology of Knowledge*, just as from a *New Historicism* (Stephen Greenblatt) conceived as a *Poetics of Culture*, pluralistic, non–deterministic and aptly self–referential approaches are developing and taking shape, arguing for a "Theory–Praxis" which would less present itself in the light of a radical relativism, but grow on the *agar* (the nutrient solution) of an organic relationality—one may for example consider Bill Brown's suggestion of a *Thing Theory*, or Bruno Latour's translation and popularization of Michel Serres' conceptually ingenious figures of thought of the *Quasi-Objects* und *Quasi-Subjects*, or also the extended meaning of the concepts of performativity and performance within contemporary cultural studies. Cf. for example: Uwe Wirth (Ed.). *Performanz. Zwischen Sprachphilosophie und Kulturwissenschaft*. Suhrkamp Verlag, Frankfurt am Main 2002. Cf. also James A. Knapp, Jeffrey Pence. "Between Thing and Theory." In *Poetics Today* 24:4, Porter Institute for Poetics and Semiotics, Winter 2003 (pp. 641–671); as well as: Bill Brown. "Thing Theory." In: *Critical Inquiry*, Vol. 28, Nr. 1, *Things*. Fall 2001 (pp. 1–22); cf. also Bruno Latour. *Politics of Nature: How to Bring the Sciences into Democracy*. Harvard University Press, London 2004; Bruno Latour. *Das Parlament der Dinge. Für eine politische Ökologie*. Suhrkamp Verlag, Frankfurt am Main 2001; Bruno Latour. *Von Realpolitik zu Dingpolitik oder wie man Dinge öffentlich macht*. Merve Verlag, Berlin 2005.

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Kant's *synthetical a priori*, nor harmonized with the Hegelian unity of an ultimate correspondence of spirit and world.<sup>68</sup> A *politics of the aesthetic* must find methods of alignment with the—hitherto primarily paralyzing—indecidability in matters of taste.

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With the label *Matter of Taste* we commonly refer to that which would lose its *particular uniqueness* through rigid analysis, and this already applies to the praxis of the wine trade, for instance. Wherever the interplay between analyzable components retains its overall quality due to the specific relations and proportions, which would, however, be lost in the layout of an analytical order, then a situation cannot be circumscribed without the synthesizing performance of the perceiver/interpreter. Thus, with questions of taste, any basis for a prognostic and potential agreement is principally lacking. What now, in the light of such perplexing and complexing of differentiability and discernability, comes to replace those elementary common features that would have been debated in analytical discourse, is an adequate reflection of what the constraints are in the various *inertial systems*, what the limiting conditions are which become effective wherever forms develop into such complex situations of taste. The identification of something as a question of taste, as a topic that could never be completely covered theoretically, has become quite popular also within critical thinking and reflective mediation in the humanities, and especially in cultural studies. A new materialism, best described as a “relativist materialism,”<sup>69</sup> promises to be the number one candidate for the role of—nevertheless—a master nar-

**70** According to Lyotard, knowledge does not find "its principle in the expert's homology, but the inventor's paralogy." See Jean-François Lyotard. *Das Postmoderne Wissen. Ein Bericht.* Edition Passagen, Vienna 1999 (p. 15). [For an English edition see: Jean-François Lyotard. *The Postmodern Condition: A Report on Knowledge.* University of Minnesota Press, Minneapolis 1985.]

**71** Here is a selection of recent publications that re-thematize the concept of the event [within the German speaking context]: Nikolaus Müller-Schöll. *Das Ereignis.* Transcript Verlag, Bielefeld 2003; Dieter Mersch. *Ereignis und Aura.* Suhrkamp Verlag, Frankfurt am Main 2002; Martin Seel. *Ästhetik des Erscheinens.* Suhrkamp Verlag, Frankfurt am Main 2002; Joachim Küpper. *Dimensionen ästhetischer Erfahrung.* Suhrkamp Verlag, Frankfurt am Main 2003; Dieter Mersch. *Was sich zeigt. Materialität, Präsenz, Ereignis.* Wilhelm Fink Verlag, Munich 2002; Mirjam Schaub. *Gilles Deleuze im Wunderland. Zeit- als Ereignisphilosophie.* Wilhelm Fink Verlag, Munich 2003; Marc Rölli (Ed.). *Ereignis auf Französisch.* Wilhelm Fink Verlag, Munich 2004; Erika Fischer-Lichte. *Performativität und Ereignis.* Franke Verlag, Marburg 2002; Ingo Zechner. *Bild und Ereignis. Fragmente einer Ästhetik.* Turia + Kant, Vienna 1999; Alain Badiou. *Das Sein und das Ereignis.* Diaphanes, Berlin 2005; Thomas Rathmann. *Ereignis. Konzeption eines Begriffs in Geschichte, Kunst und Literatur.* Böhlau, Cologne 2003.

**72** Peter Sloterdijk. *Der ästhetische Imperativ. Schriften zur Kunst.* Philo & Philo Fine Arts, EVA Europäische Verlagsanstalt, Hamburg 2007 (pp. 319ff.).

**73** See also the contribution of Manfred Fassler to this book: "Design 2020" (pp. 303ff.).

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rative, yet of a *virtualized* master narrative that is still in keeping with Lyotard's dismissal of the various theories of emancipation for legitimating "knowledge."<sup>70</sup> Considering the irreversible precariousness of the foundations for rational reasoning, of securing the grounds to support logical argumentation, the possibility of aesthetic judgment, often in connection with a discourse on "events," offers an alternative so that theory can still be practicable in the death throes of high modernism, without necessarily becoming further entangled in often fatal misbeliefs.<sup>71</sup>

The transformations at the beginning of the 21<sup>st</sup> century, in the aftermath of which aesthetic concepts find application ubiquitously and throughout the disciplines, may be traced back to the situation that we are increasingly forced to take up competences and responsibilities for as yet unestablished facts, to an unprecedented degree. The objects of scientific knowledge are no longer self-evidently anterior to their symbolizations. The particular structures of symbolic systems themselves, i.e. their materialization as technologies, apparatus, theories, are recognized as authoritative for those features that we can at all attribute to the symbolized objects. As Peter Sloterdijk avers, not only would "the primacy of our logical budget" shift "from the past to the future."<sup>72</sup> Interest in truth could also no longer manifest itself primarily in retrospective terms, avoiding prognosis and prophecy.<sup>73</sup> This refers less to the plumbing of the possibilities for *passive prognoses* as extrapolations from past events, as the statistical paradigm, which is today still considered most effective, seems to suggest. Rather, Sloterdijk has an *active prognostics* in mind, active insofar as we have for quite some time already switched to the

**74** Cf. the research project presented in the last section of this book (chapter "*Observations, Interpretations*"): "Living Memory" (by Irene Müller), which explicitly deals with design options for archives and documentary materials for the purpose of a "prospective culture of documentation." Irene Müller: "image\_base, use\_memory" (pp. 317ff.).

**75** Christian Doelker. "Medial Primordial Soup—Design and the Aquatic Turn" (pp. 159ff.) in this volume.

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primary production of facts that will be compatible and fit our desired narrations and projects.<sup>74</sup> It is all too obvious that such habits can no longer supply a foundation, at least if foundation be understood in the traditional sense of an inert and timeless ground.

Are we indeed moving, as Christian Doelker's daring train of thought suggests in his contribution to this book,<sup>75</sup> at least to a certain extent again as protozoa within a medial primordial soup, within a sea of open potentialities? In this sense we can perhaps indeed speak metaphorically of a return to the sea in light of the ongoing fluidization of commitments, a return that Doelker associates with the label *Aquatic Turn*. Yet it is important to bear in mind that the new becoming-primitive would of course take place on the cultural underground of a strong social consensus. Stabilized infrastructures and the evolutionary pioneer situation of primordial soups do not rule each other out, but constitute coexisting diversities beyond ontological borders. How can we then reconcile the former rhetoric of progress on the emergence of unlimited design possibilities with such a movement? We will, at least provisionally, give credit to this thought-image as a characteristic of the contemporary situation of radical synthetization, and reiterate the earlier reference to the creation of false feet, of the so-called *pseudopodia*, which are used by amoebae and macrophage creatures in order to establish their identities in a complex and open whole and ensure movement. With these volatile "limb masses" or physical emanations they literally organize themselves and the world around them. Pseudopodia allow these mucilaginous creatures to constantly maintain fluid inner and outer boundaries, without exchanging them for their

- 76** Cf. Rüdiger Wehner, Walter Gehring, and Alfred Kühn. *Zoologie*. Thieme, Stuttgart 1995. Cf. also the entry in *Wikipedia*, <http://de.wikipedia.org/wiki/Pseudopodium> (September 28<sup>th</sup> 2007).
- 77** If we follow certain arguments from the field of theoretical biology, living species are distinguished according to their sensorial relationality to their environment, which is "specific" to each of them. Cf. Jakob von Uexküll. *Theoretische Biologie*. Suhrkamp Verlag, Frankfurt am Main 1973; Jakob von Uexküll. *Streifzüge durch die Umwelt von Tieren und Menschen*. S. Fischer Verlag, Frankfurt am Main 1970.
- 78** Isabelle Stengers. *Power and Invention. Situating Science*. University of Minnesota Press, Minneapolis 1997. Also Isabelle Stengers. *The Invention of Modern Science*. University of Minnesota Press, Minneapolis 2000. The concept of "situated knowledge" was originally coined by Donna J. Haraway. "Situated Knowledges: The Science Question in Feminism as a Site of Discourse on the Privilege of a Partial Perspective." In: *Feminist Studies*, Vol. 14, Nr. 3, Stanford 1988 (pp. 575–599).
- 79** Karl R. Popper. *Objective Knowledge. An Evolutionary Approach*. Oxford University Press, Oxford 1972.
- 80** Bruno Latour refers to the possibilities for a scientific discourse on the body in the light of such considerations as a "patho-logical" discursive practice: One is obliged to "define an interface that becomes more and more describable as it learns to be affected by more and more elements." Bruno Latour. "How to Talk About the Body? The Normative Dimension of Science Studies." In: *Body & Society*, Vol. 10 (2–3), SAGE Publications 2004 (pp. 205–229; here p. 206).
- 81** Isabelle Stengers. *Cosmopolitique*. Vols. 1–7. La Découverte and Les Empêcheurs de penser en rond, Paris 1996–1997.

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own identity. Through protuberances of the cell plasma, facilitated by a complete fluidization of the meta-stable as well as meta-fluid cell wall, these creatures can literally turn their bodily margins into fluids in order to flow out of themselves and redefine their own limits through repeated inversions.<sup>76</sup> Their *Merkwelt* and *Wirkwelt*,<sup>77</sup> the worlds they perceive and live within, are structured by only coarse differences, they themselves consist of the same *milieu* they exist in; in their fluid and soluble states of aggregation, they literally maintain a fluid balance, a dynamic equilibrium. Their sensitivity includes the ability to chemically analyze dissolved materials, as well as the ability to perceive streams, pressure, and temperature shifts. The existence of these entities is radically risky. Each movement is a gamble with their own lives. They permanently run the risk of no longer being able to regain essential parts of themselves, or of absorbing irreconcilably foreign parts as particles of their own. If they did not continually expose themselves and take this risk, they would not be able to go on, to advance. They would not *be* themselves.

Philosopher of science Isabelle Stengers takes up many of Popper's ideas on a positive rationality in her own proposal of a *situated knowledge*,<sup>78</sup> but she replaces his use of historical relativity<sup>79</sup> as a frame of reference with that of a cosmopolitical milieu inhabited not linearly but polymorphously by time. In such an environment made up of initially pluralistic mixed and mingled bodies, an amoeba-like *bodily organization* as methodological perspective seems to show some promise.<sup>80</sup> For Stengers, knowledge is being produced in an irreducible milieu, which she describes as *Cosmopolitique*.<sup>81</sup> Starting from a pluralistic philosophy in the tradition of Whitehead, Peirce,

**82** Cf. e.g. Ilya Prigogine and Isabelle Stengers. *Order out of Chaos: Man's New Dialogue With Nature*. Bantam, Toronto 1984. Ilya Prigogine and Isabelle Stengers. *The End of Certainty. Time, Chaos and the New Laws of Nature*. The Free Press, New York 1997.

**83** Cf. also the introduction by Bruno Latour: "Stengers's Shibboleth." In: Isabelle Stengers. *Power and Invention. Situating Science*. Minnesota University Press, Minneapolis 1997 (pp. 6–20).

**84** Stengers 2000 (p. 136). See footnote [78].

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Deleuze, and not least of her own groundbreaking works<sup>82</sup> of the early 1980s together with chemist and Nobel Prize winner Ilya Prigogine, her argumentation is *ontological* rather than *epistemological*, against the predominant skepticism of science studies. Just like Popper, Stengers wants to avoid the loss of an element of normativity within the philosophy of science. But instead of Popper's criterion of a *falsifiability of facticity*, Stengers places the Shibboleth of *risk*.<sup>83</sup> She is not interested in identifying criteria that would help decide on the truth content of certain models, which could thereby be acknowledged as scientifically legitimate. On the contrary, Stengers is interested in the possibility of distinguishing constructions according to their *qualification* for generating knowledge, to which she attaches a clear ethical component. For both "good constructions" and "bad constructions" are for her *infrastructures* in the cosmopolitical milieu, which as such limit the number of directions for further developments, while they decidedly advance certain courses:

*"In effect, the computer universe establishes a direct relation between phenomenon and simulation, with nothing 'beyond' simulation, with no promise of a theory behind the models. It prefigures the ideal of an ideally versatile matrix able to engender every possible evolution."*<sup>84</sup>

Of course, one could be tempted to refer to this difference between good and bad, which can in principle not be differentiated any further, as a *question of taste*. And it would not even seem preposterous. Decisions on the basis of aesthetic criteria radically retrace responsibility of consequences back to the decision-maker. A preference for blue toothbrushes

**85** Also consider the conception of design as flavor enhancer in: Matthias Götz (Ed.). *Der Tabasco Effekt. Wirkung der Form, Formen der Wirkung. Beiträge zum Design des Design*. Schwabe Verlag, Basel 1999.

**86** "Artifice brings into existence [*faire exister*], and to do this it needs a detailed description of what it challenges, but it does not try to make a demonstration. However, it puts to the test the simplistic fictions that underpinned the great putting into perspective of a life whose secret could be revealed, and the putting to the test of the relations between explanation and delegation [...] the theoretico-experimental enterprise is confronted with other practices, inventive and risky, which by their very existence put in question the power of truth that defines this enterprise." See also Stenger's remarks in the chapter "Mathematical Fictions." In: Stengers 2000 (pp. 135ff.).

**87** Stengers 2000 (p. 138).

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does not diminish someone else's preference for yellow ones, and for this reason it is not controversial as a question of taste. The dosage of spices and other taste intensifiers for the preparation of common meals presents us with a socially more complex situation, but the essence of the problem remains the same.<sup>85</sup> Where questions cannot be answered positively and consistently for all involved due to different value preferences, political acumen is required in order to negotiate and organize the conditions for the desired developments. As a criterion for whether models are to be institutionally legitimized for the production of knowledge, Stengers argues for the risk that the suggested models put themselves in, in their researching practice.<sup>86</sup> According to Stengers, models that do not permanently thematize their own premises (and territorial claims) through an experimental comparatistics of possible consequences (also beyond the limits of their respective disciplines) cannot be accounted for in the creation of knowledge:

*“It is not a question of renouncing the distinction between the ‘artifact’ and the ‘fact created so as to demonstrate,’ but of becoming interested in something else, in the artifact as such, which itself is also capable of making the difference between human fictions with regard to their possibilities of explaining.”<sup>87</sup>*

Stengers' proposal of a theory of science that raises the claim of taking into account the phenomenon of irreversibility and historicity in an adequate manner is based on the self-referencing element of elementary imperilment—not, however, that of the world, but that of the model which is considered authoritative for the planned research.

The premise for such a *political ontology of science* is the determination of knowledge by means of *models as hard facts*—

**88** Cf. footnote [17].

**89** As Stengers points out, chemistry is not only a science of laws, but also "the art of circumstances" (p. 546). The particularity and variety of chemical reactions can be explained by "*the variety in the shapes of bodies*" (pp. 539ff.), which seems plausible at least for the organic branch of chemistry. Cf. Isabelle Stengers. "Die doppelsinnige Affinität: Der Newtonsche Traum der Chemie im achtzehnten Jahrhundert." [The Ambivalent Affinity: Newton's Dream of Chemistry in the 18<sup>th</sup> Century] In: Michel Serres (Ed.). *Elemente einer Geschichte der Wissenschaften*. Suhrkamp Verlag, Frankfurt am Main 1998 (pp. 527–567). [For an English Edition see: Michel Serres. *A History of Scientific Thought: Elements of a History of Science*. Blackwell Publishers, Oxford 1995 (pp. 280ff.).]

**90** Peter Handke. "*Aber ich lebe nur von den Zwischenräumen*. Ein Gespräch." Suhrkamp Verlag, Frankfurt am Main 1990.

**91** Jonathan Crary. "Visionary Events": [www.olafureliasson.net/publ\\_text/texts.html](http://www.olafureliasson.net/publ_text/texts.html) (September 28<sup>th</sup> 2007). See also: Peter Weibel (Ed.). *Olafur Eliasson. Surroundings Surrounded. Essays of Space and Science*. MIT Press, Cambridge, Massachusetts 2001.

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to be probed and experimented with in the sense of a quasi-material *consistency*, similarly to the chemical understanding of this concept. Quasi-materiality means that the hard facts are not limited to purely physicalistic rules. From a historical viewpoint, knowledge sediments archeologically, it manifests itself and builds the stable grounds for its further developments. Knowledge forms the very material of our constructions of the world, which can be operated with both analytically and synthetically under the conditions of a *constrained indeterminacy*. For the systematic reflection and categorization of the *new elementary knowledge* under the influence of a radical synthetization, as it is emerging in the rapid progress of contemporary *technoculture* and *technoscience* respectively,<sup>88</sup> chemistry seems indeed to provide a productive methodological framework as scientific practice in dealing with mixtures and composites,<sup>89</sup> balances and their beneficial disruption. And this not least so as to get better organized within the milieu of matters of taste.

COMPARATISTIC CONTRIBUTIONS  
 AS A KALEIDOSCOPE OF THOUGHT-IMAGES

*“For I only live from the spaces in-between.”*

– Peter Handke<sup>90</sup>

*“We live in a world now whose practical and ethical coherence depends on the ability to invent meaningful connections between incommensurable cognitive territories but also on the ability to inhabit creatively the uncertain interstices between these continually mutating zones.”*

– Jonathan Crary<sup>91</sup>

In a rhizomatic kaleidoscope of thought-images, the contributions assembled here to elaborate on the inflationary

**92** Bruno Latour. "Von Tatsachen zu Sachverhalten." [From Facts to States of Affair] In: Henning Schmidgen, Peter Geimer, Sven Dierig (Eds.). *Kultur im Experiment*. Kulturverlag Kadmos, Berlin 2006.

**93** Cf. Michel Foucault, footnote [66]

**94** Ibid. (p. 133).

proliferation of design vocabulary supply each other's contexts and circumstances. As far as conceptual form is concerned, this book is an experiment—it is an attempt to deal with text as if it were conceptual *matter*, “conceptual things.” The familiar word “thing” refers less to facts than to *states of affairs*, as for instance Bruno Latour deduces,<sup>92</sup> and semantically stands for “litigation,” for “matters” that are decided upon collectively, as well as for “assembly” or “forum.” So a *thing* is not “a simple,” let alone something objective in the scientific sense of the term, but complex, a patchwork of diversity, which cannot be grasped concretely enough for it to be clearly classifiable. A thing is pre-specific in the sense that we consider relevant here: it stands for something that has the paradoxical feature of being simultaneously indetermined and specific in its particularity.

As a whole, the assembled statements form the aggregate of a discursive thing, which is only taking shape gradually, yet increasingly through continuously engaging with it. When we speak of “statements” in this context, it is in Michel Foucault's sense of a discursive practice.<sup>93</sup> In Foucault's *Archaeology of Knowledge*, “statements” are located in the pre-specific potential space of a discourse. In an archeological theory of discourse, “statements” as not entirely specified formations define and determine the possibility for the emergence and delimitation of that which supplies meaning in a grammatical unit of a sentence, the truth value in the logical unit of a proposition, and the action in the pragmatic unit of a speech act.<sup>94</sup> In other words, a materiality is ascribed to the statements of the interlocutors against this conceptual background, lending itself to future “model-shaping” and “design activities.” With such an autologous, “digitali-form” textual

**95** In his report on postmodern knowledge, Jean-François Lyotard dedicatedly emphasized the *paralogic of the inventor* as *the frame of mind after modernism* (see footnote [70]). Michel Serres proposes a way of dealing with the concept of responsibility by requesting a Hippocratic oath for all scientists. Michel Serres. *Atlas*. Merve Verlag, Berlin 2004. See also Michel Serres. *Hominescence. Le début d'une autre humanité?* Flammarion, Paris 2001. A groundbreaking stance may prove to be contained in Wilhelm Vossenkuhl's suggestion of an ethics founded on an inherently paradoxical and plural basis. *Die Möglichkeit des Guten. Ethik im 21. Jahrhundert*. C.H.Beck Verlag, Munich 2006.

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format, the editors hope to delineate the first contours of the conceptual horizon, against which a self-image for xDesigners of all kinds as *synthesizers for social issues* could develop, a self-image that would confront with increasing responsibility the ubiquitous demand for design competence today.<sup>95</sup> When we intentionally refer to xDesign, that is when we thematize through the addition of a determinable variable X the social phenomenon of an extended sphere of influence for design thought, methods, and concepts, then we certainly do not want to argue that the *current* disciplines of design should prepare to refute these new responsibilities. We do, however, wish to encourage to promptly reflect, better today than tomorrow, on the concrete establishment of a Swiss Federal Institute for xDesign.