

UTOPIA COMPUTER

The »New« in Architecture?

Nathalie Bredella, Chris Dähne,
Frederike Lausch (Eds.)

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The critical concern of the book “Utopia Computer” is the euphoria, expectation and hope inspired by the introduction of computers within architecture in the early digital age. With the advent of the personal computer and the launch of the Internet in the 1990s, utopian ideals found in architectural discourse from the 1960s were revisited and adjusted to the specific characteristics of digital media. Taking the 1990s discourse on computation as a starting point, the contributions of this book grapple with the utopian promises associated with topics such as participation, self-organization, and non-standard architecture. By placing these topics in a historical framework, the book offers perspectives for the future role computation might play within architecture and society.

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Introduction

“There is no security’—to quote his own words—‘against the ultimate development of mechanical consciousness, in the fact of machines possessing little consciousness now. A mollusc has not much consciousness. Reflect upon the extraordinary advance which machines have made during the last few hundred years, and note how slowly the animal and vegetable kingdoms are advancing. The more highly organised machines are creatures not so much of yesterday, as of the last five minutes, so to speak, in comparison with past time. Assume for the sake of argument that conscious beings have existed for some twenty million years: see what strides machines have made in the last thousand! May not the world last twenty million years longer? If so, what will they not in the end become? Is it not safer to nip the mischief in the bud and to forbid them further progress?...’”¹

This quote about machine consciousness was written at the end of the 19th century by Samuel Butler. In *Erewhon. Or Over the Range* (1872) the protagonist discovers in his quest for colonial expansion an unknown land called Erewhon—an anagram of “nowhere.” But Erewhon is not nowhere, it is a not-yet-colonized land where the hierarchies of western society are rearranged and imagined anew.

In reference to Charles Darwin’s theory of evolution from *On the Origin of Species* (1859), Butler developed a concept of evolution in relation to machines, conceptualizing a mechanical life that is subject to constant evolution, potentially becoming “man’s next successor in the supremacy of the earth.”² This one might say rather dystopian view of the increasing importance of machines in human society leads to Butler’s utopian idea of a machine-free society: Erewhon. Both dystopia and utopia, of course, collapse

1 Samuel Butler, *Erewhon. Or Over the Range* (London: Trübner & Co., 1872), 189.

2 Cellarius [Samuel Butler], “Darwin Among the Machines,” *The Press*, June 13, 1863. Accessed March 03, 2020. <http://nzetc.victoria.ac.nz/tm/scholarly/tei-ButFir-t1-g1-t1-g1-t4-body.html>.



in Butler's novel, neither being the home of absolute horror nor absolute joy, as he demystifies the complex relationships between man and machine. Butler's *Erewhon* is at odds with the promises of industrialization. Whereas in England, machines are commonly used and regarded as a civilizing force, in *Erewhon* machines are potentially dangerous and therefore rejected. The protagonist of *Erewhon* faces several problems because he wears a mechanical watch; the *Erewhonians* fear that machines could one day develop into independent creatures and rule over humans.

In *Erewhon*, some one hundred years before its discovery by the protagonist, the chapters that make up the "Book of the Machines"³ talk about a civil war that was fought between the machinists and anti-machinists. It ended with the destruction of many mechanical inventions, treatises and engineers' workshops, while some objects remained in museums as exponents of the past. In the "Colleges of Unreason," research into these formerly existing machines is regarded as a "curious antiquarian study, like that of some long-forgotten religious practices among ourselves."⁴ The protagonist translates the "Book of the Machines" for his readers, informing them of the supposed danger of the rapid development of machine consciousness—what we would today call artificial intelligence. Even though machines are made to serve, they serve only according to their conditions and humans must operate them according to the rules of use: "How many men at this hour are living in a state of bondage to the machines? How many spend their whole lives, from the cradle to the grave, in tending them by night and day? Is it not plain that the machines are gaining ground upon us, when we reflect on the increasing number of those who are bound down to them as slaves, and of those who devote their whole souls

3 Butler developed the three chapters about the "Book of the Machines" from articles he had published previously, such as "Darwin among the Machines" (see fn. 2). Tim Taylor and Alan Dorin, *Rise of the Self-Replicators: Early Visions*

of Machines, AI and Robots that Can Reproduce and Evolve (Cham: Springer, 2020), 19–22.

4 Butler, *Erewhon*, 187.



to the advancement of the mechanical kingdom?”⁵ Just as animals and humans have evolved over millennia via natural selection, self-regulating and self-acting machines will become more intelligent by the same mechanism, thus confronting the reign of humans.

With Butler’s *Dystopia/Utopia Machine* in mind, this edited volume will reflect on the notion of “Utopia Computer.” Before we develop this notion further, we need to dwell for a moment on the word utopia. It is understood commonly as nowhere, a fictional place where things are better, or, as Butler has so convincingly explained, where they are inverted, reordered and rearranged. Utopia is not necessarily a fictional place, but a not-yet-discovered—and in Butler’s case a not-yet-colonized—place where society is organized according to different values, rules and laws. It provokes surprise, and occasionally the incredulous shaking of a head, in the Western observer as a representative of the supposed norm, or rather, of the dominant. For the philosopher Gilles Deleuze, the term utopia describes a political call to philosophy to bring about different and new concepts of existing. Deleuze, in *Différence et Répétition* (1968), adds a third layer to nowhere and erewhon: the “now-here.” It is from the erewhon—the displaced, the disguised, the modified, the always re-created—that “emerge inexhaustibly ever new, differently distributed ‘heres’ and ‘nows’.”⁶ Connected to a present and a milieu, developing out of the midst of things, the utopian presents an absolute deterritorialization: something different emerges that is not yet realized and that can only be realized “by betraying itself.”⁷ The now-here is a push in a new direction without a goal; it frees us from oppressive and limiting concepts. Utopias envision an impressive, never-before-seen world in which the present and the future are simultaneously visible: reality provokes criticism of existing conditions,

5 Ibid., 200.

6 Gilles Deleuze, *Difference and Repetition* (New York/NY: Columbia University Press, 1994), XX.

7 Gilles Deleuze and Félix Guattari, *What Is Philosophy?* (New York/NY: Columbia University Press, 1994), 100.



out of which, with all constructive imagination, a playful-experimental counter-image of a better world is created. Thus, there are two moments in this alternative life model: a rather dystopian, negatively connoted deconstructive moment, which critically diagnoses the current condition, as well as a positively connoted constructive moment, which highlights the potential for change in a future society.

The future is lost to us, the cultural scientist Aleida Assmann wrote in 2013, the past will not let us go and the present pours into a sea of data technologies, which do not produce ideals or utopian visions but scientific models and calculations. In a recent conversation with Ann-Katrin Günzel about the exhibition “Critical Zones,” Bruno Latour and Peter Weibel reject the concept of utopia and emphasize instead the down-to-earth and the present with all its problems and potentials. According to both, the illusion of utopia is toxic because there is no other world to discover or to conquer. Instead, we must “land on earth,” face the actual localized situation, and map and understand its “critical zones.”⁸ Their reasoning recalls Deleuze and Guattari’s understanding of utopia as a virtual image which emerges amid actual things and introduces new concepts. Using the notion of minor architecture, Jennifer Bloomer offers a perspective of utopia within architecture that works within the conventions of existing architectural language towards subversive ends.⁹

In this issue we look at the advent of the computer. What is a computer to begin with? It is an electronic and digital machine that can be universally programmed. While a classic machine of the industrial age—to which Butler refers—has a specific function, the computer is a universal machine that can simulate any other machine via programmes, i.e. software. A computer processes data, converts it into numbers and follows a binary logic, according to a programmed algorithm. When we speak about

8 Bruno Latour and Peter Weibel, “Utopien und Critical Zones,” interview by Ann-Katrin Günzel, ZKM Karlsruhe, September 19, 2020, video, <https://zkm.de/de/utopien-und-critical-zones>.

9 Jennifer Bloomer, *Architecture and the Text: The (S)cripts of Joyce and Piranesi* (New Haven/CT: Yale University Press, 1993).



the introduction of the computer in architecture we must distinguish between different concepts: the computer is a tool to process and analyse large amounts of data, to draw or model forms, to animate or render them; the computer is a thinking machine, capable of artificial intelligence and pattern recognition; the computer is a medium for collaborating, exchanging and distributing information; and the computer is a virtual machine, creating environments such as the internet and simulated models of spatial interaction. The title *Utopia Computer* almost presumptuously encompasses all these different applications, responding to the use of computer as a buzzword for the so-called “digital revolution” or “digital turn” in architecture.

If we go back to the period from the 1960s up until the 1990s, we detect an exhilarating euphoria about the potential of computers within architecture. What was fascinating about the computer and what hopes were projected onto the new medium? Buckminster Fuller’s World Game, Gordon Pask’s belief in an architecture that can learn via feedback loops and Frei Otto’s form-finding experiments bore witness to concepts of participatory planning procedures, self-optimizing design processes and non-standard architectural structures made possible or more accessible and easier to execute thanks to the computer. These ideas gathered momentum in the 1990s when planning processes were reconceived as gameplay and architects explored virtual games to generate collective and interactive urban planning solutions. Algorithm-based computer software and parametric design fostered the idea of a self-organizing architecture, one emerging from the interplay of parameters and able to offer “optimized” answers to internal and external constraints. Architects thought that the architectural environment could respond automatically and flexibly to the changing needs and desires of users and society through smart and connected objects. These utopian ideas—user participation in planning processes, self-optimisation or self-organisation and responsive architectures—were meant to come true with the help of the computer and the internet.

For some, the launch of the Internet marked the creation of a new place, cyberspace, where society and architecture could



work differently—a true utopia in the sense of *erewhon*, formerly nowhere and now discovered through digital media. In the *ANY* issue on “Electrotecture: Architecture and the Electronic Future” (Nov/Dec 1993), a collage of text fragments and images confronts the viewer with the following:

“When the world is wired, nothing remains the same.”

“In cyberspace, the real is hyperreal and reality becomes virtual. In this space that is no place and yet is not everywhere, what does it mean to build?”

“When speed reaches a certain point, time and space collapse and distance seems to disappear. The very conditions of spatio-temporal experience are radically transformed. At this point, does architecture finally become immaterial?”

“What happens when the grid becomes the net?”¹⁰

The introduction of cyberspace through the computer seemed disruptive for architecture. Traditional spatial categories such as public/private, outside/inside and surface/depth no longer make sense in cyberspace.¹¹ At the same time, the architecture in some virtual environments offers few surprises. Referring to the massive multi-player online role-playing game “Habitat,” which has been available since 1986, the media theorist Allucquère Rosanne Stone states that cyberspace is a “space of desire” because conventions such as gender can be broken down in the form of opposite-sex or asexual avatars. However, architecture appears in “Habitat” in the form of standardised houses and typical monuments.¹² This example shows that what is supposedly new can turn out to be very conventional. This is why, in the subtitle of this publication, we have marked the “New” in architecture with a question mark.

This compilation of case studies critically examines the utopian potential of digital technologies and the euphoria in architectural

10 “Electrotecture,” *ANY*, no. 3 (Nov/Dec 1993): 8–9.

12 Allucquère Rosanne Stone in “Electrotecture. Architecture and the Electronic Future,” *ANY*, no. 3 (Nov/Dec 1993): 44, 53.

11 Mark C. Taylor in “Electrotecture. Architecture and the Electronic Future,” *ANY*, no. 3 (Nov/Dec 1993): 49.



discourse associated with the advent of the computer. This critical view resists a positivistic or enthusiastic appraisal of the computer, but at the same time, it does not reflect a pessimistic warning like that of the anti-machinists in Erewhon. What new architectural practices and processes were actually made possible by the computer and what was just a dream, a utopia in the sense of nowhere? What new forms and spaces were created with the help of the computer and what remained conventional, perhaps re-dressed but not rearranged as Erewhon? What new liberating subjectivities and possibilities of collaboration were created by the computer and what remained illusion, a speculation that found no now-here?

Besides euphoria, the introduction of the computer in architecture provoked fear and rejection as well. We do not want to join in the lamentations that the computer undermines the (supposedly) ingenious creativity of the (mostly male) architect-artist, or that virtual architecture is causing good and solid craftsmanship to disappear. Instead we want to point to the fact that technological developments, especially at the turn of the millennium, were part of neoliberal shifts in politics and the economy. Smart houses or smart cities, for example, collect and analyse private and public data and help process this data, which is then used to generate behavioural predictions and gain knowledge about sustainable urban planning, enabling economic decision-making. The use of computers in architecture cannot be detached from larger social and economic developments such as datafication, surveillance capitalism and ideas about human improvement through social and technological control.

The publication *Utopia Computer. The “New” in Architecture?* is based on a workshop we organised at the Berlin University of the Arts from November 15–16, 2019 as part of the series *Forum Architekturwissenschaft*. Taking the 1990s discourse as a starting point, the workshop centred critical and historical reflections on interconnectedness in the post-war period and its participatory effects, about self-organization and its potential for optimization, and about non-standard architecture and its capacity to adapt itself to its environment. Three themes were discussed



during the conference. The first, “Subjects and Societies,” dealt with the effects of digital technologies on society and thus on designers, those involved in the planning and construction process, as well as users of buildings. Presenters in this section concentrated on the organisation of intellectual labour, which was meant to be improved by computers, automation and the internet, which would supposedly give people more time for creative and collective endeavours. But computer technology also brought with it new, sometimes dystopian, forms of control, hierarchy and technological dependencies that operate with and through architecture.

“Organism and Organisation,” the second theme, focused on the changes in the design process that have occurred as a result of digitalization, especially in relation to the increased interest in natural growth processes. Here it became apparent that the potential of the computer to deal with the complexity of design, i.e. the computer’s ability to manage countless parameters and calculate numerous variants, is often based on a view of the design process as a pure and objective search for the most optimal solution and for applicable rules of control. Comparing design to natural processes threatens to reduce the organism to its function and performance. This significantly changes the idea of what constitutes creativity, from free, intersubjective association to the production of variants with the help of the computer. With a view to theoretical approaches that capture the idiosyncratic aspects of computer-based design, we discussed strategies of participation and anarchism connected to the use of the computer.

The last part, “Data and Form,” looked at how architectural forms and form generation are transformed through digital design tools and the use of large amounts of data. The comparison with the 1960s made it clear that experiments with “programmed architectures” at that time had a large socio-political component—for example, the participatory and democratic aspects of computer-aided design were foregrounded, while in the 1990s and to this day, aesthetic and material-related aspects dominate. The formal references in today’s digitally produced structures



to their historical-visionary predecessors are manifold, but only a few provide direct answers to important environmental and social issues.

For this publication, we decided to rearrange—in the sense of *erewhon*—the topics in order to burst the neat framework of three distinct themes and to multiply the connections between them. We start with Hélène Frichot’s “A Dirty Theory for a New Materialism: From Gilles Deleuze to Jennifer Bloomer” which brings us back to the theory frenzy of the 1990s. She reminds us that alongside the mainstream discourse about digital design another existed: feminist architects and theorists were pointing out the necessity of critically assessing “the material and socio-technical implications of computationally informed architectures.” In “Prerequisites for Self-Organization: The Re-emergence of Colin Ward,” Grayson Daniel Bailey addresses one of these implications: the ideological positioning of architectural subjectivities in cybernetic theory. Drawing on Colin Ward’s anarchist theory, he proposes a “transition from cybernetic other-organization to anarchic self-organization.” The pitfalls of cybernetic strategies, when it comes to questions of how to manage multiple, undetermined and changing goals without patronizing subjects or converting them into objective structures, is discussed by Marcus Bernardo, reporting from the field of practice in “Unmanageable Utopias.” The nexus of freedom-control—how to experience freedom while being immersed in a controlled environment?—is also central to Juan Almarza-Anwandter’s “About the Current (and Future) Implications of the Process of Digitalization in Our Everyday Experience: A Fourfold Critical Approach.” He highlights the increasing dominance of “protocols of interaction” in architectural experience due to the present development of interactive and ubiquitous technologies such as Augmented Reality, the Internet of Things and Domotics.

Joseph L. Clarke’s “The Art of Work: Bürolandschaft and the Aesthetics of Computation” brings us back to the 1950s and considerations of how to organise intellectual labour in large companies. He shows us that the utopia of “radically open, non-gridded, and non-hierarchical, early Bürolandschaften” was driven by



information processing and cybernetic methods, which were ultimately transformed with the advent of personal computers into “rigid rows of identical cubicles.” The flexibility and adaptability of Bürolandschaften is echoed in what Erik Hermann, in “Houses of Ice: Raster Utopias and Architecture’s Liquid Turn,” describes as “real time probabilistic design environments.” Looking at the work of Italian architects Leonardo Mosso and Laura Castagno Mosso in the 1960s, he presents a “pixelated utopia” in which mutable, fluid models are able to adapt to changing conditions in real time. Both papers are contextualized by two interviews, conducted by Corinna Studier with (intermedia) artist Kurd Alsleben about his contribution to Bürolandschaft and by Arianna Borrelli, Nathalie Bredella, Mads Frandsen and Julius Winckler with computer artist Frieder Nake, whose computer-generated works, which were some of the earliest manifestations of computational art, made their first public appearances in three small exhibitions in 1965.¹³ Staying in the realm of computer and cybernetic artworks and their potential to develop and test utopias, Cezara Nicola discusses the artistic endeavour “La Plissure du Texte 2” in “Virtual Artistic Spaces: Roy Ascott’s LPDT2, Cybernetics and Beyond.” She focuses on notions of “distributed authorship” and “moist media” introduced by Ascott, and reflects upon the impact of virtual architecture design on contemporary artistic production. In “Making Sense without Meaning: Christopher Alexander and the Automation of Design” Pablo Miranda Carranza discusses the computer as an “army of clerks,” which for Christopher Alexander was the danger inherent in the use of computers. Taking a close look at the programs and code that Alexander used in “Notes on the Synthesis of Form,” he analyses whether and how architecture begun conforming to this “army of clerks.” That the conception of the computer was not just based on an operational ideology is emphasised by Gregory E. Cartelli’s “Machines, Fabrics, and Models: ARTORGA and Biology’s Cybernetic Utopia.”

13 The interviews were conducted as part of a seminar and exhibition taught by Arianna Borrelli (Wissenschaftsgeschichte TU Berlin)

and Nathalie Bredella (Institut für Geschichte und Theorie der Gestaltung, Universität der Künste, Berlin).



He introduces the reader to the 1950s collaborative project ARTORGA, an attempt “to retain both biological complexity and organic matter in the conception and construction of organizational structures” that are often overshadowed by the importance placed on information theory and operations research. The connection between biology and cybernetics in analyses of the built environment is also the topic of Kaman Lam’s “C. H. Waddington’s Biological Science of Human Settlements 1963–1978.” In it, she reveals the influence of developmental biology (epigenetics) on ekistics, the quest to find a science of human settlements from the late 1950s to the early 1970s. Nathalie Kerschen expounds the problems of the myth of the “animal-machine,” a concept that resonates with contemporary bio-inspired computational approaches and architectural projects, in “Towards a New Understanding of the Animal.” She argues that we need to restore the “animal-machine” anew as a “living being” within its *Umwelt*. The publication closes with Donal Lally’s “All that Is Solid Melts into the Cloud.” With the help of a “theory-fiction,” he reminds us that the Cloud—the data storage system floating in the sky—is a “techno-utopian fantasy,” an illusion that makes you forget the massive energy consumption, use of rare earth minerals and land consumption data centres require. Lally reveals the material side and the dirtiness of digitalisation. In this respect, the computer is not nowhere. It is right here, it is material, it has material effects—which brings us back to Frichot’s insistence on materialism. Returning to nowhere, erewhon and now-here, we would like this publication to contribute to (re)discovering some fictions, some hidden territories, some alternative thoughts related to the introduction of the computer in architecture. They point to a critical evaluation of the field of machine-thinking, which has been developing since the post-war period, and is currently associated with utopian promises. Knowing the beginnings of computer use, the hopes and dreams associated with it, and the different, sometimes alarming directions in which these dreams have developed, we can decide now-here whether we want to prevent those that have proved harmful and stand up for those that have not taken place (yet).



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