Beyond Bauhaus.
New Approaches to Architecture and Design Theory

Johannes Warda (Ed.)

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Alessa Brossmer

windmills

Ich wuchs in der Weißenhofsiedlung auf, bis ich 4 Jahre alt war. Als Kind dachte ich, wir würden in Amerika leben, weil die Dame, die vorne an der Ecke im Hans-Scharoun-Haus wohnte, einen Akzent hatte, alles weiß war und immer ein leichter Wind ging, als wären wir an der Küste.

I grew up at Weißenhofsiedlung, until I was 4 years old. As a child I thought we would live in America because the woman living at the corner in the Hans Scharoun house had an accent, everything was white and there was always a little wind going, as if we lived at the coast.

Introduction

Johannes Warda

Luxury and Legacy.
Moving Design Theory and Practice beyond Bauhaus

Fig. 1: Henry van de Velde, art school building, Weimar (1910/11; now Bauhaus-Universität), detail of the staircase with mural painting by Herbert Bayer (1923), January 2019

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The ever new preoccupation with the avant-garde movements of the 20th century is an integral part of the theoretical discourse of architecture, art, and design. In the case of the Bauhaus, one of the most received design schools of the past 100 years, different approaches can be observed. Looking into the history of writing the Bauhaus's multiple histories, we find hagiographic accounts as well as critical revisions of gender issues, strategies of branding and self-fashioning, and of the whereabouts of lesser known Bauhaus students. Especially on the occasion of Bauhaus anniversaries, the writing of Bauhaus history often coincides with reflections on how the idea of the Bauhaus could be put forward in the future. In 1968 the first comprehensive Bauhaus exhibition in Stuttgart presented a multi-faceted panorama of the teaching concepts and biographical data of selected Bauhäuslerinnen and Bauhäusler (and their whereabouts after 1933/45). The exhibition traced, for example, the Bauhaus-inspired teaching of Iwawo Yamawaki in Tokio, at the new bauhaus in Chicago and at other schools elsewhere.

> aber wir wollten nicht nur das bauhaus in seiner historischen gestalt nachzeichnen, sondern wir wollten, soweit es überhaupt möglich war, erkennen lassen, wie sich die ehemaligen bauhäusler inzwischen weiterentwickelt hatten und wie sich die lehre des bauhauses fortsetzen konnte.[1]

Statements like this one from the Stuttgart exhibition catalogue illustrate that the Bauhaus was perceived as an ongoing movement which had survived through (and even become more of a movement because of) the global migration of its protagonists. The impression of continuity was also evoked with regard to the active role a Bauhaus design approach might play meeting contemporary challenges. Hubert Hoffmann who was commissioned by the governing mayor of Dessau to prepare a possible reopening of the Bauhaus Dessau from 1945 to 1948, states 60 years after the founding of the Bauhaus,

> der widerspruch zwischen kulturellen wunschvorstellungen und gesellschaftlicher wirklichkeit ist nur zum teil aufgehoben. das bauhaus hat erziehungsmethoden entwickelt, zeichen gesetzt – und die anfänge eines gestalt-kanons entwickelt, dessen gerüst in die zukunft hineinragt – das bauhaus ist nicht mit den erzeugnissen von zwei generationen abgeschlossen und eine mode die als passé angesehen wird – die idee ist gemessen an den bestehenden widersprüchen unserer zeit aktueller denn je.[2]

In her essay discussing 90 years of the Bauhaus Annett Zinsmeister interrogates the »current relation between fine and applied arts«, claiming the arts have become a »model of border-crossing«.[3] Nonetheless, she asks for an »update« of the Bauhaus.

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1 Honisch, Dieter: »Zur Ausstellung«, in: *50 Jahre Bauhaus*, Suttgart: Württembergischer Kunstverein 1968, 31. [We did not want to just trace the history of the Bauhaus, but attempted to show how the former *bauhäusler* had advanced and put forward the teaching concepts. Transl. JW.]

2 *60 Jahre Bauhaus. Ausstellung vom 18.10. bis 17.11.1978*, Galerie Kul, Bruck an der Mur, n.p. [(...) The Bauhaus has developed teaching concepts and laid the foundations of a design canon. This has not ended with the design prodcution of two genereations – given the contradicitions of our time, to pursue the Bauhaus idea is more important than ever. Transl. JW.]

3 Zinsmeister, Annett: »Update! 90 Years of the Bauhaus – What Now?«, in: Annett Zinsmeister (ed.), *Update! 90 Years of the Bauhaus – What Now?*, Berlin: Jovis 2010, 21.

Gerd Zimmermann and Norbert Korrek, at a symposium held in Weimar to honor the 75th anniversary of the founding of the Bauhaus, reflect on the claim of being avant-garde – not in order to glorify the 1920ies avant-garde, but to ask critically what »Avantgarde« means today:

> Gibt es heute Avantgarde, oder handelt es sich da um eine überholte historische Figur? Die Ausgangsthese war und ist, daß es in der zeitgenössischen Kunst, Kultur, Architektur nicht nur Epigonen, sondern ebenso Avantgarden gibt [...]. Dem nachzugehen hieße auch, Kritik und Perspektiven der Moderne erneut zu thematisieren.[4]

The authors of this volume, submissions to an open call, all try exactly this in very different ways:[5] Thinking beyond Bauhaus. Taking the occasion of the 100th anniversary of the Bauhaus, they revisit critically its pedagogical concepts, gender policy and design theoretical implications. Finally, the contributions open up new perspectives on the increasingly hybridising fields of the design disciplines between virtual environments, the aesthetics of sustainable design, biotechnology and the question of a postcolonial ethic. In chapter 1, Ines Rödel and Olivier Gaudin discuss the teaching practices at the Bauhaus in the broader context of earlier pedagogical concepts of the »workshop«, or the close study of art history classics. Revisiting the Bauhaus heritage can also bring to bear another position, namely that of a different perspective of design and architecture. In chapter 2, Alexandra Matz, Aysar Ghassan and Adham Selim do exactly this and more or less leave the Bauhaus behind. Departing from contemporary concepts such as design thinking, design-based research and the notion of architecture as a critical practice, they offer new approaches to design theory as a theory of a practice. Chapter 3 deals with the contemporary challenges of (environmental change) on multiple levels. Arvid Krüger elaborates on the legacy of modernist mass housing concepts in today‘s planning schools, Leander Thiel reflects on the design implications of synthetic biology, Arthur Crucq discusses formal and stylistic issues of sustainable architecture, while finally Nicolai Bo Andersen considers »beauty« a most sustainable concept to meet the environmental challenges of the future. In chapter 4, in a somewhat manifesto-like quality, Christian Sinn, Vanessa Ramos-Velasquez and Josenia Hervás deal with the old and new issues of images and interfaces, our common condition humaine and the legacay of the female Bauhaus.

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4 Gerd Zimmermann/Korrek, Norbert: »Avantgarde!! 75 Jahre Bauhaus Weimar«, in: *Thesis. Wissenschaftliche Zeitschrift Hochschule für Architektur und Bauwesen* 40 (1994) 2, 1. [Is there an avant-garde today? Or is avant-garde an outdated concept? Our thesis is that in contemporary art, culture and architecture we do not only find epigones, but also an avant-garde. (...) Putting the argument further must include a critique and a discussion of the perspectives of modernism. Transl. JW.]

5 »Designs from a World to Come«, Call for Papers, Panel 4, XIV. Internationales Bauhaus-Kolloquium 2019. The papers presented at the panels of the Bauhaus-Kolloquium will be published by Eva von Engelberg, Ines Weizman, Max Welch Guerra and Johannes Warda with arthistoricum.net (forthcoming); https://bauhaus-kolloquium.documentary-architecture.org [19 February 2020].

Looking back at 100 + x years of Bauhaus history and attempts of renewing it, we are facing ever greater global challenges which require new designs of collaboration, solidarity, and planning. And yet we happen to have the luxury choice of either delving into facts and fiction of the »actual« Bauhaus, or being inspired by the objects, images and ideas, or moving beyond the all too well known references. To have this choice is part of the legacy of the Bauhaus, too. Alessa Brossmer, the artist-contributor to the publication project, has made her choice in appropriating the Bauhaus legacy: Her artwork throughout this volume invites us to expose ourselves time and again to the disturbing experience of the desired modernist objects. And to start playing with them.

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Fig. 1: Photograph by the author

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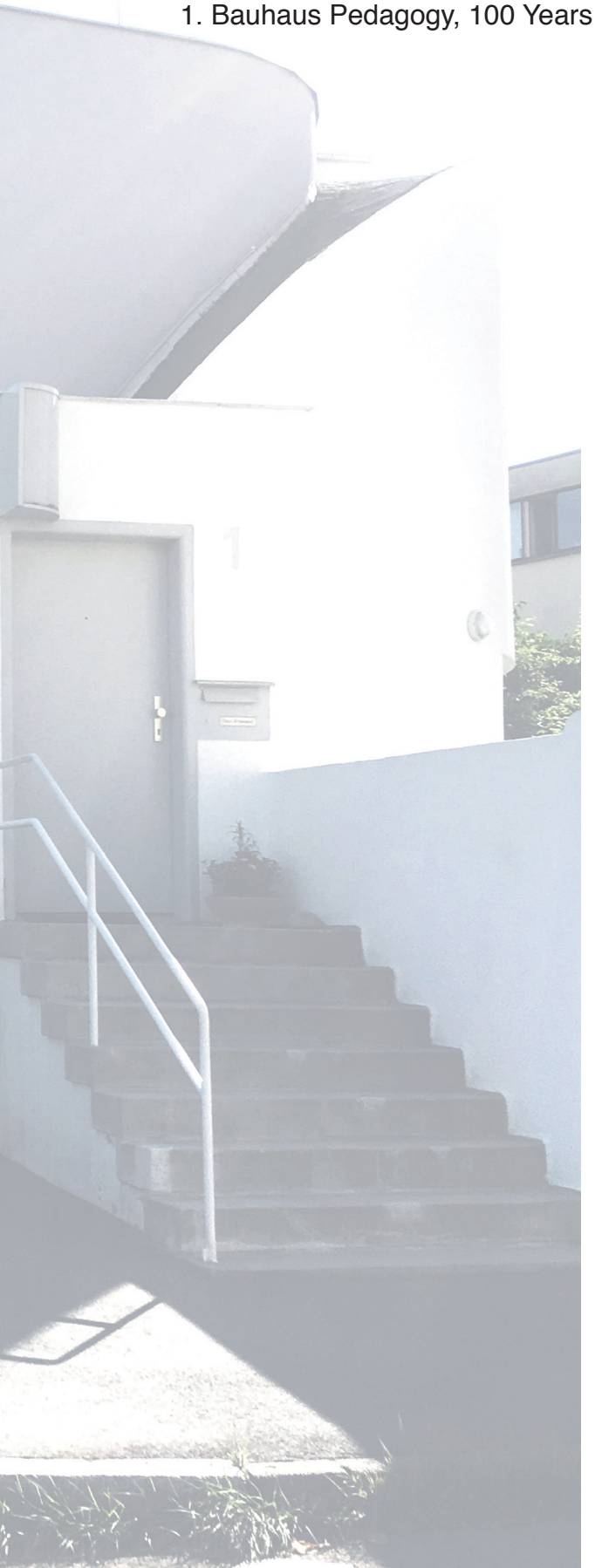
1. Bauhaus Pedagogy, 100 Years After



Rafaela Wahl Herrera

Women[1], an unnecessary experiment. Bauhaus was never modern (T'ai Smith[2])

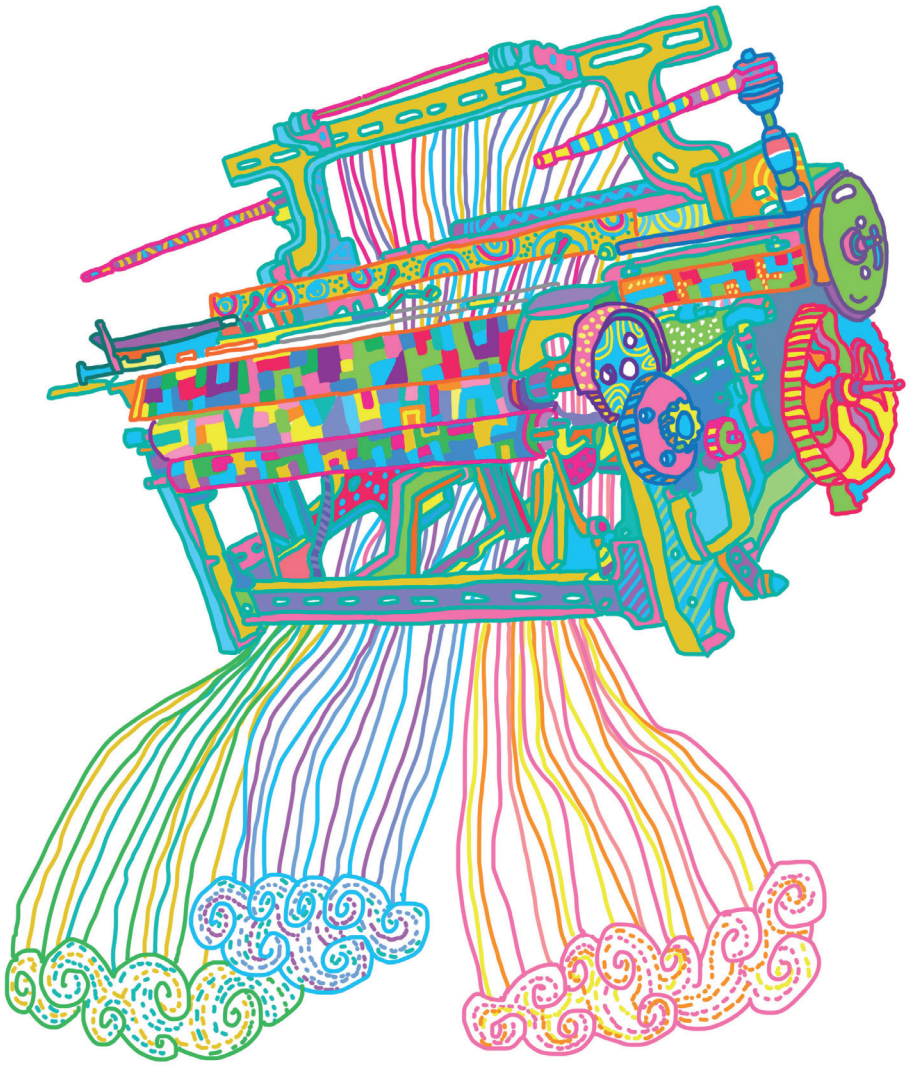


Fig. 1: Early computer, the Loom

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1 ›Woman‹ is used to refer to a social category and not a gender identity.

2 Smith, T'ai: *Bauhaus Weaving Theory: From Feminine Craft to Mode of Design*, PLACE: University of Minnesota Press 2014.

The Bauhaus stands for all that is modern. In the collective memory the Bauhaus was an architecture school. However, the architectural workshop, despite its undeniable influence, was only one of its many departments. Nowadays, the Bauhaus tends to be described as a school of industrial design. Indeed, pieces like Mariane Brand's tea kettle or Marcel Brauer's chair are strongly associated with modernity and by extension, with the Bauhaus as a whole, which perhaps was not the original intention of the Bauhaus master. The founding year of the Bauhaus was also the year when the law enabling female suffrage in Germany came into effect. Since the end of the 19th century, the enrollment of women has been gradually allowed at German universities. Still, women were precluded from studying at fine arts academies. Fine arts and handicrafts (such as woodworking and metalsmithing) were male domains, but arts and crafts (primarily working with soft materials, *Kunstgewerbe*) were considered a female leisure occupation with comparatively lower status.

In line with the development of the newly founded Weimar Republic, the Bauhaus inaugural manifesto was full of promises of progressive ideas. What was to be expected from the Bauhaus? – Reports from early students unanimously describe a fresh atmosphere radiating out of Weimar.

The idea of academia as a place to become an artist was despised by most artists of the time. Although Gropius shared this attitude, he agreed to take over the Weimar arts and crafts school, which was undoubtedly part of the academic tradition. In order to counteract this, Gropius proposed a new kind of student: »The Bauhaus student will grow familiar with science as well as economics. This will lead her to unite creative imagination with a practical knowledge of craftsmanship and thus help to develop a new sense of functional design.«[3]

The school started in Weimar and already then, the administration faced opposition from the local authorities.[4] Students would be taught by two masters, one of form and one of craft. It seems that the original idea was to employ one master who would have been knowledgeable in both of these areas but to find such a person proved impossible. The first year consisted of a preliminary course common for everyone (*Vorkurs*). This was supposed to secure the students a place in the workshop matching their skills, but also turned out to become the gatekeeper for women: An overwhelming majority of them would end up in the weaving workshop, so many in fact that the textile workshop was called the women class, »*Frauenklasse*«.[5]

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3 Baumhoff, Anja: *The Gendered World of the Bauhaus: The Politics of Power at the Weimar Republic's Premier Art Institute, 1919–1932*, Frankfurt am Main/New York: Peter Lang 2001, 15.

4 Which seems relevant to remember now in 2019 when the state of Thuringia is promoting itself as »the cradle of Bauhaus« matter of factly. Their lack of vision and contempt for the modern was what drove the school out of Weimar in the first place.

5 Beilfuß, Elke: *Das Bauhaus und die neue Frau: bauhaus feminin – ein Mythos*, GRIN verlag 2009, 3; Gunta Stölzl: »Bauhausmädchen der ersten zeiten versuchten sich in jeder werkstatt, tischlerei, wandmalerei, metall-

Some of the women fought their way into other workshops, but those were a small minority. Self-report stories told by even fewer women shed light on the internalized misogyny in play–their destinies were decided for them. This is the case with the most prominent, laborious and later-to-be only Bauhaus meisterIN Gunta Stölzl who came to the Bauhaus already with eight semesters of experience.[6]

> Weaving is above all the work of the woman. The play with form and color, better perception of materials, strong empathy and adaptability, a more rhythmic than logical thinking are dispositions of the female character, which is particularly capable of making something creative in the textile field.[7]

Nevertheless, the rhetoric used by Gunta Stölzl needs to be understood as part of the condescending agenda that dominated the Bauhaus masters in particular and the society in general. Else Mögelin reports:

> He [Gropius] spoke to us with all the charisma and conviction that was his trademark, and conjured up a vision of a Bauhaus, wherein young people of supreme talent and potential would congregate. [...] Only the greatest, brightest and best were to work as independent artists. […] This revelation came as a major shock! [...] All my ambitions collapsed like a house of cards and thus I became a Bauhaus pupil who was ready to yield humbly to these new goals; I was ready to learn a craft without any artistic ambitions. Hence I eventually ended up in weaving.[8]

Furthermore, comes to mind the interview of Käthe Brachmann in the student newspaper. Here we can identify her apologetic manner in accordance with the feeling »of not belonging« reported by women in underrepresented groups:

> The very right to participate fills me with sweet music; it is a great privilege, especially for women. After all, what is the status of women here? Like all working women, we are objects of pity to the men. – Why do you not honour your natural vocation? – That is the most profound question I ever get to hear from them.[9]

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werkstatt, töpferei, buchbinderei. bald zeigte sich, daß der schwere hobel, das harte metall, das anstreichen von wänden für manche nicht die betätigung war, die den psychischen und physischen kräften entsprachen. die seele blieb dabei hungrig! [...] wir gründeten eine frauenklasse. unsere ersten taten waren kinderspielzeuge, aus bunten lappen, holz, draht, glasperlen und knöpfen, stroh, Gummi Schwämmchen und Pelzresten bastelten wir flammend begeistert ›urtiere und urmenschen‹ zusammen. Die fanaktik – die starke ausdruckskraft maximal kontrastierender materie hatte es uns angetan! unsere fantasiestrotzenden werke haben wir mit anderen ersten bauhauskuriositäten zusammen in der ›dadabude‹ auf dem weihnachtsmarkt von weimar einer jubelnden kinderschar für einen groschen verkauft«, in: *Bauhaus Zeitschrift für Gestaltung*, 2.7.1931, cit. Droste, Magdalena/Ludewig, Manfred: *Das Bauhaus webt. Die Textilwerkstatt am Bauhaus*, Berlin: G+H Verlag 1998, 237.

6 Baumhoff, Anja/Droste Magdalena: *Mythos Bauhaus*, Berlin: Reimer 2009.

7 »Die Weberei ist vor allem das Arbeitsgebiet der Frau. Das Spiel mit Form und Farbe, gesteigertes Materialempfinden, starke Einfühlungs- und Anpassungsfähigkeiten, ein mehr rhythmisches als logisches Denken sind allgemeine Anlagen des weiblichen Charakters, der besonders befähigt ist, auf dem textilen Gebiet Schöpferisches zu leisten.« Gunta Stölzl: »Weberei am Bauhaus«, in: *Bauhaus-Heft* 7 (1926), cit. Beilfuß: *Das Bauhaus und die neue Frau*, 3.

8 Baumhoff, Anja: »›What's in the Shadow of a Bauhaus Block?‹ Gender issues in the Classical Modernity«, in: Christiane Schönfeld (ed.), *Practicing Modernity: Female Creativity in the Weimar Republic*, Würzburg: Königshausen & Neumann 2006, 62.

9 Ibid., 52.

Already in February of 1920, less than a year after the opening, Walter Gropius recommended »no more unnecessary experiments«[10] at the Bauhaus. These were the words he uttered when he realized the large number of women who had applied to the study at the Bauhaus. He feared they would harm the reputation of the school and demanded a »sharp immediate rejection« of female applications.
What caused the men of the Bauhaus, who so openly portrayed themselves as avant-garde, to act in such a repressive and reactionary way? The adoption of the crafts guilds disguised in modernity did not change the patriarchal role of the male master who has unquestioned authority over his apprentices »also over his wife and kids«.[11] Gropius assumed the role of a father and his female students were treated like his daughters. The turn to equality was undermined by the director's traditional understanding of women's abilities and interests. In turn, the female students were not empowered enough to insist on their own wishes. Women were expected to take the craftsman as their role model but nevertheless they belonged to a different social class, which fitted perfectly to the school's concealed labour hierarchy. Gender differences among Bauhaus students also manifested themselves in the fact that mostly female students did unpaid work in the organization of celebrations and extracurricular activities; e.g. Oskar Schlemmer in his letters of 1921 praises the women for »voluntarily giving up time that might be spent on their art studies«.[12] This goes in line with the lower status of women in the Bauhaus where female staff was employed in the canteen, as secretaries, etc., whereas all academic positions were occupied by men.[13] In addition, sending women to the weaving workshop would guarantee that the »male workshops« were reserved for the male students who would have a better chance at the labour market. The Bauhaus was not alone. Trade unions, too, were known to favor their male workers over their female ones.[14]
One of Gropius' aims was to fight superficiality in the arts for he considered the machine to be the modern means of production. Form follows function–but then, what role does craft play in the industrial manufacture project?

> On one side it is the handcraft model, even though viewed through the primitivizing lens, of the Andean weaver, who was elevated to the status of an artist who controlled the weaving process from design through production, in contrast to the european division of labour between the artist/designer and weaver/craftsperson.

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10 Protocol 17 of march 1921.

11 Cimino, Eric: Student Life at the Bauhaus, 1919–1933, https://www.academia.edu/27783104/Student_Life_at_the_Bauhaus_1919-1933?auto=download 2003, 100.

12 Baumhoff: »›What's in the Shadow of a Bauhaus Block?‹«.

13 James-Chakraborty, Katleen: *Bauhaus Culture: From Weimar to the Cold War*, Minneapolis: University of Minnesota Press 2006.

14 Hakanoğlu, Orli: *Beyond the Loom: Examining the relationship among Gender, Textiles, and Architecture at the Bauhaus* [2016]. Honors Thesis Collection, https://issuu.com/orlihakanoglu/docs/beyond_the_loom-_examining_the_rela [29 October 2019], 14.

> Equally powerful was the idea of the Andean weaver operating in a cultural context where textile production was imagined as fully integrated into a way of life rather than holding a subordinate position within a hierarchy of the arts.[15]

On the other side there is the commercial dimension which aspired to support itself through the sale of its designs, in partnership with the industry this in retrospect seems a bit odd for an art institution.[16] Bauhaus objects were not consumed by the masses because they ultimately remained luxury products. Yet a list of objects produced by the weaving workshop that did not make it to the sales catalogue included simpler, arguably more easily mass-producible items, such as tablecloths, pillows, scarves, and drapes. In 1925, even if the masses could have afforded a Bauhaus lamp, 81 percent of the inhabitants in Berlin's working-class areas lived without electricity.[17] Arts and craft were assumed to require little intellect or creative ingenuity, also there was some weird kind of affinity of the female to yarn. Paintings made out of wool from the earlier Weimar workshop, were dismissed in the Dessau times. The first master of form had zero idea about weaving, the disdain was social and uninformed, now we know the practice of weaving is structurally analogous to the process of building, working from the base and adding to it.

> Through a systematic procedure of weaving weft through warp, back and forth, the image emerges from bottom to top, the horizontal process builds vertically, layering yarn as in the stacking of bricks. And the addition of layers is predicated upon the completion of previous layers. While in a painting the artist may move or return to an area, in the weaver's case the »picture« is embedded into the fabric structure.[18]

There are many ways to police gender boundaries. One is through educational credentials, another by »simply« being a genius. Credentials are a way of defining your value and uniqueness in a field in which the relationship between credentials and ability is kind of fuzzy already. »Genius« of course, is a strongly male-gendered attribute. Anja Baumhoff envisions two survival strategies in the case of the women at the Bauhaus: to have a male mentor, like Marianne Brandt, or as Lucia Moholy, be married to a Bauhaus *Meister* (which meant unpaid work).
The association between the prestige of a field and the distribution of genders in it has been known from other contexts as well. In 1945 the University of Pennsylvania created a programmable machine which needed female-human-computers programmers. So in fact the first software workers were women (the word software would not be introduced until 1958, though). The hierarchical distinctions and gender connotations it embodies, between »hard« technical mastery, and the »softer«,

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15 Auther, Elissa: Andean Weaving and the Appropriation of the Ancient Past in Modern Fiber Art. *Bauhaus Imaginista Journal* [2018], http://www.bauhaus-imaginista.org/articles/824/andean-weaving-and-the-appropriation-of-the-ancient-past-in-modern-fiber-art [29 October 2019], 5.

16 James-Chakraborty: *Bauhaus Culture*, xvii.

17 Schuldenfrei, Robin: »The Irreproducibility of the Bauhaus Object«, in: *Bauhaus Construct: Fashioning Identity, Discourse and Modernism*, London: Routledge 2009, 43.

18 Smith, T'ai: »Pictures Made of Wool«: The Gender of Labour at the Bauhaus Weaving Workshop (1919–23) [2002], https://www.rochester.edu/in_visible_culture/Issue4-IVC/TSmith.html [29 October 2019], 3.

more social (and implicitly, of secondary importance) aspects of computer work, are applicable even in the earliest of electronic computing development projects.[19] The ENIAC women were expected to simply adapt the plans of computation to the new technology of the electronic computer. These plans of computation were themselves highly gendered, having been traditionally developed by women for women (human computing had been largely feminized by the 1940s according to historian Nathan Ensmenger). In 1984, 40% of computer science majors in colleges across the U.S. were women. The female representation in I.T. declined significantly as the field gained prestige. A similar pattern can even be observed within I.T., e.g. in the web development. As the field became more complex and specialized it got divided into the back-end (the background functionality of a web-page) and the front-end (the display of a web-page). Females are more represented in front-end than in other areas of software development, and front end has become a feminized area with its respective lower wages and lower status. Back-end developers often attribute front-end expertise not to mastery but to wizardry or magic–one does not require technical skill but those soft fuzzy things (e.g. design and looks) that females are supposed to excel at. The gendered attributes switch as you travel to the back of the stack. On the back-end, developers (more often »engineers«) are imagined to be logical, asocial sci-fi enthusiasts. The »nerd« only emerged as the field professionalized and gained prestige.

Many initiatives have been developed to get more females into I.T. »Introducing women into a discipline can be seen as empowerment for women«,[20] Ensmenger says, but not when instead we create a division (of labour) that was not there before: »Historically speaking, the more women in a profession, the lower paid it is.«[21]

The textile industry provides another example. In the second half of the nineteenth century, there were three categories of arts as understood by academically trained artists: fine art »*Kunst*«, handicraft »*Handwerk*« and arts and crafts »*Kunstgewerb*e«.[22] For us it is relevant to focus on the status of handicraft before the Bauhaus. The textile industry was the first in Germany to move from the household to the factory. The particularities of this transformation varied widely among regions and cloth materials. For example, in the early nineteenth century the textile industry was synonymous with linen production, where 55 percent of all textile workers were employed. Furthermore, textiles represented the second most important source of income of the German *Kaiserreich* after agriculture.[23] Manufacturing at this point was still

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19 Saini, Angela: Inferior: *How science Got Women Wrong- and the New Research that is Rewriting the Story*, Boston: Beacon Press 2017, 5.

20 Cit. Posner, Miriam: »We can teach women to code, but that just creates another problem«, in: *The Guardian*, 14 March 2017, https://www.theguardian.com/technology/2017/mar/14/tech-women-code-workshops-developer-jobs, 1.

21 Ibid.

22 Hakanoğlu: *Beyond the Loom*, 14.

23 Canning, Katleen: *Languages of Labour and Gender: Female Factory Work in Germany, 1850–1914*, Ithaca:

Fig. 2: Man made of Wool.
»Where there is wool, there is a women who weaves« (Oskar Schlemmer)

at its proto-industrial stage, i.e. the work was carried out at home and most probably the whole household was involved. Women's contribution to the home industry has escaped the historical record, either by being intentionally left out by the representatives of the state or because the women themselves could not conceptualize their labour as »work« or »employment«.[24]
This industrial transition lasted a century and was very uneven. Textiles became an emblem of modernization: first came the cotton spinning, then cotton weaving, followed successively by the wool, linen, velvet and silk branches. The replacement of workers started in the mid-1880s with the expansion of the garment industry. Later the competition for industrial workers intensified because of the demand of the heavy industries. At the end of 1890 the number of workers employed by the textile industry ranked only on the fifth position. In 1895 over 50 percent of the married female workers had a post in the textile industry, with female worker numbers continuing to increase while male employment declined. This change came to represent a so-called »feminization« of textile industry. It is important not to disregard the considerable lower wage paid to women and the steadily rising cost of living which made it impossible for a working family to depend on one breadwinner. Furthermore it is interesting to pay attention to the attributes ascribed to male jobs once they became associated with female workers,:»the particular capacity of the women for certain task« this capacity would be one of the crucial factors in the expansion of women's factory employment.[25] How else could the male worker have explained his own displacement »*Verdrängung«* from their monopolies over skills and physical strength? Their claim: The male worker has transformed from a master into a maiden, how original! A more proper term would be the defeminization of household looms, which puts the focus on the proto-industrial angry male, who stayed home feeling emasculated and sad on his own initiative. The outcry against feminization helped to blur and to generalize the different origins and consequences of the expansion of female factory work.

My aim is to open up the discussion of the failure of modernism to enable women of the Bauhaus to reach their full potential. The women who enrolled in the Bauhaus faced a glass ceiling–in spite of Gropius' inaugural manifesto in which he particularly promised no exclusion based on gender. However, in line with the general spirit of the time, many of the enrolled women seemed to agree with the inherent feminization of the weaving workshop, thus validating the preconceived ideas of »crafts equal leisure, soft materials equal femininity«. This by no means should be understood as a condemnation of the women but as an example of the double bias that they encounter in terms of self-positioning. The weaving workshop at the Bau-

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Cornell University Press 1996, 27.

24 Ibid., 66.

25 Ibid. 33.

haus, claims Hakanoğlu, can be understood as a stage upon which gender stereotypes were perpetuated, nullified, or used as a tool of power. The Bauhaus, we have been told, represents all that is modern. But such an assumption is a fundamental disjunction between its aim of rationality and its focus on arts and crafts rather than on the techniques of more »modern« mass production. Even those trying to trace aspects of the Bauhaus heritage back to sources as diverse as Goethe's color theories and Wilhelmine nationalism have challenged the idea that everything about the school was radically new.[26]

Once again Gropius, who tried to confine women to the weaving workshop, is exposed as something less than an ideal social pioneer. Despite confronting blatant sexism, denial of credentials**,** proper payment and status, women affiliated with the Bauhaus managed to flourish and make unconventional art while leading equally unconventional lives. The weaving workshop is now widely understood to have been one of the school's most commercially successful divisions, as well as a font of ideas that helped transform textile art and design on both sides of the Atlantic.[27] Recognition is now given to female Bauhäusler[28] and to their work. Nevertheless the gaps in the narrative are a product of the time. Much more attention has to be paid now to save and promote the women of the Bauhaus.

Is modernism the problem here, or is this yet another example of a continuous effort to restrict the social advance of half the population? This is indeed such a common feature of so-called progressive movements, which continually fail to recognize the performance of their female members. Be it the female textile workers of the Vyborg district in St. Petersburg who started the February revolution in imperial Russia,[29] only two years before the founding of the Bauhaus their involvement was totally downplayed in the subsequent mythologization of the revolution–or be it the ENIAC women in the history of computer science, the same leitmotif of obliteration can be observed.

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26 Smith: *Bauhaus Weaving Theory*.

27 James-Chakraborty: *Bauhaus Culture*.

28 According James-Chakraborty, the 90th anniversary of the Bauhaus in 2009 marks the virtual beginning of the inclusion of the gender perspective in Bauhaus studies.

29 McDermid, Jane/Hillyar, Anna: *Midwives of the Revolution: Female Bolsheviks and Women Workers in 1917*, London: Routledge 1999, 148.

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Ines Rödl

Wesenserforschung und prospektive Schau: Johannes Itten und die Alten Meister

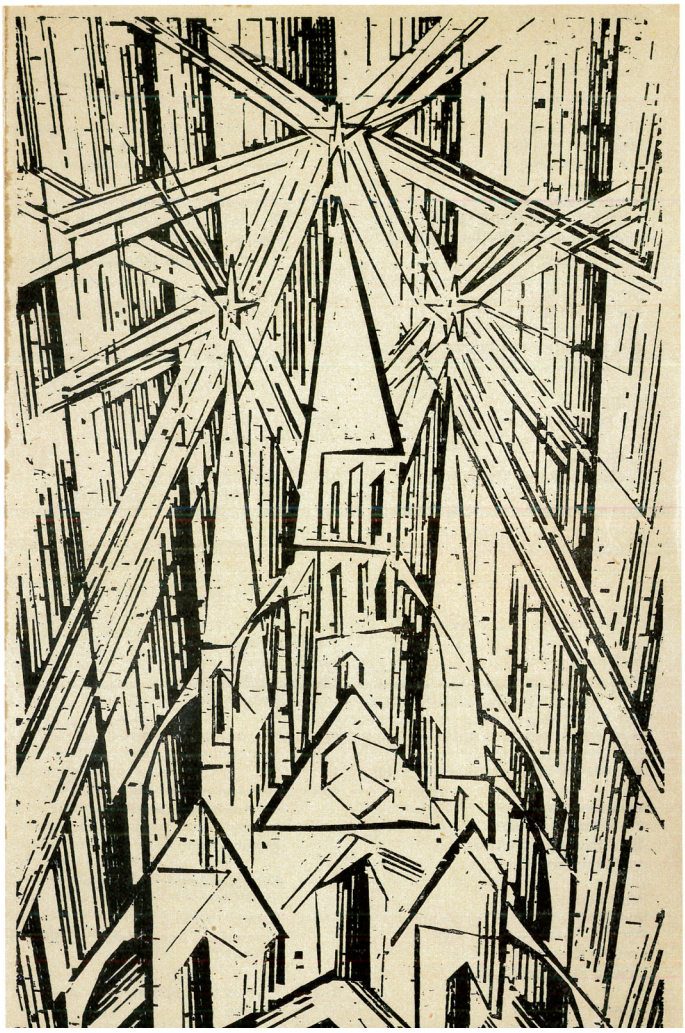

Abb. 1: Lyonel Feininger, Illustration, und Walter Gropius, Autor, Manifest und Programm des Bauhauses, hier: Titelblatt Kathedrale, April 1919

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Einführung: Rückbesinnung als Flucht nach Vorne

Das frühe 20. Jahrhundert war geprägt von weltanschaulichen, kulturkritischen und ökonomischen Umwälzungen. In der Kunst- und Kulturwelt wurden Debatten über die angemessene Ausbildung in den freien Künsten, im Kunsthandwerk und in der Architektur geführt und die Neuorganisation der entsprechenden Unterrichtsstätten mitgedacht. Die richtige Positionierung im »Kampf gegen die Akademie, die [...] den Dünkel des Schulmanns über den Praktiker gestellt hat«[1], war der Motor der Avantgarde für die Umstrukturierungen des Ausbildungswesens. Während sich akademische Traditionalisten jedoch gegen diese Erneuerungsbestrebungen sträubten, entdeckte die Avantgarde gerade das höchste Gut der Gegenseite neu, nämlich die vorangegangenen Epochen der Kunstgeschichte, und erhob diese zum eigenen Paradigma für ihre Sicht auf die Welt in der Zeit nach dem Großen Krieg. Proklamationsartige Leitworte wie das »Recht auf Empfindung«[2] und Forderungen nach dem »Austausch der technischen, seelischen, kunstphilosophischen Erfahrungen«[3] zeichnen ein Stimmungsbild der Reformwilligen und verweisen zugleich auf die neuen Ansätze bei ihrem künstlerischen Zugriff auf die Vergangenheit. Der Disziplin der Architektur wurde die Rolle der Ägide in dieser neuen Ära zugesprochen, unter deren metaphorischem Dach das Volk und die Kunst als eine neue Einheit zusammenfinden sollten – so zuerst formuliert im Manifest des ›Arbeitsrats für Kunst‹.[4] Aus sozialökonomischer und kultureller Pflicht heraus war es demnach die Absicht der Avantgarde, der modernen Zeit angemessene ›Ideen‹ zu formulieren, ohne das Fundament des Vergangenen zu untergraben, sondern bewusst darauf aufzubauen.[5]

Damit generierte sich die Moderne nicht entlang eines Bruchs mit den Traditionen, sondern war vielmehr eine aufkeimende Epoche, deren geistesgeschichtliche und kunstgeschichtliche Bezugspunkte im historischen Mittelalter zu suchen sind.[6] Die Rückbesinnung auf die als vorbildhaftes Zeitalter verklärte Gotik wurde zum symptomatischen Auswuchs dieser Suche nach Orientierung und damit zum künstleri-

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1 Erklärung von Walter Gropius in der Meisterratssitzung vom 9. Dezember 1921, in: Wahl, Volker (Hrsg.): *Die Meisterratsprotokolle des staatlichen Bauhauses Weimar 1919 bis 1925*, bearb. von Ute Ackermann, Weimar: Böhlau 2001, 149.

2 *Arbeitsrat für Kunst Berlin 1918–1921. Ausstellung mit Dokumentation*, hrsg. von der Akademie der Künste Berlin, Ausst.kat, Akademie der Künste, Berlin-West: Akademie der Künste 1980, 27.

3 Ibid., 26.

4 Vgl. ibid. S. 87: »Kunst und Volk müssen eine Einheit bilden. Die Kunst soll nicht mehr Genuß weniger, sondern Glück und Leben der Masse sein. […]«.Vgl. auch Conrads, Ulrich/Neitzke, Peter (Hrsg.): *Programme und Manifeste zur Architektur des 21. Jahrhunderts*, Bauwelt Fundamente 1, Basel/Boston/Berlin: Ullstein 2001, 41f.

5 Erwin Haß, ebenfalls Mitglied im Arbeitsrat für Kunst urteilte hierzu so treffend: »Die Masse empfindet nie die Idee im Präsens, sie empfindet im Imperfectum die vorhergehende Idee nach«, in: Ausst.kat. *Arbeitsrat für Kunst Berlin 1918–1921*, 34.

6 Vgl. Kappel, Kai: »Nächstes Fremdes, ferner Spiegel. Romanik-Rezeption als Identitätsstiftung für eine andere Moderne«, in: *Zeitschrift des Deutschen Vereins für Kunstwissenschaft* 66 (2012), 231–257, hier 231ff.

schen Anknüpfungspunkt der Avantgarde. Eine expressive Ausdeutung des gotischen Stils galt bis zur Zäsur des Ersten Weltkriegs jedoch noch als ein kunstwissenschaftliches Konstrukt. Einen Niederschlag in der Kunstpraxis oder in der Kunstpädagogik hatten die interpretatorischen Auseinandersetzungen noch nicht erfahren, obwohl im Zuge der weltpolitischen Ereignisse immer mehr vermeintliche Parallelen zwischen der gotischen bzw. mittelalterlichen Epoche und dem aktuellen Zeitgeschehen aufgedeckt wurden. Schließlich griffen die modernen Künstler der Zwischenkriegszeit die Gotik als ein psychologisches Dispositiv auf und verwerteten es im Kontext ihres eigenen künstlerischen Selbstverständnisses. Denn das nach Wilhelm Worringer genuin gotische Grundgefühl von überspannter Weltangst und Erlösungssehnsucht trachteten schon die Menschen des Mittelalters durch Kunst – nämlich in einer abstrakten Formsprache – zu mildern.[7] Die Beschäftigung mit der Kunst aus der Ära der sogenannten Alten Meister war infolgedessen nicht nur legitimiert, sondern sogar hinsichtlich der widrigen Umstände nach dem Weltkrieg künstlerisch und sozial überlebenswichtig. Die Rezeption der mittelalterlichen Gotik seitens der Avantgarde basierte damit sowohl auf einer formalen, als auch vor allem auf einer inhaltlichen, von derselben Weltsicht geprägten Motivation.[8]

Die ›moderne Gotik‹ und das Ideal der Bauhütte

> Aus dem Furchtverhältnis, in dem der Mensch zur Erscheinungswelt steht, muss ihm als stärkstes geistiges und seelisches Bedürfnis entspringen der Drang nach Notwendigkeitswerten, die ihn von dem chaotischen Wirrwarr der geistigen und der Gesichtseindrücke erlösen. Die unübersehbare Relativität der Erscheinungswelt muss er also in unwandelbare absolute Werte umzuprägen suchen[9],

schrieb Wilhelm Worringer 1911 in seinem Werk *Formprobleme der Gotik* und wies damit auf die epochenunabhängige Strategie des Menschen hin, sich auf Konstanten und das Absolute zu besinnen, um in einer von relativen Bezügen undurchsichtigen Umwelt zurechtzukommen.
Auch der spätere Bauhausmeister Johannes Itten, für den in den Jahren des Welt-

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7 Vgl. hierzu Worringer, Wilhelm: *Abstraktion und Einfühlung. Ein Beitrag zur Stilpsychologie*, München: Piper 1908, 53: »Diese abstrakten gesetzmäßigen Formen sind also die einzigen und die höchsten, in denen der Mensch angesichts der ungeheuren Verworrenheit des Weltbilds ausruhen kann.«. Vgl. auch Böhringer, Hannes: »›Der Limes zwischen uns‹. Worringers Geschichtsphilosophie«, in: ders. und Beate Söntgen (Hrsg.), *Wilhelm Worringers Kunstgeschichte*, München: Wilhelm Fink 2002, 35–43, hier 37ff. Er weist hier auch auf den apotropäischen Effekt von Kunst hin. Vgl. dazu auch Ubl, Ralph: »Wilhelm Worringer, Hans Arp und Max Ernst bei den Müttern. Überlegungen zum Primitivismus der deutschen Avantgarde«, in: ibid, 119–140, hier 123 mit Anm. 19 und Lang, Siegfried K.: »Wilhelm Worringers ›Abstraktion und Einfühlung‹. Entstehung und Bedeutung«, in: ibid., 81–117, hier 85f.

8 Vgl. Bushart, Magdalena: *Der Geist der Gotik und die expressionistische Kunst. Kunstgeschichte und Kunsttheorie 1911–1925*, München: Verlag Silke Schreiber 1990, 15.

9 Worringer, Wilhelm: *Formprobleme der Gotik*, München: Piper 1920, 15.

kriegs eine starke Rezeption von Worringers Thesen belegt ist,[10] hatte für sich eine ähnliche Beobachtung gemacht, die ihn seine Bestrebungen, einen Generalbass für die Anwendung aller künstlerischen Mittel zu formulieren, vorantreiben ließ. Noch während seiner Ausbildung unter Adolf Hölzel an der Königlichen Akademie der bildenden Künste in Stuttgart war er mit der Methode der Analyse von Kunstwerken Alter Meister in Kontakt gekommen, die ein Destillat solcher absoluten Werte der künstlerischen Gestaltung in Aussicht stellte. In diesem Zusammenhang hatte er sich in seinem Tagebuch 1916 auf die überzeitliche Frage ›Was ist ein Kunstwerk?‹ als Antwort notiert:

> Die mit dem geistigen Auge erfasste innere Anschauung, das bewusst gewordene Reziprokerlebnis in einem überzeugenden allgemeinen Gleichnis, einem Symbol dargestellt, ergibt ein Kunstwerk.[11]

Die Anerkennung einer unauflösbaren wechselseitigen Bedingtheit, die allen Kunstwerken eingeschrieben war, sie miteinander verwob und die erst in ihrer künstlerischen Übertragung lesbar wurde, veranlasste Itten in der Folge, die vorangegangenen Epochen als Referenz für die künstlerischen Fragen der Zukunft auszuwerten. Denn obwohl zwar die Interpretation der Gotik im frühen 20. Jahrhundert changieren konnte, wurde das Bestehen einer ununterbrochenen Traditionslinie bis in die Moderne von fortdauernder Aktualität nicht angezweifelt. Sie galt als die letzte und noch immer anhaltende Stil-Erscheinung, die in der abgewandelten Form einer »verkleideten« oder einer »geheimen Gotik« bis in die gegenwärtige Zeit wirke:[12]

> Und immer und stets ist es die eine gleiche und dieselbe Kunst, die wiederkehrt, denn es gibt nur eine Kunst, eben die Kunst. Ihr Erscheinen auf der Erde gleicht einer Seelenwanderung. Auch in Europa ist die gelegentlich erschienen. Im frühen Mittelalter, in der Gotik, in der Romantik und im Kubismus. Aber eigentlich war doch nur die Gotik bisher eine wirkliche Erfüllung der großen, alles umfassenden Kunstform.[13]

Hierauf fußte auch die Forderung nach einer Wiederbelebung der Bauhüttenidee als neues, altes Vorbild für Kunstschulinstitutionen. Walter Gropius folgte diesen Beobachtungen und schuf mit seiner Gründung des Bauhaueses 1919 eine Kunstschule der Moderne, die sich in ihrer frühen Form als Bauhütte nach gotischem Vorbild verstand. Umso nachvollziehbarer erscheint es,

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10 In einer längeren Passage im Tagebuch vom Dezember 1917 in Wien widmete sich Itten den Aussagen Worringers. Auf den 5. Dezember datiert der Auftakt eines über mehrere Seiten reichenden Exzerpts aus *Abstraktion und Einfühlung*. Die Tagebücher erschienen als faksimilierte Teilausgabe bei Badura-Triska, Eva (Hrsg.): *Johannes Itten. Tagebücher. Stuttgart 1913–1916, Wien 1916–1919. Abbildung und Transkription,* Band 1, Wien: Löcker 1990. Vgl. auch Wagner, Christoph »Gotikvisionen am Bauhaus«, in: Herbert Schneider (Hrsg.), *Mittelalter und Mittelalterrezeption, Musikwissenschaftliche Publikationen*, Band. 24, Hildesheim/Zürich/New York: Olms 2005, 382–406, hier 401ff. Hardy Happle hat jüngst eine kurze Untersuchung vorgelegt, in der er Worringer im allgemeinen Bauhauskontext beleuchtet, vgl. ders.: »Im Dienste einer ›subtilen Kultur des Schauens‹. Wilhelm Worringer am Bauhaus Weimar«, in: Peter Bernhard, *bauhausvorträge. Gastredner am Weimarer Bauhaus 1919–1925*, Neue Bauhausbücher, neue Zählung, Band 4, Berlin: Gebr. Mann 2017, 187–195.

11 Badura-Triska: *Tagebücher*, 128, fol. 92.

12 Worringer: *Abstraktion und Einfühlung*, 127.

13 Behne, Adolf: *Die Wiederkehr der Kunst*, Leipzig: Kurt Wolff 1918, 37.

dass Lyonel Feininger in seinem Holzschnitt für die bildnerische Illustration des *Bauhausmanifests* eine stilisierte, emporstrebende Kathedrale von gotischer Anmutung gewählt hatte (Abb. 1). Durch die Prämisse der noch immer anhaltenden gotischen Epoche musste das mit allen Kräften der Werkstätten des Bauhauses erstrebte Gesamtkunstwerk jedoch nicht als formale Kopie der Gotik in Erscheinung treten, sondern konnte als Wiederkehr der ›einen Kunst‹ den architektonischen Bedürfnissen der Moderne lebensnah entgegenkommen.[14] Gropius entwickelte in der Folge seine Begriffsvorstellung einer ›neuen Gotik‹ auf der Basis von ökonomischen Notwendigkeiten, indem er eine spirituelle Neuorientierung vom Betrachtungspunkt der Utopie aus als konstruierter Alternativgesellschaft definierte.[15] Bisher lebe der gegenwärtige Künstler nach Gropius nämlich in »einer dogmalosen, analytischen Zeit des Chaos«[16], in welcher er sich nur als Mitglied eines vom Gemeinschaftsgeist getragenen Konstrukts wie der Bauhütte zurechtfinden könne. Der als sozialistisches Bekenntnis anmutende Appell im Manifest des Bauhauses ist daher auch nicht als tatsächlich politischer Programmentwurf zu verstehen. Vielmehr handelt es sich um einen sozialethischen Gedankenvorstoß, inspiriert durch die ideengeschichtlichen Einflüsse des als überzeitlich empfundenen Phänomens der gotischen Gesinnung.[17] Die kulturelle Orientierung im Deutschen Reich bedurfte dieser Wegweisung. Die Gesellschaft stand am Ende des Großen Kriegs vor den eigenen ökonomischen und ideologischen Ruinen. Die Durchschlagskraft industriell gefertigter Maschinen und Waffen im Krieg hatte die Sehnsucht nach einer ›heilen‹, vorindustriellen Welt heraufbeschworen.[18] Diese sah man wieder in einer vom Handwerk bestimmten Gemeinschaft realisiert. Die oben angeführte Abneigung gegen die akademische Theoretisierung künstlerischen Schaffens schürte weiterhin die Begeisterung für den mittelalterlichen Handwerks-Künstler, der nun nicht mehr als Individuum hervortreten sollte, sondern seinen Arbeitsbeitrag zugunsten eines höheren Ideals leistete, d.h. in den Dienst des gesellschaftlichen Gesamtkunstwerks stellte.[19] Das Führungsvakuum sowie völkerstaatliche Fragen nach der Niederlage im Krieg forderten außerdem indirekt zunächst die »Unterordnung unter die Staatsidee« des Künstlers sowie seinen Beitrag als »Träger einer Volkskultur«.[20] In diesem Sinne war die bohèmeartige

14 Vgl. ibid., 107ff. Als wegweisend führt er hier die Glasarchitektur Paul Scheerbarts an (vgl. ibid., 108).

15 Vgl. Bushart: *Geist der Gotik*, 139ff. Vgl. auch Franciscono, Marcel: *Walter Gropius and the Creation of the Bauhaus in Weimar: The ideals and artistic theories of its founding years*, Urbana/Chicago/London: University of Illinois Press 1971, 252.

16 Handschriftliche Notizen Gropius' für einen Beitrag im *Deutschen-Revolutions-Almanach* 1919, zitiert nach ibid., 245.

17 Vgl. Bushart: *Geist der Gotik*, 169. Vgl. Wagner: Gotikvisionen am Bauhaus, 384.

18 Vgl. Claussen, Horst: *Walter Gropius. Grundzüge seines Denkens*, Studien zur Kunstgeschichte, Band 39, Hildesheim/Zürich/New York: Olms 1986, 38f.

19 Biermann, Georg: »Die Deutsche Kunst in der Zukunft«, in: *Der Cicerone. Halbmonatsschrift für die Interessen des Kunstforschers & Sammlers*, 10 (1918), 249–255, hier 255.

20 Ibid., S. 254. Vgl. Kappel: Romanik Rezeption, 233.

Auffassung vom Künstlertum ebenso überholt wie die zum Kopisten und Nachahmer geschulten Absolventen der Kunstakademien nutzlos.[21] »Architekten, Bildhauer, Maler, wir alle müssen zum Handwerk zurück!«[22], postulierte zusammenfassend das *Bauhausmanifest*. In die Grundfeste des Bauhauses waren somit seit 1919 die Ideale der Gotik, vor allem das Primat der handwerklichen Schulung als Fundament allen künstlerischen Schaffens, grundlegend eingeschrieben.[23] Tatsächlich war die ideelle Aufwertung des Handwerksbegriffs schon seit der Jahrhundertwende der zentrale Ausgangspunkt bei der Diskussion um die Kunstschulreform gewesen, als bereits die Vertreter der Arts-and-Crafts- und Jugendstil-Bewegung als erste eine Rückkehr zur Handarbeit forderten. Die Verklärung des mittelalterlichen Bauhütten-Konstrukts, dessen Leistung in der gemeinschaftlichen Organisation des gotischen Kathedralbaus lag, ist daher schon seit dem 19. Jahrhundert als ideeller Antrieb für Reformen zu verstehen, die letztendlich in Bezug auf das Verständnis des Künstlertums, auf dem Gebiet des Sozialwesens, wie z.B. der Lebensreform, und mit dem Fokus auf pragmatische volkswirtschaftliche Überlegungen durchgesetzt wurden.[24] Damit waren die Ziele für die Künstler und Handwerker, die von reformfreudigen Stimmen wie der von Gropius zu Beginn des 20. Jahrhunderts verkündet wurden, ebenso wenig aus sich heraus geboren wie der Gotikbegriff, sondern führten die Tradition unter modernen Vorzeichen fort.

Referenzgröße ›Gotik‹: Ittens Analysen Alter Meister am Bauhaus

Von Wien aus, wo er in den Jahren 1916 bis 1919 erfolgreich eine eigene private Kunsttschule betrieben hatte, kam Johannes Itten 1919 auf Einladung von Walter Gropius an das Bauhaus. Als Meister der ersten Stunde wurde ihm die Leitung mehrerer Werkstätten, aber insbesondere die Sorge um den sogenannten Vorkurs, der von jedem Bauhäusler zur durchlaufen war, aufgetragen. Durch den Umstand, dass der Bauhausmeister Itten der Nachwelt insbesondere als Initiator dieses Vorkurses im Gedächtnis geblieben ist bzw. vornehmlich seine Farbenlehre als Gegenstand der kunstpädagogischen Praxis tradiert wurde, wurde ein gewichtiger Aspekt seiner ganzheitlich gedachten Künstlerausbildung bisher nur als Randnotiz im Kontext der Vorlehre am Bauhaus wahrgenommen. Mit seiner Berufung brachte er das bei Professor Adolf Hölzel in Stuttgart erlernte und in Wien selbst fortgeführte pädagogische und künstlerische Konzept der ›Analysen Alter Meister‹ ans Bauhaus. Der Rückgriff auf Werke der Kunstgeschichte von vorbildhaftem Wert, vor allem auf solche altdeutscher und gotischer Meister, war die Grundlage seiner Analysestudien, von denen er sich die Ableitung allgemeingültiger künstlerischer Gesetzmäßigkeiten

21 Vgl. Biermann: Die Deutsche Kunst, 254.

22 Auszug aus dem *Bauhausmanifest* von 1919.

23 Vgl. Claussen: *Walter Gropius*, 32.

24 Vgl. weiterführend Pevsner, Nikolaus: *500 Jahre Künstlerausbildung. William Morris. Zwei Vorträge,* Darmstadt/Düsseldorf: Staatl. Kunstakademie 1966, 21ff.

sowie einen abstrakten, gar metaphysischen Erkenntnisgewinn erhoffte.
Das Bauhaus in seinen frühen Jahren stellte eine Institution dar, in deren Umfeld Johannes Itten seinen Vorstellungen nach adäquat künstlerisch wie pädagogisch aktiv sein konnte. In der Vermengung seiner aus Wien mitgebrachten philosophischen Überzeugungen mit dem ›gotischen‹ Bauhaus-Geist war der intellektuelle Nährboden für das Vorantreiben seiner ›Analysen Alter Meister‹ zunächst gegeben. Itten blieb bis 1923 am Bauhaus und verließ es schließlich, nachdem ihm aufgrund der Interessens- und Methodenverschiebung in den kommenden Jahren, die zugunsten der Zusammenarbeit mit der Industrie und mit Bedacht auf Wirtschaftlichkeit ausfiel, zunehmend die geistigen und praktischen Rahmenbedingungen seiner Arbeit entzogen worden waren. Uneinigkeit zwischen Itten und Gropius bei Grundsatzfragen bezüglich der Ausrichtung der Ausbildung mündeten in offenen Streit. Die ›Analysen Alter Meister‹ hatten sich zu einem Bauhaus-internen Politikum gewandelt:

> Als Gropius 1923 »zufällig« einem meiner Analyse-Vorträge beiwohnte, in welchem ich über Formsymbolik sprach, sagte er am Schluß zu mir: »Itten, ich kann diesen Unterricht nicht mehr verantworten.« Ich sagte darauf: »Nun – dann gehe ich fort!«[25]

In seinem Vorkurs bemühte sich Itten den Schülern durch ein breit gefächertes Curriculum eine elementare Ausbildung zu vermitteln. Dies beinhaltete neben einer allgemeinen Formlehre, in der rhythmische Übungen, besonders im Rahmen von Aktzeichnen unternommen wurden und die die Vermittlung der Farbenlehre sowie Materialübungen mit verschiedenartigen Werksstoffen implizierte, den Besuch der wichtigen Analysestunden zu Werken Alter Meister. Das Druckblatt *Ausstellung von Arbeiten der Gesellen und Lehrlinge im Staatlichen Bauhaus Weimar, April–Mai 1922*, welches anlässlich der großen Bauhaus-Ausstellung im Jahr 1923 veröffentlicht wurde, fasst das komplexe Ineinandergreifen dieser aufeinander aufbauenden Klassen um den Vorkurs noch deutlicher zusammen. Hier wird die Notwendigkeit von Analysen Alter Meister im Vorlehrekontext darin begründet, dass in deren Werken die Darstellung der verschiedenen Materien und Stofflichkeit vorbildhaft zu studieren sei und hierin auch erste Grundkenntnisse zur Formlehre vermittelt werden könnten, die in den Kursen zum Rhythmus und zur Materie ihrerseits wieder vertieft würden:

> Darstellung der Materie mit anderen Mitteln der Kunst ist Voraussetzung für die bildende Kunst. Daher nimmt im Vorunterricht einen breiten Raum ein die Analyse alter Meister, in deren Werken die verschiedene Materie eben meisterhaft dargestellt ist. Die Werke alter Meister wie Bosch, Meister Franke oder Grünwald geben auch die Grunderkenntnisse für den Formunterricht, der ebenfalls dem Vorunterricht angehört.[26]

Ittens Untersuchungen gingen indes über die bloßen Formalia der Gestaltungsmittel

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25 Rotzler, Willy (Hrsg.): *Johannes Itten. Werke und Schriften*, Zürich: Orell Füssli 1978, 32.

26 *Ausstellung von Arbeiten der Gesellen und Lehrlinge im Staatlichen Bauhaus Weimar*, April–Mai 1922, zitiert nach Wingler, Hans M.: *Das Bauhaus. Weimar Dessau Berlin 1919–1933 und die Nachfolge in Chicago seit 1937*, Bramsche: Gebr. Rasch 1975, 64. Rotzler weist Itten die Autorenschaft zu, vgl. Rotzler: *Johannes Itten*, 224f.

hinaus. Er eröffnete seinen Schülern einen esoterischen Zugang zur Kunst und stellte ihnen eine metaphysische Wahrheit in Aussicht, die jedes Kunstwerk in sich trage und die es nur zu schauen galt. Itten hatte sich während seiner Wiener Jahre von als Synkretist mit den Lehren verschiedenster Philosophen und Mystikern auseinandergesetzt, indem er z.B. theosophisches Gedankengut studiert. Sein Zugriff auf Kunst hatte in dieser Zeit die Grenzen der reinen Sinneswahrnehmung überschritten: Sein Ansatz basierte auf der Überwindung des Sehens und forcierte eine Erprobung der eigenen Fähigkeit zum Schauen, wobei nur letztere die erwünschte Erfassung des Wesens eines Kunstwerks hervorrufen konnte. Die Annäherung an die postulierte Wesensschau erfolgte hingegen zunächst über die Auseinandersetzung mit dem Sichtbaren. Durch das Analysieren der gängigen Gestaltungsmittel wie Hell-Dunkel- oder Farbkontraste, perspektivische Konstruktion und Rhythmus der bildgebenden Linien lehrte er seinen Schülern in Wien und in Weimar die innerbildlichen Gesetzmäßigkeiten sowohl optisch als auch empfindungsmäßig abzutasten. Auf dieser Basis konnte in der Folge erst eine geistige Einfühlung in das Kunstwerk und sein Wesen geschehen. Im einfühlenden Moment lag wiederum die Voraussetzung für jegliches künstlerisches Verständnis der Werke der Alten Meister.

Wenige Analyse-Arbeiten und zeichnerische Niederschläge dieser Einfühlungsversuche haben sich aus dem Unterrichtskontext des Bauhauses erhalten.[27] Die persönlichen Aufzeichnung Ittens bieten jedoch eine reiche Fülle an Analysen, die er zu eigenen Studienzwecken angestellt oder für die Vermittlung im Unterricht erprobt hatte. 1919, kurz vor seiner Übersiedlung nach Weimar, fertigte er eine Analyseskizze nach einer Darstellung von *Elisabeth und Zacharias mit Johannes Baptist* aus dem *Mindelheimer Sippenaltar* von Bernhard Strigel (Abb. 2a und b). Während ihn die christliche Thematik der um 1505/1506 entstandenen Tafel unbeeindruckt ließ, betonte er in einer Notiz die »Starke Raumwirkung«[28] der Komposition. Mit eingezogenen Konstruktionslinien legt er die Staffelung der Bildebenen in die Tiefendimension hinein offen. Durch die Diagonalen betont Itten den dem Bildaufbau eingeschriebenen Rhythmus, der eine Lenkung des Betrachterblicks in einem perspektivischen Sog hervorruft. Ittens Skizze weist verdichtete Doppellinien auf, die als Synthese von emotionaler Einfühlung und rationaler Konstruktion die Zeichnung durchziehen. Damit hebt er nicht nur das Offensichtliche hervor, sondern deckt verborgene Relationen und die Strategien des Künstlers, die inhaltliche Aussage bildlich festzumachen, auf.

Ebenfalls im Frühjahr oder Frühsommer 1919 setzte sich Itten in seinen Analyseaufzeichnungen mit einem für ihn programmatischen Werk auseinander, nämlich der Kreuzigungsszene auf dem Mittelbild der geschlossenen Flügel

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27 Vgl. Itten, Anneliese: »Itten und das frühe Bauhaus. Ein Diskussionsbeitrag«, in: Rainer Wick (Hrsg.), *Ist die Bauhaus-Pädagogik aktuell?*, Köln: Verlag der Buchhandlung Walther König 1985, 76–78, hier 77f.

28 Badura-Triska: *Tagebücher*, 275, fol. 62A. Die konkrete Publikation mit der Vorlage, die Itten benutzte, konnte in diesem Fall ausnahmsweise nicht identifiziert werden.

Abb. 2a: Analyse nach Bernhard Strigel, *Elisabeth und Zacharias mit Johannes Baptist (Mindelheimer Sippenalter)*, 1919

Abb. 2b: Bernhard Strigel, *Elisabeth und Zacharias mit Johannes Baptist (Mindelheimer Sippenaltar)*, um 1505/1506, Mischtechnik auf Tannenholz, 78 x 55 cm, Germanisches Nationalmuseum Nürnberg, Nürnberg

des *Isenheimer Altars* von Matthias Grünewald (Abb. 3a, b und c). Für die Gestalt der Maria Magdalena ist gesichert, dass sie während des Bauhausunterrichts Anstoß und Gegenstand verschiedenartiger Aufgabenstellungen war, die besonders auf die Einfühlung in ihre Darstellung als erbittlich Flehende abzielten.[29] Für diese Analyse nach einer Abbildung in Fritz Burgers Sammelwerk zur Altdeutschen Malerei von 1909 griff Itten mit Fokus auf den Linienrhythmus die Ausdruckskontur ihres Haares heraus, die von ihm verschmolzen mit dem Faltenwurf des Gewands wiedergegeben werden. Auf Oskar Schlemmer geht die Schilderung einer Analysestunde am Bauhaus zurück,[30] in der Itten sich angesichts dieser Vorlage mit der Aufforderung an die Schüler wandte, in Weinen bzw. Empfindung zu ›zerfließen‹, falls ihre Einfühlung in das Werk zuvor erfolgreich erfolgt war. Insofern führte Itten in seiner Skizze die fließenden Formen der lockigen Strähnen des Haars im auslaufenden Übergang zu dem sich in Falten legenden Stoff um die kniende Figur zeichnerisch fort. Ergänzend schreibt Itten zu den Formeigenschaften in der Gestaltung der Figur Maria Magdalenas nieder: »Magdalena. Die Kurve kehrt nicht zurück«.[31]
Eine anonyme Schülerarbeit aus dem Vorkurs nach der Kreuzigungsdarstellung von Matthias Grünewalds *Tauberbischofsheimer Altar* (Abb. 4a und b) von 1921 analysiert den Kontrast von Hell und Dunkel. Während sich die scharf umrissenen Linien der Gestalt Jesu vom schwarzen Dunkel des Hintergrunds absetzen, erscheinen die Körper von Maria und Johannes zur Rechten und Linken des Kreuzes in ihrer Kompaktheit zerklüftet. Hier setzt sich das Weiß nicht mehr in festgefügten Konturen vom Schwarz ab. Durch das starke Hell-Dunkel changiert die äußere Anmutung zwischen gotischer Malerei und expressionistischem Holzschnitt. Der gekreuzigte Körper ist besonders expressiv charakterisiert: Die stachelige, ausgreifende Form von Jesu Dornenkrone hat der Schüler abstrahiert zusammengefasst und in eine borstige Struktur mit Bewegungsrichtung übersetzt. Diese Dynamik wird durch eine hell nuancierte Stelle im Grund intensiviert, die sich offenbar auf kein Element in der Vorlage von Grünewald zurückverfolgen lässt. Auf gleiche Weise herausgearbeitet sind die überstreckten und verdrehten Arme und Beine, die in der expressiven Auflösung der Formen von Fingern und Füßen kulminieren. Obwohl der Schüler den Körperumrissen des Originalgemäldes im Groben folgt, liegt diesen anatomischen Überzeichnungen die Einfühlung für die Aussage des Werks zugrunde. Die Verteilungen und Kontraste der Massen von jeweils Hell und Dunkel stehen gleichwertig neben der Wiedergabe von Stimmung. Es handelt sich um einen Schattenriss sowohl der zentralen figuralen Elemente als auch der emotionalen Schwingungen.

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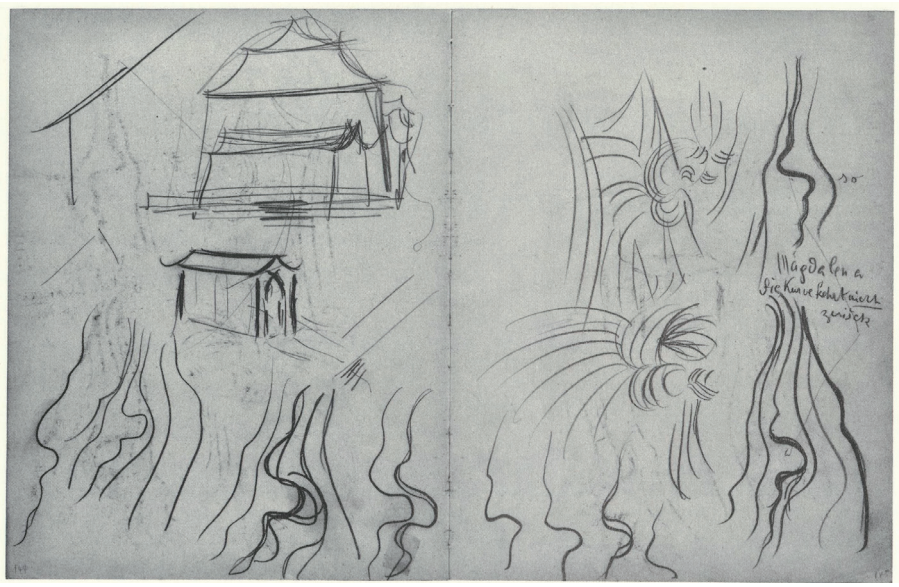
29 Vgl. Itten, Johannes: *Gestaltungs- und Formenlehre. Mein Vorkurs am Bauhaus und später*, Ravensburg: Otto Maier 1963, 178. Itten unterlief hier in seiner Erinnerung selbst ein Fehler, indem er seiner Aussage die Analyse einer anderen Mariendarstellung zuordnete.

30 Schlemmer, Oskar: *Briefe-Texte-Schriften aus der Zeit am Bauhaus*, hrsg. von Elke Beilfuß, Weimar: Weimarer Verlagsgesellschaft 2014, 30.

31 Badura-Triska: *Tagebücher*, 356, fol. 145.



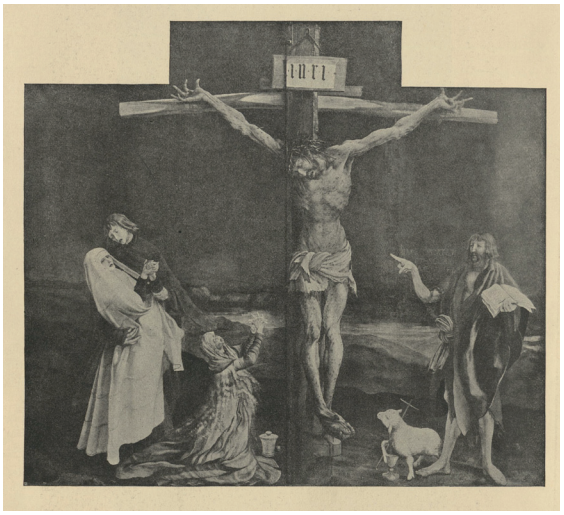


Abb. 3a: Analysen nach Matthias Grünewald, *Kreuzigung (Isenheimer Altar)*, 1919

Abb. 3b: Matthias Grünewald, *Kreuzigung (Detail aus dem Isenheimer Altar)*, 1512–1516, Mischtechnik auf Lindenholz, 376 x 534 cm, Unterlinden-Museum, Colmar

Abb. 3c: Matthias Grünewald, *Kreuzigung (Isenheimer Altar)*, 1512–1516, Mischtechnik auf Lindenholz, 376 x 534 cm, Unterlinden-Museum, Colmar

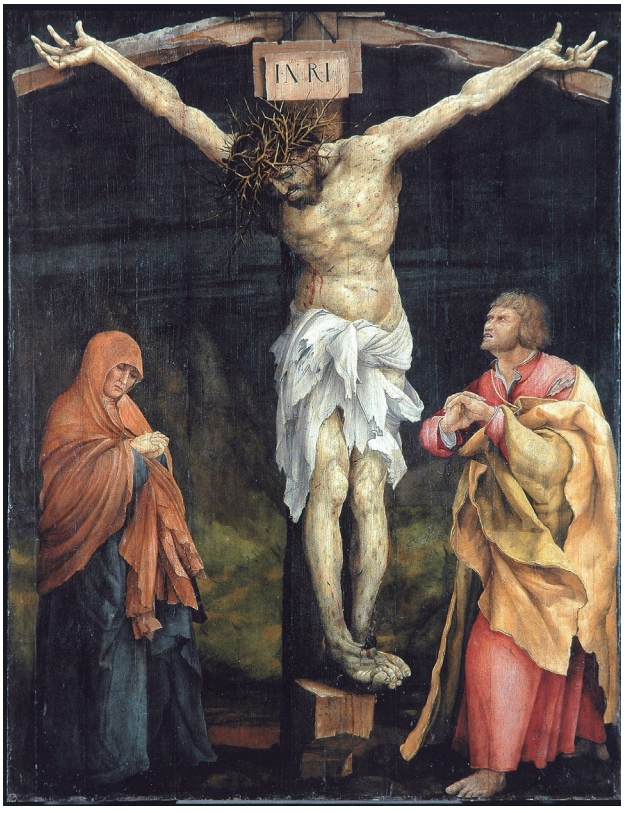


Abb. 4a: Schüleranalyse nach Matthias Grünewald, *Kreuzigung (Tauberbischofsheimer Altar)*, 1921

Abb. 4b: Matthias Grünewald, *Kreuzigung (Tauberbischofsheimer Altar)*, 1523–1525, Öl auf Tannenholz, 152,5 x 195,5 cm, Staatliche Kunsthalle Karlsruhe, Karlsruhe

Lipps, Riegl, Fiedler: Die Grundlagen für Ittens Analysen

Wilhelm Worringer hätte seine These kaum ohne das methodische Gerüst von Theodor Lipps' Einfühlungslehre[32] oder Alois Riegls Gedanken zum »Kunstwollen«[33] entwickeln können. Den Angeführten ist es zu verdanken, dass die Kunst und ihre Erscheinungsformen nunmehr nicht nach äußeren, ästhetizistischen Schönheitskriterien, sondern nach objektiven, formalen Schemata auf der Grundlage einer als Wissenschaft betriebenen Ästhetik beurteilt wurden. Dies konnte die Vormachtstellung des als klassisch geltenden Zeitalters der Renaissance durchbrechen und verhalf den Epochen wie der Gotik, welche bisher als vom Verfall gezeichnet angesehen wurden, zu erstmaliger Würdigung.[34]

Lipps strebte nach einer wissenschaftlich fundierten Hypothese für die Apperzeption eines Kunstwerks. Für seine Einfühlungstheorie setzte er voraus, dass das Gefühl, das den Künstler angehalten habe, das Kunstwerk zu erschaffen, und das im Rezipienten bei der Betrachtung ausgelöste Empfinden übereinstimmten. Als logische Konsequenz sei das »Genießen [des Werks] eine Art des Nachschaffens«.[35] Damit fasste Lipps in seiner Ableitung einer Wesensschau die äußeren Rahmenfaktoren, die den Entstehungsprozess des Werks umreißen, mit den »inneren Bedingungen«, die inhärente Gesetzmäßigkeiten und die Wechselwirkung von Kunstwerk und unmittelbarem Zeitgeschehen umfassen, zusammen.[36]

Hierauf gründet Johannes Ittens These, dass durch das Analysieren, das über das reine Betrachten desselben Werks mit dem Gesichtssinn hinausgeht, mehr als ein Nachempfinden des Werks vollzogen wird – dem Betrachter wird die Option auf ein tieferes Vordringen in das Wesen des Werks geboten, woraufhin er auf die metaphysische Erkenntnis einer universalen Bildaussage hoffen kann. Itten erprobte in seinem Bauhaus-Unterricht an gotischen Beispielen und exemplarisch anhand des *Isenheimer Altars* von Grünewald, was Lipps zwei Jahrzehnte zuvor theoretisch formuliert hatte:

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32 Vgl. allgemein Lipps, Theodor: *Ästhetik. Psychologie des Schönen und der Kunst, I., Grundlegung der Ästhetik*, Hamburg/Leipzig: Voß 1903 und ders. *Philosophie und Wirklichkeit*, Heidelberg: C. Winter 1908. Worringer gibt auch an, sich direkt auf Lipps zu beziehen, vgl. Worringer: Abstraktion und Einfühlung, 36.

33 Alois Riegl: *Historische Grammatik der bildenden Künste*, hrsg. von Karl M. Swoboda und Otto Pächt, Graz/Köln 1966, 123. Weiterführend zu Riegl vgl. auch: ders.: *Stilfragen. Grundlegungen zu einer Geschichte der Ornamentik*, Berlin: Georg Siemens 1893.

34 Vgl. Lang: Entstehung und Bedeutung, 89.

35 Lipps: *Ästhetik*, 5, vgl. auch ders.: Philosophie und Wirklichkeit, 17. Vgl. auch Denaro, Dolores (Hrsg.): *Johannes Itten. Wege zur Kunst*, Ausst.kat., Saarland Museum, Saarbrücken, Ostfildern: Hatje Cantz 2002, 240f.

36 Lipps: *Ästhetik*, 5.

> Itten gibt in Weimar ›Analyse‹. Zeigt Lichtbilder wonach die Schüler dieses oder jenes Wesentliche zeichnen sollen; meist die Bewegung, die Hauptlinie, Kurve. Darauf verweist er sie an eine gotische Figur. Dann zeigt er die weinende Maria Magdalena vom Grünewald-Altar. Die Schüler bemühen sich, aus dem sehr Komplizierten ein Wesentliches zu lösen. Itten sieht die Versuche und donnert: Wenn sie ein künstlerisches Empfinden hätten, so müssten sie vor dieser erhabensten Darstellung des Weinens, das das Weinen der Welt wäre, nicht zeichnen, sondern dasitzen und in Weinen zerfließen. Spricht's und schlägt die Tür zu![37]

Und im Vergleich hierzu formulierte Lipps in seiner Abhandlung zur Ästhetik von 1903:

> Dies heißt insbesondere, die optisch [im Kunstwerk vom Betrachter, d. Verf.] wahrgenommenen Formen wecken auch Impulse zu solchen Bewegungen oder Weisen des Verhaltens, zu denen sie dienen oder für welche sie bestimmt scheinen; und sie wecken wiederum damit zugleich die entsprechende innere Zuständlichkeit.[38]

Erst durch die Anerkennung eines Einfühlungsdrangs durch Theodor Lipps konnte der abstrakte Anteil an Emotionen beim Schaffensvorgang bzw. beim Betrachten von Kunst als Forschungsgegenstand etabliert werden. Dieser Aspekt des Inneren Erlebens in Kombination mit dem rationalen Begreifen der formalen Mittel galt von nun an als Motor einer jeden Kreation und machte den bis dahin geltenden Geniebegriff bzw. die Voraussetzung des künstlerischen Ingeniums überflüssig. Ittens Lehrer Adolf Hölzel hatte in diesem Zusammenhang 1916 konstatiert: »Der Geist des Kunstwerks liegt in der durchgeistigten Verwertung der Mittel«.[39] Das vom undefinierbaren Aspekt einer göttlichen Schaffenskraft losgesagte Kunstwerk wurde für die vom Empirismus geprägte Generation am Ende des 19. Jahrhunderts somit erst durch die Vorarbeit von Lipps und anderen Theoretikern analysierbar.[40] Als logische Konsequenz war die Einfühlung nach dem modernen Konzept nicht an den Naturalismus im Bild gekoppelt, sondern war auch auf ungegenständliche, also abstrakte Kompositionen anwendbar.[41] Von einer Analyse derselben nahm Itten jedoch seine gesamte Schaffenszeit hindurch Abstand.

Der Kunsthistoriker Alois Riegl, ein Vertreter der Wiener Schule der Kunstgeschichte, führte die Gedankengänge von Lipps hinsichtlich einer inneren Triebkraft fort, indem er in jenem Drang die Initialzündung für jegliches bildende Schaffen sah. Auf dieser Basis des von Riegl in die Kunstgeschichte eingeführten Kunstwollens schlüsselte Worringer die beiden Richtungen von Abstraktionswillen und Einfühlungsdrang auf: »Die Stileigentümlichkeiten vergangener Epochen sind also nicht auf ein

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37 Schlemmer: *Briefe-Texte-Schriften,* 30.

38 Lipps: *Ästhetik*, 144.

39 Adolf Hölzel: »Einige aphoristische Sätze aus einem demnächst erscheinenden Hefte«, in: *Hölzel und sein Kreis*, Begleitband zur Ausst., Freiburger Kunstverein, Stuttgart 1916, 3–14, hier 5.

40 Vgl. Rehmann, Irene: »Der Aspekt der Empfindung bei Hölzel«, in: *Adolf Hölzel: Die Kunst steckt in den Mitteln*, hrsg. vom Württembergischen Landesmuseum Stuttgart und dem Kulturamt der Stadt Stuttgart, Ausst. kat., Württembergisches Landesmuseum, Stuttgart, Stuttgart: Württembergisches Landesmuseum 1986, 38–45, hier 39f.

41 Vgl. ibid., 41.

mangelndes Können, sondern auf ein anders gerichtetes Wollen zurückzuführen.«[42] Die Erzeugnisse der Bildenden Kunst seien nämlich nicht zu verstehen als Ausdruck von kunstfertigem Können oder Nichtkönnen, sondern lediglich von Wollen, dem das technische Vermögen nachfolge. Damit forcierte er den Bruch mit der bis dahin gültigen rein positivistischen Kunsttheorie und führt die psychologische Variable als Urantrieb ein.[43] Die wahrnehmungspsychologische Anerkennung dieser Antriebskräfte für das Kunstschaffen konnte es in der Folge erlauben, aus den Kunstwerken ein weltanschauliches Fazit zu extrahieren.[44]
In der Tradition der Einfühlungstheorie zurückblickend fußten die Gedanken von Worringer und die praktischen Ansätze Ittens auf den Ausführungen des Kunsttheoretikers Konrad Fiedler.[45] Worringer definierte den Abstraktionsdrang als Folge eines vom Menschen in widrigen Zeiten empfundenen Ordnungswillen.[46] Auch Fiedler hatte bereits in seinem Aufsatz *›Über die Beurteilung von Werken der bildenden Kunst‹* aus dem Jahr 1876 den Urgrund der künstlerischen Tätigkeit auf dieselbe Weise gedeutet:

> Die künstlerische Tätigkeit beginnt, wo der Mensch sich der Welt ihrer sichtbaren Erscheinung nach, als einem unendlich Rätselhaften gegenübergestellt findet, wo er, von einer inneren Notwendigkeit getrieben, die verworrene Masse des Sichtbaren, die auf ihn einstürmt, mit der Macht seines Geistes ergreift und zum gestalteten Dasein entwickelt.[47]

Auch er hatte damit eine rein formal-historische Betrachtungsweise von Kunstwerken abgelehnt und die Anerkennung der geistigen produktionsästhetischen Dynamik impliziert.[48] Dies ging damit einher, dass seinem Verständnis nach eine von Worringer in der Folge erneut als solche beschriebene weltanschauliche Ansicht in den Schaffensprozess miteinfloss. Für Fiedler war die Kunst ein Hilfsmittel zum Wirklichkeitsverständnis. Wie später bei Worringer kann im Sinne Konrads Fiedlers die Kunst und der darin liegende Wahrheitsgehalt daher nicht mehr nur auf der mimeti-

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42 Worringer: *Abstraktion und Einfühlung*, 42.

43 Worringer führte Semper und dessen Verständnis von Kunst als ein Produkt aus Technik, Rohstoff und Zweck an. In Wirklichkeit aber handele es sich bei den drei Zutaten um »Reibungskoeffizienten« in einem nach dem Wollen ausgerichteten Zusammenspiel. Hierbei zitierte Worringer aus Riegl, Alois: *Die spätrömische Kunst-Industrie nach den Funden in Österreich-Ungarn im Zusammenhange mit der Gesamtentwicklung der Bildenden Künste bei den Mittelmeervölkern*, Wien: Druck und Verlag der kaiserlich-königlichen Hof- und Staatsdruckerei 1901. Vgl. Worringer: Abstraktion und Einfühlung, 42.

44 Vgl. Worringer: *Formprobleme der Gotik*, 10f. und 11:» Und so soll denn auch diese Stilpsychologie der Gotik zu einem Beitrag der Geschichte der menschlichen Psyche und ihrer Aeusserungsform werden«. Vgl. auch Lang: Entstehung und Bedeutung, 91.

45 Vgl. Rotzler: *Johannes Itten*, 393.

46 Vgl. auch Bushart: *Geist der Gotik*, 40.

47 Fiedler, Konrad: »Über die Beurteilung von Werken der bildenden Kunst«, 1876, in: ders., *Schriften über Kunst*, München: Wilhelm Fink 1913, 1–79, hier 55.

48 Vgl. ibid., S. 36f.

schen Wiedergabe der Wirklichkeit gründen, sondern muss darüber hinausgehen.[49] Neben der Frage des ›Warum‹ erfolgten seitens Fiedlers Überlegungen zum Sinn des künstlerischen Schaffens, wie es im Titel des Aufsatzes ›*Über den Ursprung der künstlerischen Tätigkeit*‹ anklingt. Nach Fiedler vereinten sich im Vorgang des Kunstschaffens, der für sich selbst stehe – und bei Worringer zu einem religiösen Prozess der »Selbstentäusserung« erhoben wurde[50] –, schicksalhaft alle wesenhaften Aspekte äußerlicher und innerlicher Einflussnahme:

> Sie [die Kunst, d. Verf.] geht nicht vom Gedanken, vom geistigen Produkte aus, um zur Form, zur Gestalt hinabzusteigen, vielmehr steigt sie vom Form- und Gestaltlosen zur Form und Gestalt empor, und auf diesem Wege liegt ihre ganze geistige Bedeutung.[51]

Diese Beobachtungen machten die Thesen Fiedlers für Johannes Itten so wertvoll. Itten konnte später aus diesen Worten Fiedlers, die er eingehend studiert hatte, für sich ableiten, dass eine tiefergehende, sezierende Analyse eines Kunstwerks, von welcher Art sie auch sei, notwendig zum Verständnis des Wesens und der Seinsbedingungen sei.[52] Und Fiedler ging außerdem noch einen Schritt weiter: Er stellte die These auf, dass mit einem Kunstwerk eine intrinsische Erkenntnis bzw. Wahrheit geschaffen wurde, die vor der symbiotischen Vermengung mit dem Werk bisher nicht existiert habe: »[D]as vom menschlichen Geiste noch Unberührte ist es, was [die] Tätigkeit erregt, für das, was noch in keiner Weise für den menschlichen Geist existiert, schafft [das Kunstwerk] in Form […].«[53] Der Mazdaznan-Anhänger Itten, der stets auf der Suche nach einer esoterischen Wahrheit war, musste von dieser Beobachtung Fiedlers umso mehr beeindruckt gewesen sein.

Gotik als Anker in der Zukunft

Als Reaktion auf den Großen Weltkrieg feilten Kulturtheoretiker und damit auch Kulturpessimisten am passenden philosophischen Fundament ihrer prospektiven Geschichtsdeutung.[54] Karl Scheffler legte im Jahr 1917 eine Monografie vor, die stellvertretend für die Versuche der Gegenwartskritiker steht, ihrer Zeit durch das Festhalten an einer bekannten Konstante habhaft zu werden. Scheffler, ein von Itten

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49 Vgl. Fiedler, Konrad, »Über den Ursprung der künstlerischen Tätigkeit«, in: ders., *Schriften über Kunst*, München: Wilhelm Fink 1913, 183–368, hier 188ff. Vgl. auch Argan, Giulio Carlo: *Gropius und das Bauhaus*, hrsg. von Ulrich Conrads, Bauwelt Fundamente, 69, Reinbek bei Hamburg: Rowohlt 1962, 8f.

50 Worringer: *Abstraktion und Einfühlung*, 31.

51 Fiedler: *Ursprung künstlerischer Tätigkeit*, 55ff

52 Itten ist erstmals mit Fiedler und dessen Theorien im Laufe seiner Lehrzeit bei Eugène Gilliard an der École des Beaux-Arts in Genf in Berührung gekommen. Vgl. Lichtenstern, Christa, »Der junge Itten im Umkreis von Fiedlers Kunsttheorie«, in: Dies./Christoph Wagner (Hrsg.), *Johannes Itten und die Moderne. Beiträge eines wissenschaftlichen Symposiums,* Materialien zur Moderne, Ostfildern: Hatje Cantz 2003, 34–48, hier 35.

53 Fiedler: *Beurteilung Werke bildender Kunst*, 52.

54 Vgl. auch Bernhard, Peter: »Die Einflüsse der Philosophie am Weimarer Bauhaus«, in: Christoph Wagner (Hrsg.), *Johannes Itten – Wassily Kandinsky – Paul Klee. Das Bauhaus und die Esoterik*, Ausst.kat., Gustav-Lübcke-Museum, Hamm, Museum im Kulturspeicher Würzburg, Bielefeld/ Leipzig: Kerber 2005, 29–36.

rezipierter Kunstkritiker und Schriftsteller, widmete sich in seine Monografie mit dem Titel ›*Der Geist der Gotik*‹ weniger den durch ihr Entstehungsjahr als gotisch einzuordnenden Werken, sondern machte sich auf zu einer Spurensuche nach gotischer Formensprache und Geistesinhalten in Werken sämtlicher nachfolgender Epochen. Im Ergebnis strebte er eine Relativierung der gegenwärtigen gotischen Begriffsvorstellung an.[55] Die Grundlage hierfür war seine Beobachtung, dass allen Kunstwerken sämtlicher Epochen dieselben darstellerischen Gesetzmäßigkeiten zugrunde lägen und sie damit auf die gleiche Anwendung der bildnerischen Mittel rekurrierten.[56] Folgerichtig unternahm Scheffler einen prüfenden Durchmarsch durch die Vor- und Frühgeschichte über die Neuzeit bis in die klassische Moderne inklusive dem Impressionismus und zählte sämtliche Epochen und ihre künstlerischen Ausformungen auf, in welchen er Kongruenzen mit der gotischen Formenwelt identifizieren könne.[57] Dies konnte einerseits Äußerlichkeiten, wie den »mystisch gesteigerten Naturalismus«[58] beinhalten, welchen er der Höhlenmalerei zugestand, oder sich auf inhaltliche Gemeinsamkeiten beziehen, wenn er in der Kunst der Renaissance, besonders bei Giotto oder bei den Sienesischen Künstlern, eine gotische Stimmung oder Gesinnung erkannte.[59] Johannes Itten muss sich mit Blick auf El Greco, welchen er neben den Altdeutschen und Altniederländischen Künstlern mit Vorliebe in seinen Analysen untersuchte,[60] im besonderen Maße bestätigt gefühlt haben, wenn Scheffler ausdrucksvoll beschrieb, wie »Maler wie Tintoretto und dessen spanischer Geistesverwandter Greco dem neuen Stil sein gotisches Geheimnis mit herrlicher Gewaltsamkeit entrissen haben […]«.[61] Ähnlich Karl Scheffler hatte auch der Kulturpessimist Oswald Spengler mit seiner ›Schrift *Der Untergang des Abendlandes. Umrisse einer Morphologie der Weltgeschichte*‹ von 1918 bzw. 1922 ein Überblickswerk geschaffen, welches unter Bewertung kunstepochaler Entwicklungen eine

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55 Vgl. Scheffler, Karl: *Der Geist der Gotik,* Leipzig: Insel-Verlag 1917, 22: »Doch ziele ich weit über die Grenzen dessen hinaus, was in der Kunstgeschichte der gotische Stil genannt wurde. Dem Begriffe der Gotik ist Prähistorisches und Ägyptisches, Indisches und Barockes, Antikes und Modernes, Fernes und Nahes eingeordnet worden«.

56 Vgl. ibid., 17.

57 Vgl. ibid. 105ff. Namentlich zählte er folgende Kulturen oder Zentren, Gattungen und Epochen mit gotischer Charakterisierung noch auf: Babylonier (68ff.), Indien (71f.), Ostasien und China (72ff.), Römer und Etrusker (77f.), das frühe Christentum (80ff.), Miniaturmalerei (83ff.), Barock (96ff.), Rokoko (99ff.) und zusammengefasst die Strömungen im 19. Jahrhundert (102ff.).

58 Ibid., 63. Auf gleiche Weise sah er in der Stilisierung der Pyramiden gotische Formsprache in der Altägyptischen Kunst vorweggenommen (65). Auch Itten unternahm seine ersten persönlichen Analyse-Versuche anhand Werken der vorchristlichen Ägyptischen Kunst, vgl. Badura-Triska, *Tagebücher*, 75ff., fol. 85ff.

59 Vgl. Scheffler: *Geist der Gotik*, 94ff. Insbesondere in der Frühgotik erkannte er das Gotische. Für die ›klassische‹ Hochrenaissance gilt zwar, dass »das Gotische nur noch als Persönlichkeitsäußerung in einzelnen Werken sichtbar ist«, aber dennoch nachweisbar bleibt (95).

60 So z.B. bei Badura-Triska: *Tagebücher*, 378, fol. 13; 381, fol. 25; 382, fol. 27; 383, fol. 33; 385, fol. 37. Vgl. weiterführend zu El Greco: Wismer, Beat/Scholz-Hänsel, Michael (Hrsg.): *El Greco und die Moderne*, Ausst.kat., Stiftung Museum Kunstpalast, Düsseldorf, Ostfildern: Hatje Cantz 2012.

61 Scheffler: *Geist der Gotik*, 99.

Evolutionsgeschichte voraussagte, die durch alternierende Phasen von Niedergang und Wiederauferstehungsbestrebungen gekennzeichnet ist.[62] In Anbetracht der voranschreitenden Verfallserscheinungen in Kultur und Kunst rechtfertigte er seinen Kulturpessimismus und legitimierte sein Lob auf die als vorbildhaft angesehene Epoche der Gotik. Spenglers Buch hat zwar zwiegespaltene Meinungen hervorgerufen, entsprach jedoch zum Zeitpunkt der Veröffentlichung des ersten Bandes gemeinhin der Stimmung der Zwischenkriegszeit.[63] Für Johannes Itten gilt wiederum, dass die von Spengler vorgenommene Auswahl der betrachteten Epochen und Künstler gewisse Übereinstimmungen mit den von Itten behandelten Werkgruppen aufweist.[64] Ähnlich seinem Lehrer Adolf Hölzel hatte sich auch Itten mit Künstlern der italienischen Renaissance wie Leonardo Da Vinci, Tizian, Luca Signorelli auseinandergesetzt.[65] Jedoch überwog seine Beschäftigung mit der Kunst der nordalpinen Spätgotik und Frührenaissance, der er sich gerade im Zuge seiner eigenen Lehrtätigkeit in Wien und am Bauhaus intensiver und kontinuierlicher widmete. In den Augen Oswald Spenglers waren die Renaissance und ihre künstlerischen Hervorbringungen zu ihren Hochzeiten eine fehlgeleitete Erscheinung der Gotik[66] – und sogar als eigenständige Epoche nicht existent, folgte doch nach Spengler auf die Epoche der Gotik unmittelbar das Barockzeitalter, welches ebenso eine gotische Weltauffassung aufwies.[67] Den genannten Kulturtheoretikern sowie Kunsthistorikern wie Wilhelm Worringer war damit der methodischen Ansatz gemein, die Epoche des gotischen Mittelalters nicht in einer Rückschau zu deuten, sondern durch das Hineinversetzen in die Vergangenheit Gesetzmäßigkeiten für die nachfolgenden Strömungen und die Moderne abzuleiten. Johannes Itten gelang es beispiellos, die theoretischen Beobachtungen zu einer prospektiven Kunstgeschichtsdeutung in der Praxis umzusetzen. Er suchte in seinem Analyse-Kurs am Bauhaus vornehmlich die Fühlung mit der altdeutschen

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62 Spengler, Oswald: *Der Untergang des Abendlandes. Umrisse einer Morphologie der Weltgeschichte*, München: C.H.Beck 1923. Das Buch wurde in Abfolge von zwei Bänden veröffentlicht. Die Autorin hat hier mit einer Ausgabe von 1923 gearbeitet, in der beide Teile, *Gestalt und Wirklichkeit* (1918) und *Welthistorische Perspektiven* (1922), enthalten sind.

63 Itten wiederum äußert sich selbst mit pessimistischer Vorahnung zur gegenwärtigen Lage der Gesellschaft, vgl. Badura-Triska: *Tagebüche*r, 52, fol. 62.

64 Obwohl von Itten selbst die Aussage getätigt wurde, Spengler und das zitierte Buch studiert zu haben und davon auch maßgeblich beeinflusst worden zu sein, blieb eine tiefergehende Gegenüberstellung von beiden Positionen in der Forschung bisher aus. Vgl. auch den Bericht von Erich Pfeiffer-Belli in *Johannes Itten gesehen von Freunden und Schülern, Kaleidoskop. Zum Almanach*, Ravensburg: Otto Maier 1960, 11.

65 Vgl. Hadding, Katharina: »Johannes Itten und Ida Kerkovius. Eine Künstlerfreundschaft im Zeichen der Lehre Adolfs Hölzels«, in: Christa Lichtenstern/Christoph Wagner (Hrsg.), *Johannes Itten und die Moderne. Beiträge eines wissenschaftlichen Symposiums*, Materialien zur Moderne, Ostfildern: Hatje Cantz 2003, 64–83, hier 74. Vgl. auch Badura-Triska: *Tagebücher*, 24, fol. 13f.

66 Vgl. Spengler: *Untergang des Abendlandes*, 300f., vgl. außerdem auch Schefflers Einschätzung der Renaissance, siehe Anm. 59.

67 Vgl. ibid., 304ff. und überspitzt 308: »Mit Lionardo und Giorgione beginnt der Impressionismus«. Nach Spengler folgte auf die Epoche der Gotik unmittelbar das Barockzeitalter, welches demnach ebenso eine gotische Weltauffassung aufweist, vgl. 301.

Kunst, um durch Einfühlung in die Vergangenheit die Künstler und Architekten von morgen zu bilden. Für den Künstler und Kunstpädagogen Itten lag der Mehrwert der Werke Alter Meister viel höher als nur in der Erkenntnis der korrekten Anwendung der künstlerischen Mittel. Er sah in ihnen und in ihrer eigenen Darstellung des ›Sichtbaren‹ – im Sinne Riegls und Fiedlers – vielmehr eine Codierung für die metaphysischen, zeitungebundenen Geheimnisse der Welt, die es vom modernen Menschen nur aufzudecken gelte.

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Abb. 1: Ralf Rothe [Hrsg.]: *Das frühe Bauhaus und Johannes Itten. Katalogbuch anläßlich des 75. Gründungsjubiläums des Staatlichen Bauhauses in Weimar*, Ausst. kat., Kunstsammlungen zu Weimar, Weimar, Ostfildern-Ruit: Hatje 1994, 6.

Abb. 2a: Badura-Triska: *Tagebücher*, 275, fol. 62a.

Abb. 2b: ©Germanisches Nationalmuseum, Foto: Georg Janßen.

Abb. 3a: Badura-Triska: *Tagebücher*, 356, fol. 144f.

Abb. 3b: Heidrich, Ernst: *Die Altdeutsche Malerei. 200 Nachbildungen mit geschichtlicher Einführung und Anmerkungen, Die Kunst in Bildern*, Jena: Eugen Diederichs 1909, Abb. 137.

Abb. 3c: Heidrich, Ernst: *Die Altdeutsche Malerei. 200 Nachbildungen mit geschichtlicher Einführung und Anmerkungen, Die Kunst in Bildern*, Jena: Eugen Diederichs 1909, Abb. 134.

Abb. 4a: Itten, Johannes: *Gestaltungs- und Formenlehre. Mein Vorkurs am Bauhaus und später*, Ravensburg 1963, Abb. 181.

Abb. 4b: Ziermann, Horst: *Matthias Grünewald*, München/London/New York: Prestel 2001, Abb. 108).

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Olivier Gaudin

Toward an Environment-based Pedagogy of Creativity: Learning from the Bauhaus and Dewey's Pragmatism

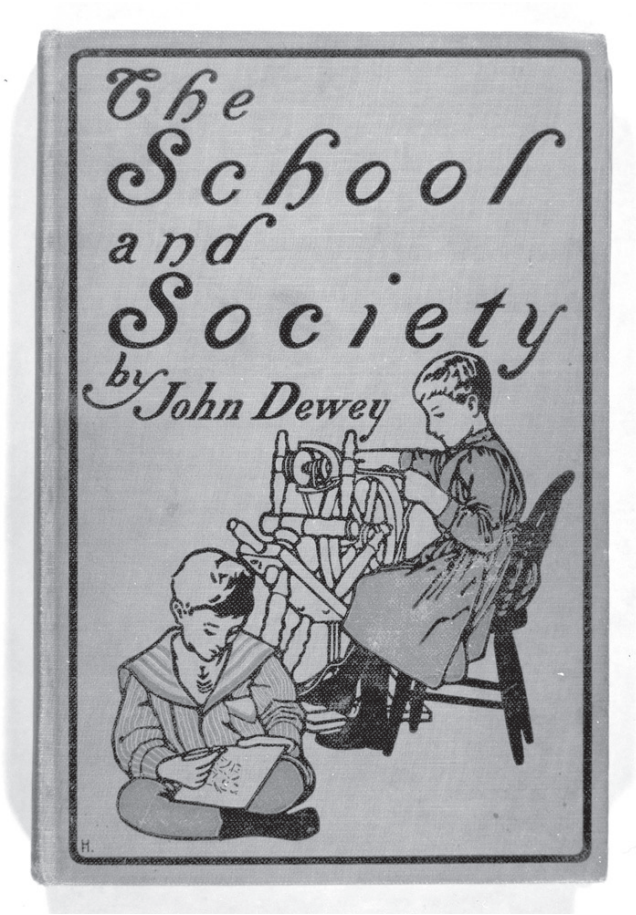

Fig. 1: First edition of *School and Society*, by educator John Dewey (1899)

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Students, teachers, and practitioners of design disciplines have still much to learn from the Bauhaus's successive pedagogical experiments. From the Weimar of 1919 to 1930s Harvard and Chicago, their programs famously attempted to bypass disciplinary boundaries through the organization of collective workshops on materials, classes to teach craft techniques such as drawing, weaving and carving, and practical exercises on color, composition and form. It is well known that all successive Bauhaus pedagogies focused on manual work, shared tasks and creative imagination. However, these attempts have been the subject of various interpretations and narratives throughout the school's history, especially during the Dessau period and after Gropius left the Bauhaus in 1928. The school's pedagogy, following the new ideological standpoint of the teaching staff under the guidance of Hannes Meyer, shifted toward cooperative, social and reformist concerns, while maintaining and even tightening relations with entrepreneurship and industry. From 1928 onward, new forms of pedagogical cooperation between artists' skills, craftmanship and scientific knowledge (including the social sciences) were envisioned and tested. The emphasis on creativity through cooperation and collective work was arguably enhanced and enlightened by this reorientation.[1]

The scope of this chapter is not to contribute to the core of this fascinating history, especially as I am no historian myself. Rather, I will seek to sketch a parallel between some central aspects of the Bauhaus pedagogy (especially during the second period inaugurated with the arrival of Meyer, without wishing to overstate the significance of this turning point) and another intellectual tradition, which thrived during the same decades on the other side of the Atlantic: philosophical pragmatism.

American pragmatism emerged as an intellectual tradition around the turn of nineteenth and twentieth centuries among a few philosophers and psychologists.[2]One of the most distinctive features of this movement of thought is its carefully crafted and widely discussed approach to education and pedagogy, based on multiple experiments led especially by John Dewey and George Herbert Mead. Both were trained psychologists as well as philosophers, and taught at the recently founded University of Chicago (before Dewey moved to Columbia University in New York, in 1904), where they trained teachers. Dewey inaugurated a »Laboratory School« within the University, still in activity to this day. Through an impressive series of courses, conferences, syllabi, press articles and books, he and Mead developed a flexible conceptual and methodological framework capable of capturing, describing and improving education at different scales.

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1 See Stiftung Bauhaus Dessau: *Bauhaus, Ausgabe 7: Kollektiv*, Leipzig: Spector Books 2015, 32–39; Stiftung Bauhaus Dessau/Möller Werner (Hg.): *Das prinzip coop – Hannes Meyer und die Idee einer kollektiven Gestaltung*, Leipzig: Spector Books 2015.

2 Charles Sanders Peirce (1839–1914), William James (1842–1910), John Dewey (1859–1952) and George Herbert Mead (1863–1931) are considered as the »classical pragmatists«. For a general presentation of philosophical pragmatism, see Legg Catherine/Hookway Christopher: »Pragmatism«, *The Stanford Encyclopedia of Philosophy* (Spring 2019 Edition [online]), Edward N. Zalta (ed.).

In the first section of this paper, I shall recall how Dewey emphasized education's environmental and social conditions, describing learning as a shared and situated activity; for him, education constitutes part of the integrated flow of experience. These conditions form the context of any individual or collective experience – including work, teaching, and pedagogy itself. Human activities and interactions are anchored in these social and ecological circumstances. The second section will draw a parallel between pragmatist views of education and the Bauhaus pedagogy, which articulated multiple scales of experience in the training of students. The practical purpose of the school brings it even closer to the pragmatist stances. In examining the content and the limitations of this parallel, my third section will point out the similarities between the Bauhaus's teaching programs (between 1919 and 1932) and classic pragmatist views of education (as they appear in Dewey's and Mead's writings). I will show that both pedagogical approaches were environment-based and will examine how they both fostered creative imagination through concrete applications. My conclusion elaborates on this parallel: in comparing our own context – surrounded and pervaded by technical objects, infrastructures and procedures – I argue that we could take inspiration from this parallel in order to improve our pedagogical approaches to the disciplines of design and planning.

A philosophy of pedagogy

> I believe that education, therefore, is a process of living and not a preparation for future living.[3]

As a trained psychologist devoted primarily to matters of pedagogy, transmission and education, John Dewey developed an inspiring experience-based conception of these processes, understood in their broadest sense. He never ceased working on a »new philosophy of education […] committed to some kind of empirical and experimental philosophy.«[4] He was engaged in the reformist movement of »progressive"«education, which led to the opening of an impressive number of experimental schools throughout the United States. During the years when the original Bauhaus was established, in the 1920s, Dewey continually argued for a close examination of contextual conditions of education, intended as a crucial and defining step of both personal and collective development within society. His approach to education and pedagogy, based on social psychology and years of experimental practice, emphasized the notions of interaction and continuity. It was thus essentially social and ecological, and relied, to a large extent, on Dewey's cooperation with his colleague at the University of Chicago, the social psychologist George Herbert Mead. Dewey's standpoint on the question of education was also tightly connected to his psychological, anthropological and political views, making educational issues the

3 Dewey, John: »My pedagogical creed« [1897], in: Larry A. Hickman/Thomas M. Alexander (eds), *The Essential Dewey, volume 1: Pragmatism, Education, Democracy*, Bloomington: Indiana University Press 1999, 230.

4 Dewey, John: *Experience and Education* [1938], New York: Touchstone 1997, 25.

nexus of his experience-driven thought. In order to enlighten its possible connections with the Bauhaus school, let us briefly examine the main insights of Dewey's pedagogy.

For this American philosopher, »transactions« with a moving environment are a constant and unifying factor of human experience.[5] Unlike basic causal determinism, they involve reciprocal interaction, in a circular fashion: a living organism actively modifies the shape of its surroundings by responding to their salient properties. While it is being affected by them, it also makes itself sensitive to certain qualities of the environment, which increases its possibilities of perception and action. This situation makes education a »biological necessity« and a »vital process.«[6] Human beings, in particular, dramatically transform their environment: in most cases, human flourishing involves deep alterations of their physical and social surroundings. In that coordinated development, physical space and material topography count just as much as the living web of social relationships in which any individual existence takes place. One of the most important features of Dewey's approach to education, then, is to characterize its situation in detail, in order to contextualize the activities and experience that we call »pedagogy« within a concrete »process of living.« In his eyes, pedagogy should always be problem-driven, in order to foster active and cooperative responses by the pupils or students.

Such orientation can be called a social ecology of education. This perspective sheds light on the practical goals and means of education and training. More precisely, it shows that ends and means cannot be separated from each other – just as intellect and affect, logic and psychology, or knowledge and action should not be segregated in the first place in processes of education.

Dewey's holistic view holds that the success of pedagogical processes relies on the active participation of the pupils themselves. Like any other social activity, education depends on cooperation and association. A successful pedagogy should therefore include ways of making teachers and students cooperate on practical tasks, in order to make possible the emergence of a shared intelligence and coordination of actions. Since an experience can be more or less educative, or even »mis-educative,«[7] the pedagogue's task is to develop the skill of preparing and arranging cumulative sequences of experiences, in order to make them fruitful and formative for students and apprentices.

What are the concrete means of achieving this sort of cooperation? In order to avoid idealistic or wishful conceptions of »spontaneity,« Dewey argues in favor of a contextual and experimental approach. He defends the necessity of defining methods and

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5 Ibid., 43. See also, by Dewey: *Reconstruction in Philosophy*, New York: Henry Holt 1920; *Experience and Nature* [1925], London: George Allen & Unwin 1929.

6 Dewey, John: *Democracy and Education* [1916], Hazleton: Pennsylvania State University, Electronic Classics Series, 2001, chapter 1.

7 Dewey: *Experience and Education*, 25. See also: Ibid., 37.

plans, »criteria of experience«[8] instead of mere abstract ideas and principles. Thus, the pedagogue should work primarily on the surrounding material conditions of the child's experience and improve the shared control, through direct manipulation, of these conditions. His or her role is to carefully "select" the "material" presented for a given activity and "determine the environment of the child"[9] in the most incentivizing and suggestive way. The process remains open-ended, as it should help reveal the »power, capacity, or attitude«[10] of children, in »series of situations« made by »interactions.«[11]

As a broader consequence, in Dewey's eyes, the plea for a public education only makes sense in relation to what goes on outside of schools. His conception of education as rooted in a substantial philosophy of experience even becomes a strong element of justification, in his eyes, of a democratic society, to the extent that it may foster a comparatively »better quality of experience«[12] than other political regimes. Reciprocally, democracy itself could not be sustainable if it was not considered a continuous educative process – a sort of uninterrupted pedagogical experiment led by citizens themselves on their own attitudes, choices and actions.[13] The ultimate meaning of education seems to be to maintain collective intelligence through vivid interactions and improve shared social control over changing situations, by reinforcing pupils' or students' curiosity and initiative.

Learning scales: from »the school as a special environment«[14] to urban planning

During the same period, on the other side of the Atlantic, Walter Gropius (succeeded by Hannes Meyer after 1928) and his colleagues actually built an original social and spatial learning environment at the Bauhaus. They shaped a specific learning and living atmosphere in their avant-garde school. The Bauhaus's innovative pedagogy – a visionary interdisciplinary program – was constantly modified and improved over the years, building on lessons drawn from the experience itself. Since the components of

8 Ibid., 33 sq.

9 Dewey: »The Child and the Curriculum« [1902], in: Hickman/Alexander: *The Essential Dewey*, 245. See also Dewey, *Experience and Education*, 40, 45.

10 Ibid.

11 Ibid., 43.

12 See for instance ibid., 34–35. Also see Steven Fesmire: *Dewey*, London: Routledge 2015, 173–180.

13 Dewey, John: »Creative Democracy – The Task before us« [1939], in: Boydston, Jo Ann (ed.), *The Later Works*, Carbondale: Southern Illinois University Press 2008, vol. 14. See also Westbrook, Robert B.: *John Dewey and American Democracy*, chapter 10: »Philosophy and Democracy«, Ithaca: Cornell University Press 1991, 319 sq.

14 Dewey: *Democracy and Education*, 23.

this pedagogy are well-documented,[15] I shall instead focus on several features shared by both pragmatist views and the Bauhäusler's pedagogical innovations.[16]
In close collaboration with Gropius, the »masters« Johannes Itten, László Moholy-Nagy and Josef Albers, successively, were in charge of the famous »preliminary course« – the Vorlehre. In many ways, this program seemed to experiment with pedagogical intuitions that recall Dewey's principles, first and foremost the continuity and quality of experience,[17] the intensity of interactions, and the virtues of experimentation. As Albers phrased it in »Creative Education,« a public talk he gave in 1928:

> The best education is one's own experience. Experimenting surpasses studying. To start out by »playing« develops courage, leads in a natural manner to an inventive way of building and furthers the pedagogically equally important facility of discovery […]. While experimenting, the students often recognize that presumed innovations are already in existence. But there is no harm in that, because the end effect is the experience which the student has gained for himself and hence is a possession, for he has learned and not merely been taught.[18]

Beyond this general confidence in experience, the pedagogy strived to articulate its different scales and scopes into a unified process of learning. Manual work and training were integrated into this broader process. In Gropius's eyes, designing a new educational institution involved paying increased attention to the school's built environment – from student housing or the dining hall to new »classrooms,« conceived as spacious open studios; and to the corridors, stairs, doors and windows. The Dessau building helped to organize and stage educational experience as a shared social activity. The idea of cooperation, central to Dewey's progressive views, could not have been more clearly considered than Gropius did at the Bauhaus. The »simplification,« »organization,« and »order« in pedagogy often called for by Dewey[19] find a literal echo in the Dessau building. Significantly, the influence of American modernism in art and architecture (starting with its assumed functionalism and general »state of mind«) was a prominent and important influence on Gropius himself.[20]
»We never educate directly, but indirectly by means of the environment.«[21] As if to amplify the principles tested by Dewey in his experimental »Laboratory School« at

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15 See Richard, Lionel: *Encyclopédie du Bauhaus*, Paris: Somogy 1985; Wingler, Hans Maria: *The Bauhaus: Weimar, Dessau, Berlin, Chicago*, Cambridge: MIT Press 1993; Fiedler, Jeannine/Feierabend, Peter (Hg.): *Bauhaus*, Köln: Könnemann 1999; Coll.: *Bauhaus, a conceptual model*, Berlin: Hatje Cantz 2009; *L'esprit du Bauhaus*, Paris: Les Arts décoratifs/Hermès 2016.

16 Looking for their probable common sources in nineteenth-century theories of pedagogy would be yet another way of bringing them closer – beginning with the declared influence that the Swiss social pedagogue Johannes Pestalozzi had on Hannes Meyer, for instance. (See Richard: *Encyclopédie du Bauhaus*, 13–22.)

17 »Everything depends upon the quality of the experience which is had.« (Dewey: *Experience and Education*, 27).

18 Albers, Josef: »Creative Education« [1928], in: Wingler: *Bauhaus*, 142.

19 Dewey: *Experience and Education*, 30.

20 See Breuer Gerda/Jaeggi Annemarie (Hg.): *Walter Gropius Amerikareise 1928*, Berlin/Wuppertal: Bauhaus-Archiv/Bergische Universität Wuppertal 2008.

21 Dewey: *Democracy and Education*, 23.

the University of Chicago between 1896 and 1903,[22] the Bauhaus classrooms were actual workshops, engaged in coordinated activities aimed at manipulating, producing and transforming material objects (the following section will consider these activities in detail). Gropius even hoped to turn the school's workshops into »laboratories« where prototypes could be designed with a view to larger-scale industrial production. Students' inventiveness, creativity, and exploration were guided by the judgment of the »masters« – first on the basis of their own personal experience, but also according to technical criteria for machine production. Indeed, the directors (Gropius and Meyer especially) expected to establish closer connections with the emerging standards of industrial design (a tendency reinforced under Meyer's guidance).

As in any educational institution, encouraging creative imagination had nothing to do with advocating an attitude of laissez-aller or disorder; it involved strict attendance, appraisals and evaluations, counseling, and guidance. The »free painting« class, for instance, opened space for studying the elements of graphic representation – forms, colors and composition – through constantly repeated exercises and applications.[23] It was both open-ended and carefully directed, since its purpose was to assemble pictures or studies. As a rule, direct interactions between teachers and students were constant and included other students. This overall program of learning through cooperative work could only be made possible through shared attitudes and intentions, as well as a coherent organization of the physical space of the school building itself.

Designing the school was not limited to organizing space. It also meant structuring time through the periodization of study. The exercises developed at the Bauhaus followed, in principle, a sharply defined curriculum – resulting in the famous »diagram for the structure of teaching at the Bauhaus« designed by Gropius in 1922. Though this schema is striking for its centripetal and integrative dynamic,

> it was by no means a question of recapitulating any actually existing program of studies, but instead of a representation that had been reduced to an abstract essence with an affirmative character. Clustered in the schema and concentrated to the point of graphic visual expression and general validity were only the essential aspects; it visualizes a principle whose abbreviated formulation endows it with ideological force.[24]

Could pedagogy free itself from ideology? Gropius's curriculum diagram fulfilled, at least, the task of visually expressing the coherence of thought, imagination, and action that was the ambition of the Bauhaus program over the whole course. It increased the motivating disposition of both teachers and students, since it provided a useful unified image of a complicated and uncertain process; the real working conditions at the school, especially during the first years, were in fact quite tough.

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22 Mayhew, Katherine Camp/Edwards, Anna Camp: *The Dewey School: The Laboratory School of the University of Chicago, 1896–1903*, New York: Appleton 1936.

23 Badura-Triska, Eva: »Freie Malerei am Bauhaus«, in: Fiedler/Feierabend, *Bauhaus*, 160–171.

24 Jaeggi, Annemarie: »Bauhaus: A conceptual model«, in: *Bauhaus: A conceptual model*, 15–16.

For eight years, the architecture section could not even be opened and remained a distant event on the horizon – even though it was mentioned in the very first sentence of the Bauhaus's original manifesto. However, the pervasive energy carried by such documents (along with other similar »programs of study« edited by the Bauhaus in 1928, 1932 and 1933, for instance) is still conveyed to readers in a convincing way. They exhibit a strong practical commitment and a catching desire to optimize collective activity through teamwork. In a way that echoes, to some extent, the »somber spirituality«[25] of Oskar Schlemmer's famous pictorial composition (Bauhaus Stairway, 1932), the schematic programs embody the enduring quality of expressivity that singles out the Bauhaus pedagogy and history. This distinctive quality helps us to understand how and why its influence extends beyond the usual dimension of a method or a school, bringing it closer, perhaps, to an actual philosophy of education through shared experiences.

Beyond the school itself, Gropius's aim was, eventually, to address the whole context of mass industrialization – including working and housing conditions, as well as urban and regional planning. This explains why his views on »handicraft« and manual instruction may appear ambivalent. Gropius never intended craftsmanship, the study of materials, and the design of manufactured objects to be ends in themselves, but instead viewed them as necessary steps within the teaching and learning process, at a point in the curriculum between the »preliminary course« and the specialized workshops. With regard to corporate capitalism and big industry, he sought to hold the practical and efficient standpoint of a pioneering educational institution capable of training a new, comprehensive type of architect and planner. This ambition appears in 1919 as well as in several unambiguous passages of his 1965 retrospective work:

> I saw that an architect cannot hope to realize his ideas unless he can influence the industry of his country sufficiently for a new school of design to arise as a result […] This idea of the fundamental unity underlying all branches of design was my guiding inspiration in founding the original Bauhaus.[26] [...] My idea of the architect as a coordinator – whose business is to unify the various formal, technical, social and economic problems that arise in connection with building – inevitably led me on step by step from study of the function of the house to that of the street; from the street to the town; and finally to the still vaster implications of regional and national planning.[27]

This cumulative »idea« at the heart of the organization of studies is thus anchored in the principle of articulating scales of »problems« and the related tasks of future architects. But how was this general intention transposed in the existing Bauhaus pedagogy? Interestingly, by designing the curriculum itself as a successive integration of different scales of associated work and learning-by-doing. In practical terms,

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25 According to Lilian Tone, who throws an interesting light on the circumstances and purpose of the painting (in: *Bauhaus: A conceptual model*, 312). See also Wagner, Christoph (Hg.): *Esoterik am Bauhaus, Eine Revision der Moderne?*, Regensburg: Schnell & Steiner 2009.

26 Gropius, Walter: *The New Architecture and the Bauhaus*, Cambridge: MIT Press 1965, 48–51. See also: Ibid., 52–54.

27 Ibid., 98.

this was achieved by organizing the school and the curriculum as a specific material environment, controlled by cooperation. The next section will attempt to make this connection more explicit, specifying the reasons for a closer comparison of the Bauhaus teaching program with pragmatist educational notions.

Associated pedagogies of participation: Redesigning education in context

What sort of evidence might prove the affinity between the Bauhaus's teaching programs (between 1919 and 1932) and classic pragmatist views of education, as they appear in Dewey's and Mead's writings? Two main features, essentially: the definition of practical methods for varying and revising teaching activities within educational institutions; and their consideration of a broader social environment or milieu, beginning with industrialization and urbanization. Geographical and cultural distance notwithstanding, the pragmatist pedagogues and the masters of the Bauhaus provided similar answers to the same contemporary problems – anchored in the respective contexts of American academia and of a German professional training institution. On the one hand, Mead and Dewey – committed to reforming school systems – proposed a philosophical »reconstruction« of education according to progressive views, while they tested them through situated learning experiments (in particular the »Laboratory School«). On the other hand, the Bauhäusler put a »conceptual model« into practice as they were inventing and revising it. They explored innovative pedagogical situations and changing working objectives and methods as they tested them through experimentation; this lasted for almost fourteen years, thanks to continuous revisions and cooperation, often conflictual. The Bauhaus made possible new sorts of social interactions between students and teachers, taking place in a specifically designed material environment that functioned like an open laboratory.

These two legacies have more in common than casual similarities: they share an idea of education founded on lively participation, dynamic organization, and collective intelligence – instead of imitation, passive accumulation of knowledge, or disciplinary formatting by a closed system. They were also attentive to affective and emotional states. The pragmatists built their conceptions upon experimental psychology and actual situations of interactions; the Bauhaus advocated a continuous and inclusive approach to human existence – to the point that the first years of the institution were heavily tainted by a diffuse mysticism (yet, in a quite different tone and color, Meyer's 1929 text on »Bauhaus and society«[28] sketches out a highly encompassing view of existence as well).

Ultimately, both developed associated pedagogies that conceived education as a collective activity, capable of turning its spatial and social environment into a direct

28 Meyer Hannes: »Bauhaus und Gesellschaft«, in: *Bauhaus. Vierteljahr-Zeitschrift für Gestaltung* 3 (1929) 1, 2 (reprinted in: Stiftung Bauhaus Dessau/Möller, Werner (Hg.): *Das prinzip coop – Hannes Meyer und die Idee einer kollektiven Gestaltung*, Leipzig: Spector Books 2015).

resource. »The very process of living together educates,[29]« Dewey wrote in 1916, reminding the reader that conservative schooling institutions might forget this fact, in both its internal and external meanings. Since education unfolds within broader social contexts, educators should display – and pass on to their students – a meticulous attention to complex and dynamic environments. One should learn to deal practically with the rapidly emerging world of industrial cities, factories, sites of production, movie houses, luminescent store windows, and press and printed material aimed at the masses. This idea was clearly addressed by the Bauhaus's successive experiments, especially during the years of Moholy-Nagy's teaching.

Concrete applications took the form of repeated exercises. At the Bauhaus, classes fostered learning by doing, through manipulation of material objects and the study of raw materials. They also reinforced interactions between students through group study and teamwork (the principle of associating two different »masters« during workshops being a key element from the beginning). In each workshop, students were progressively involved in every step of the conception, design, and production of objects or prototypes. This integratory tendency avoided artificial divisions and segmentations: between theory and practice, conception and application, matter and form, intellect and emotion, etc. It also organized the continuity of training, from the generalist preliminary course to more specialized workshops. Even then, open-endedness avoided any partitioning of the pedagogy:

> The characteristic of the Bauhaus pedagogy was that every Bauhäusler could participate in the different fields of study, in order to be confronted with other problems. That is, every student could contribute his thought to every subject.[30]

No separation between topics, porosity between classes, constant interactions among students who exchanged views on concrete issues and tasks: every aspect of these pedagogical principles would obtain the approval of pragmatists, who constantly emphasized that »there is no such thing as educational value in the abstract.«[31] One might also point out that both filiations insisted that students should acquire attitudes and dispositions not in a disciplinary and codified way but rather in a dynamic and practical sense. They aimed to help people become autonomous, that is to say »responsive« and capable of getting the most out of their own experiences, instead of having them mechanically repeat segmented activities.

Turning to Dewey's philosophy of education and Mead's social psychology,[32] one could further explore the echoes and proximities between pragmatist views and the Bauhaus pedagogy. In particular, the flourishing of creative imagination involved in

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29 Dewey: *Democracy and Education*, 10.

30 Kranz, Kurt: »Pädagogik am Bauhaus und danach«, in: Eckhard Neumann (ed.), *Bauhaus und Bauhäusler. Erinnerungen and Bekenntnisse*, Köln: DuMont 1985, 340.

31 Dewey: *Experience and Education*, 46.

32 Mead, George Herbert: *Mind, Self and Society*, Chicago: University of Chicago Press 1934; Mead G. H., *The Philosophy of the Act*, Chicago: University of Chicago Press 1938.

acknowledging the central role of play, amusement, and humor, affects and emotions – the famous parties held at the Bauhaus school were the most visible emblems of this idea.[33] Emotional states constitute the living heart of the processes that can make a successful education – that is, one that may enrich the quality of a person's experience and his or her capacity to take an interest in and benefit from his or her own past, present and future experiences.

Accordingly, the proximity of these two intellectual heritages is far from limited to promoting manual work and cooperation (which were already a classic element of nineteenth-century reformist or progressive pedagogy). A key factor of their shared originality lies in their common attention to the social context and the practical stakes. Organizing a pedagogical program capable of fostering creativity and imagination not only presupposed careful attention to the school's environment, it also involved a full awareness of what was going on outside the institutions. »I believe that knowledge of social conditions, of the present state of civilization, is necessary in order properly to interpret the child's powers«[34]: considering education as a transversal and diffuse process, Dewey and Mead insisted on understanding children from a socio-psychological and anthropological standpoint. But this was true for the Bauhaus as well. The orientations taken at Dessau toward an integrated »education of vision« from multiple perspectives (coordinated by Moholy-Nagy but also involving Kepes, Kandinsky, Klee, Schlemmer, Breuer, and Albers) confirmed the original tendency to address human experience as a living whole. At the same time, Meyer's guidance insisted that the attention to context should include, primarily, social needs and concerns. In »Bauhaus and society,«[35] he emphasized that design must extend to environmental design and »landscape.« Concrete applications of this idea are visible, for instance, in the project realized in Breslau, but they also became pervasive in teaching, from Albers' renovated Vorkurse on structure and materials to the program of conferences held at the school.

This orientation toward broader social and political concerns represents another possible convergence of views between the Bauhaus and pragmatist perspectives. Both share democratic concerns and enthusiasm for cooperation; a critique of alienating work and dispossession of sensory experience. On the one hand, they reject academic dualism, whether in philosophy or in art and architecture. On the other hand, they direct their pedagogical attention toward technique and industry, the press and the media, and advertising. Indeed, Meyer was not referring to a fictitious »nature« when he mentioned »landscape« but rather exhorted students to examine actual living conditions in contemporary society, which presupposed »reading the newspapers«[36]: staying aware of one's current changing environment.

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33 See »The Bauhaus Celebrates: Parties as Communal Art«, *Bauhaus, Ausgabe 7: Kollektiv*, 32–39.

34 Dewey: »My pedagogical creed«, 230.

35 Meyer: »Bauhaus und Gesellschaft«.

36 Kranz: »Pädagogik am Bauhaus und danach«, 340.

Meanwhile, Dewey insisted that »we live from birth to death in a world of persons and things which in large measure is what it is because of what has been done and transmitted from previous human activities«[37], which recalls that this attention to the environment should extend to the shared historical past, in order to anticipate the long-term consequences of our own decisions and actions.

Conclusion: Our present and future schools

These affinities between pragmatism and the Bauhaus may inspire our own syllabi for training designers, architects and landscape architects. In order to foster cooperative dispositions and creative imagination, pedagogues should primarily be attentive to the social and environmental conditions of shared experience, both within and outside schools. At the urban and suburban scales, (re)designing built space as a series of communicating and open-ended places, able to accommodate many different uses, would appear to be the most important task to achieve. Within our schools, how can we reinforce creativity and interdisciplinary applications? One possible way is to emphasize, as the pragmatists and the Bauhäusler did, the need to improve the environmental conditions of experience in education, both materially and socio-psychologically. Approaching education from an interactionist and ecological standpoint highlights the need for active participation, exchanges, and confrontation of the technically mediated environments we inhabit. This is why continuous learning, or adult education, is also a crucial factor to consider. Processes of education do not have limits. Reflecting on the complexity of our perceptions and attitudes regarding these conditions, and regarding the people with whom we grow, exist and work, is a priority for educators who seek to foster the creativity of educational experience – their own as well as that of the students they are guiding.

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37 Dewey: *Experience and Education*, 39. See also »Social as a Category«, *The Monist*, 1928.

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Fig. 2: Activity of moulding terracota figurines, class at the University of Chicago Laboratory School, undated (probably early 1900s)

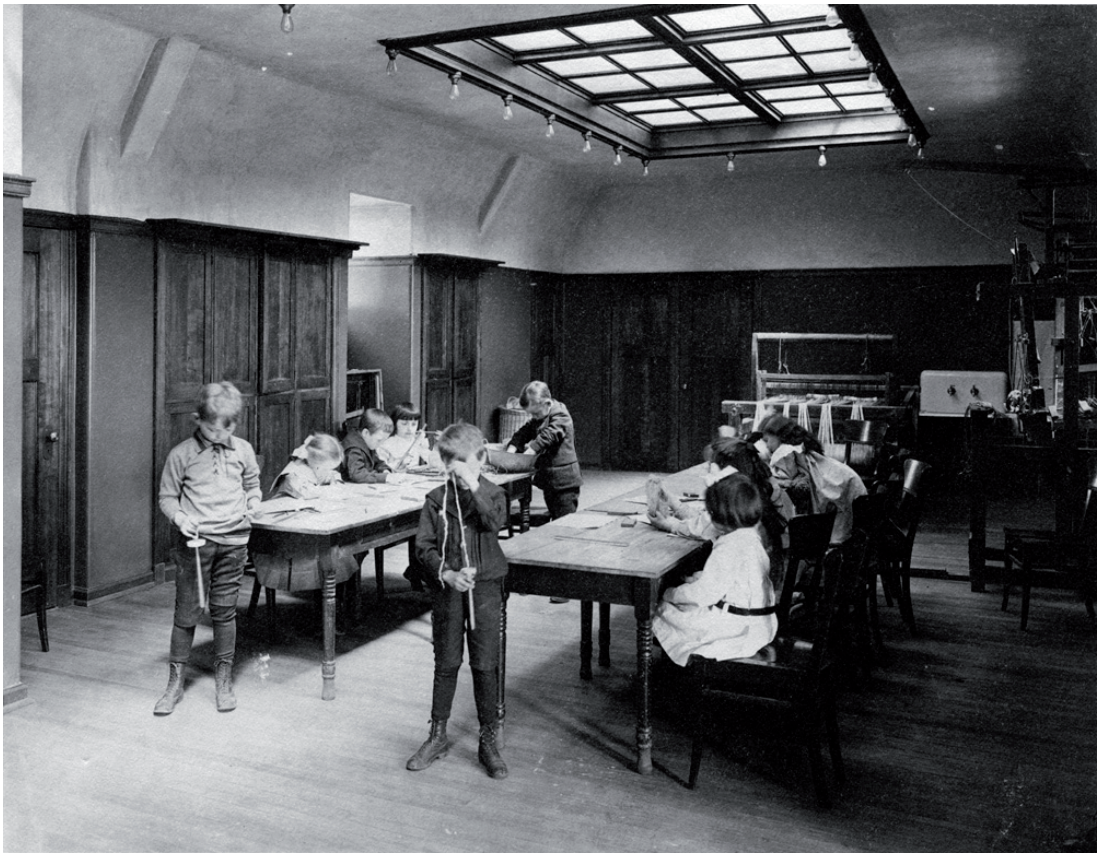

Fig. 3: Manual activity, class at the University of Chicago Laboratory School, undated (probably early 1900s).

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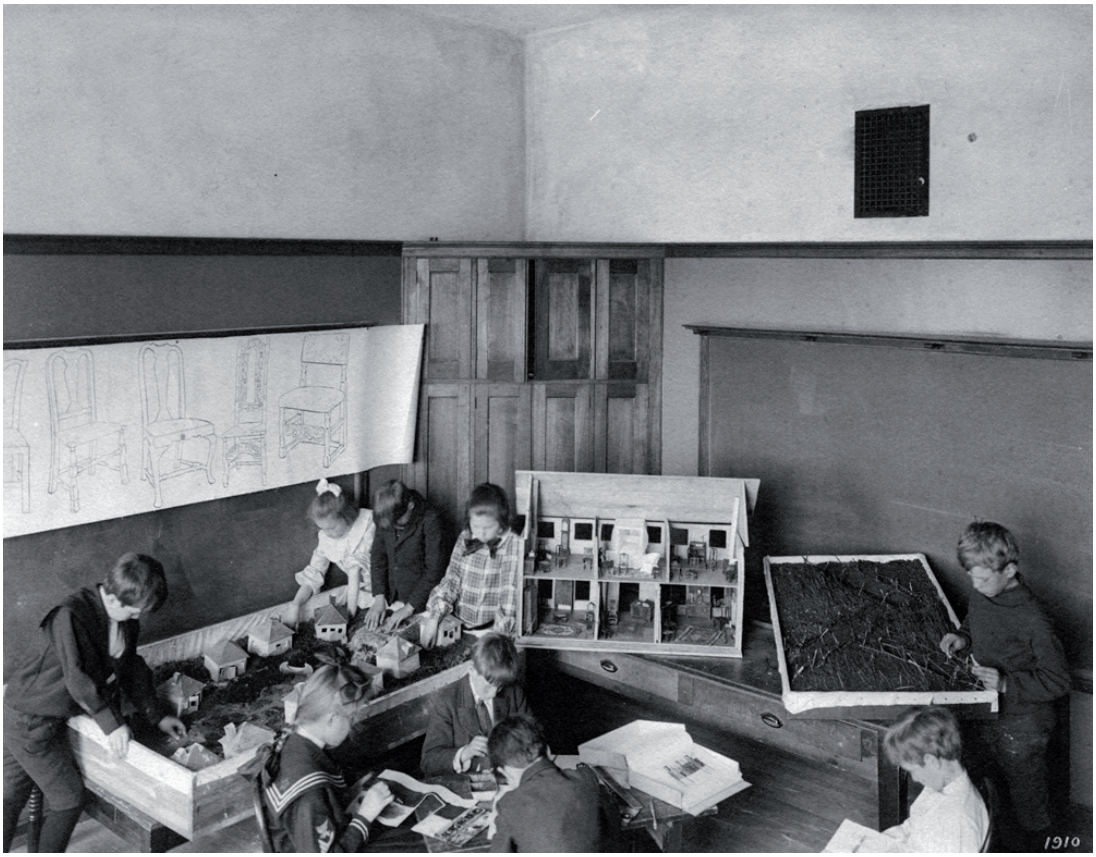

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2. Doing Design: Theories of A Practice

Alexandra Matz

Looking Ahead by Looking Back: The Role of Research in Design for Creativity, Inspiration and Innovation – A Case Study

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Introduction

Walter Gropius stated that »only the artist is capable of breathing a soul into the inert machine-made object«.[1] Today, artificial intelligence (AI) and machine learning (ML) drive technological development, whereby machines are trained through the data of economically successful examples of art, craft and design. Alternatively, the machines are self-learning, and create their own novel designs, albeit to date based mostly on artefacts created by human artists or designers. While there might not yet be a definable soul in the devices we use, algorithms and agent-based tools have worked their way into the daily life and design processes of creative practitioners and other professionals. A common use of technological support within the design process is to produce visual inspiration for idea generation and design development. Visual research is an important element of the design process in which designers investigate existing designs, artworks, imagery and materials from a variety of media and other sources. With the rise of digital technologies, the focus of inspiration gathering has developed from browsing bookshelves and other non-digital media to inspiration gathering via visually-focused social media. While users of these sites or tools can search platforms using tags or keywords, or follow certain designers to receive high quality examples of design in almost endless numbers, this often leads to direct idea development, omitting the step in which detailed research could add to inspiration and idea generation.
Based on the evaluation of two university design assessment projects as study cases, this chapter endeavours to ascertain whether upfront evaluative, iterative research in design will allow a broader spectrum of ideas, and thus a more focused design phase. The results evaluated in this article are assumed to be valid for research conducted with or without the help of technology, as they describe the importance of primary and secondary research in design, as well as the interconnectivity of research with creativity, inspiration and innovation.

Connecting research in design, creativity, inspiration and innovation

Numerous scholars have reported on research activities in design, design research, creativity, inspiration and innovation. The goal of this article is not to add further definitions, but rather to exemplify the connections between them, and to explain their advantages through the use of a case study.

o Research in Design and Design Research
According to Bayazit, the »objectives of design research are the study, research,

1 Forgács, Éva: *The Bauhaus idea and Bauhaus politics*, Budapest/London 1995: Central European University Press, 10f.

and investigation of the artificial made by human beings«.[2] The roots of design research can be found in attempts to methodise design by De Stijl and by the Bauhaus school's design education in the 1920s.[3] From the mid-1960s, the evolution of design research increasingly considered human factors, believing that »the designer has to start analyzing the human behavior.«[4] This attitude was key to the development of methods used in Human Factors, Human Computer Interaction, User Experience Design (specifically User Experience Design Research or User Research) and Service Design. These fields of study, as well as the Design Thinking methodology and industry practitioners, extended the term design research to include human-centred research activities (primary and secondary research), while academia uses a more scientific definition. Grocott would have the academic approaches to design (research-led design) and design practice (design-led research) inspire and benefit from each other, and accordingly proposes a framework that »seeks to model a critical approach to researching that draws on the core abilities of a designer.«[5]
In this chapter the extended understanding of design research is applied, which includes the needs and desires of a product or service's potential users and consumers. It is a generative approach to research in design, »asking questions before coming up with design ideas«.[6] While in both described case studies, extensive design research was performed, many design projects do not comprise detailed design research activities. Yelavich quotes Grocott: »The problem was that the majority of practitioners do not perceive research as relevant to the professional practice of design«.[7] One reason design research is often omitted is that conducting research takes time: sources must be found for secondary research, primary research must be planned and conducted, data must be consolidated, and the designer must inform him- or herself about the various contexts and boundaries of the brief.[8] While it is certainly well invested for a design's success (MacKinnon describes the benefits of doing research

2 Bayazit, Nigan: »Investigating Design: A Review of Forty Years of Design Research«, in: *Design Issues* 20 (2004) 1, 16.

3 Ibid., 17.

4 Ibid., 20.

5 Grocott, Lisa: *Design research & reflective practice: the facility of design-oriented research to translate practitioner insights into new understandings of design*, Doctor of Philosophy (PhD), Melbourne, Australia 2010, 224.

6 Matz, Alexandra/Muraspahić, Ena: Start with questions, not ideas! Why design research matters (15 June 2017) 2017, http://arhiva.designdistrict.hr/program2017/start-with-questions-not-ideas-why-design-research-matters/ [12 March 2019].

7 Yelavich, Susan: Designerly Ways of Researching: Re-thinking the Design Process. Lisa Grocott's Practice-led Research as a Model for Design Education 2013, https://designpracticesandparadigms.wordpress.com/2013/06/03/designerly-ways-of-researching-re-thinking-the-design-process-lisa-grocotts-practice-led-research-as-a-model-for-design-education/ [16 March 2019].

8 MacKinnon, Kim: »Context matters: The value of analyzing human factors within educational contexts as a way of informing technology-related decisions within design research«, in: *International Journal of Computer-Supported Collaborative Learning* 7 (2012) 3, 382.

with a higher relevance and usefulness[9]), time might be scarce in some projects, due to resource constraints or time pressures, or other expectations from the client. This case study aims to add to the body of knowledge by enabling practitioners and the teaching professions to demonstrate the added value of in-depth design research to their stakeholders or students. It will outline how time invested in research will add to the design outcome by fostering creativity, widening the horizon of inspiration and bringing new ideas and solutions to the surface.

o Creativity

Creativity has been widely discussed in the field of design, and reports indicate many contributing factors, such as creative environments and diverse teams. This article uses Tapio Takala's definition of creativity: »a person's ability to produce something new and unexpected. […] Essential in creativity is that something recognizable is produced and that the result is novel«.[10] Takala adds that the start of a creative process is based on »strong internal motivation«,[11] and that a practitioner will be rewarded with »gratification and satisfaction achieved from successful comprehension«.[12] This is an important connection to design research: an understanding of materials and contexts can only be achieved when they have been researched. MacKinnon refines the importance of context by highlighting that »design research is much more sensitive to the nuances of context than traditional experimental approaches.«[13] Context has been especially important in the approach taken for the case study due to need due to the need to understand the wider historical, political, social and economic contexts, as well as the intricate crafts involved.

o Inspiration

Inspiration is key to creating novel designs based on as many ideas as possible, which are later refined in the design development phase. Gonçalves et al. quote Hornby that inspiration is »the process of being mentally stimulated to do or feel something, especially to do something«.[14]

As outlined in the introduction, social media platforms for creative practitioners are being used increasingly as an inspiration-fusing method on which to base ideas. Sites such as Behance and Dribble are targeted at creative practices, and are used to present original work upon which to gather feedback, while Pinterest and Instagram

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9 Ibid., 381.

10 Takala, T.: »A neuropsychologically-based approach to creativity«, in: John S. Gero/Mary Lou Maher (eds.), *Modeling creativity and knowledge-based creative design*, Hillsdale, NJ: Lawrence Erlbaum 1993, 91.

11 Ibid., 92.

12 Ibid.

13 MacKinnon: »Context matters«, 383.

14 Gonçalves, Milene/Cardoso, Carlos/Badke-Schaub, Petra: »What inspires designers? Preferences on inspirational approaches during idea generation«, in: *Design Studies* 35 (2014) 1, 29.

are more curations of visuals[15], often used as mood boards for design work, or to build original ideas from the curated selection. As such, they can also be seen as supporting the creative process.[16] Instagram is becoming increasingly popular for inspiration gathering, too.[17] Goucher-Lambert and Cagan – in their research[18] for a tool to determine how crowdsourcing can support designers in their ideation process – along with Gonçalves et al., indicate that inspirational stimuli should be correct and applicable, and provided at the right time.[19] The visual stimuli provided by image-driven social media platforms and other pictorial sources do satisfy this, and are – as an important tool – most used by designers. Textual stimuli are under-represented as inspirational sources, even though research has not shown a reason for this.[20] Gonçalves et al. contrast the possible negative aspects of pure visual inspiration gathering with a recommendation to broaden inspiration gathering to include more distant domains and areas to avoid narrow minded design outcomes due to building on the visuals or design of others or remaining in a designer's most immediate domain-space.[21] This case study will describe how the act of moving out of a close domain, triggered by primary and secondary research that followed an initial phase of visuals-based inspiration gathering, created additional inspiration.

o Innovation

The research shows a variety of approaches to defining innovation, as well as proposing models and best practices for applying it. This indicates that it is a difficult term to define, and this lack of a general definition is regarded as an issue.[22] Baragheh et al. describe innovation as cross-disciplinary: »Innovation is the multi-stage process whereby organizations transform ideas into new/improved products, services or processes, in order to advance, compete and differentiate themselves successfully in their marketplace.«[23]

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15 Kim, Nam Wook: Creative Community Demystified: A Statistical Overview of Behance 2017, http://arxiv.org/pdf/1703.00800v1 [16 June 2019].

16 Scolere, Leah/Humphreys, Lee: »Pinning Design: The Curatorial Labor of Creative Professionals«, in: *Social Media + Society* 2 (2016) 1.

17 Xie, Chunhui »Shay«: *The Instagram Playscape: Designers' Creative Self-expression as Play and Inspiration for Their Professional Practice*. Masters thesis 2018.

18 Goucher-Lambert, Kosa/Cagan, Jonathan: »Crowdsourcing inspiration: Using crowd generated inspirational stimuli to support designer ideation«, in: *Design Studies* 61 (2019), 2.

19 Gonçalves/Cardoso/Badke-Schaub: »What inspires designers?«, 45.

20 Ibid.

21 Gonçalves, Milene/Cardoso, Carlos/Badke-Schaub, Petra: »Inspiration peak: exploring the semantic distance between design problem and textual inspirational stimuli«, in: *International Journal of Design Creativity and Innovation* 1 (2013) 4.

22 Baregheh, Anahita/Rowley, Jennifer/Sambrook, Sally: »Towards a multidisciplinary definition of innovation«, in: *Management Decision* 47 (2009) 8, 1334.

23 Ibid.

In the discussion of how to approach and implement innovation, several authors connect it to design research. Here, the focus is on potential users and consumers, through the creation of a (new) clear »meaning« that these users assign to products or services,[24] or through understanding which »job [a client wants] to be done«.[25] In their joint publication, Verganti and Norman differentiate between incremental and radical innovation. They describe incremental innovation as »improvements within a given frame of solutions (i.e., ›doing better what we already do‹)«[26] and radical innovation as being »driven by either advances in technology or a deliberate change in the meaning of the product, rather than being driven by the human-centred design philosophy widely used in product design«[27], with both types of innovation complementing and requiring each other. The authors add Dahlin and Behrens' three criteria of what makes an innovation radical: (i) it needs to be significantly different from former innovations as well as (ii) current innovations, and (iii) it needs to impact future innovations. The latter is a success-measured criteria, which can only show results over time.[28]

While the case study presented aimed to create a novel design, as required by the university's requirements, it did not aim for radical innovation as part of a product market strategy. Yet, due to the design research performed, the results satisfy at least Dahlin and Behrens' first and second innovation criteria and thus can be used as an example for describing its added value.

Case Studies

During the Level 6 studies for the B.A. Graphic Design program at the Interactive Design Institute | University of Hertfordshire, students are tasked to respond to one student design award from a list of proposed briefs, as well as to plan and execute a self-negotiated design project, including the creation of an original design brief based on a theme set by a word (out of five available). Both case studies will be presented as the process of answering these briefs, indicating the value of design research performed. The action of building on prior knowledge and expertise of the subject matter to help create novel designs will be highlighted. In these case studies, factual and visual primary and secondary research (including generative design research) was undertaken to inform the ideation process, and evaluative research allowed feedback on the first design prototypes, thus enhancing the design.

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24 Verganti, Roberto: *Design-driven innovation. Changing the rules of competition by radically innovating what things mean*, Boston, Mass.: Harvard Business School Press 2009.

25 Christensen, Clayton M. et al.: »Finding the Right Job For Your Product«, in: *MIT Sloan Management Review* 48 (2007) 3.

26 Norman, Donald A./Verganti, Roberto: »Incremental and Radical Innovation: Design Research vs. Technology and Meaning Change«, in: *Design Issues* 30 (2014) 1, 82.

27 Ibid., 81.

28 Ibid., 82.

The discussion is based on evaluative research, with n=6 experts, and thus does not claim to have proof of a statistically relevant number of participants.
The intent of this chapter is not to rate or detail the design quality of the visual communication results, but to focus on the approaches and interventions taken during the research and design phase, which informed the design. As such, a reflective approach to the case studies has been used.
The design process in both cases followed that proposed by the University, which is, simplified, visualised in fig. 1. The university's assignment documentation strongly encourages students to work iteratively: i.e. not to work in a waterfall process, but to continuously questioning the current state of research or design, and rework prior steps following feedback from peers, tutors or evaluative research.
The above process description might indicate that a waterfall process was used, in which research always needs to precede ideation and design development. In fact, an iterative process was followed, which is especially seen in agile design practices[29] and Design-Led Development approaches.[30] While both methods access User Experience Design as well as Design Thinking[31] and Human-Centred Design Toolkits such as IDEOs[32], they can be applied to graphic design practice as well. As they were based on industry experience as a User Experience Design Researcher, the design research and development in this study constitute a practice-infused approach.

o Case study one: responding to a student design award brief
The first assignment took place in the weeks of study between February and June 2018. Following an initial evaluation of possible briefs, the student design award Project 2: »Writing Women into History«[33] from the International Society of Typographic Designers (ISTD) was chosen. The ISTD is a not-for-profit company and, as a professional organisation, aims to foster typographic standards, working in close collaboration with the industry and institutions. In the brief, students are required to write »women back into history«.[34] The overall challenge of the brief was to promote the life and work of a woman whose reputation and mark on history is not adequately reflected.

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29 Brown, Diana DeMarco: *Agile user experience design. A practitioner's guide to making it work*, 1st ed., Waltham, Mass.: Morgan Kaufmann 2013.

30 SAP SE: Design-Led Development Process. SAP Fiori Design Guidelines 2018, https://experience.sap.com/fiori-design-web/design-led-development-process-external/ [12 March 2019].

31 Meinel, Christoph/Leifer, Larry/Plattner, Hasso: *Design Thinking*, Berlin/Heidelberg: Springer 2011.

32 Luebkeman, Chris: »Design Is Our Answer: An Interview with Leading Design Thinker Tim Brown«, in: *Architectural Design* 85 (2015) 4.

33 Dowling, John Paul: ISTD 2018 Student Assessment 2018, https://www.istd.org.uk/asset/download/3508/2018_ISTD_Student_Projects.pdf, 8 [12 June 2019].

34 Ibid.

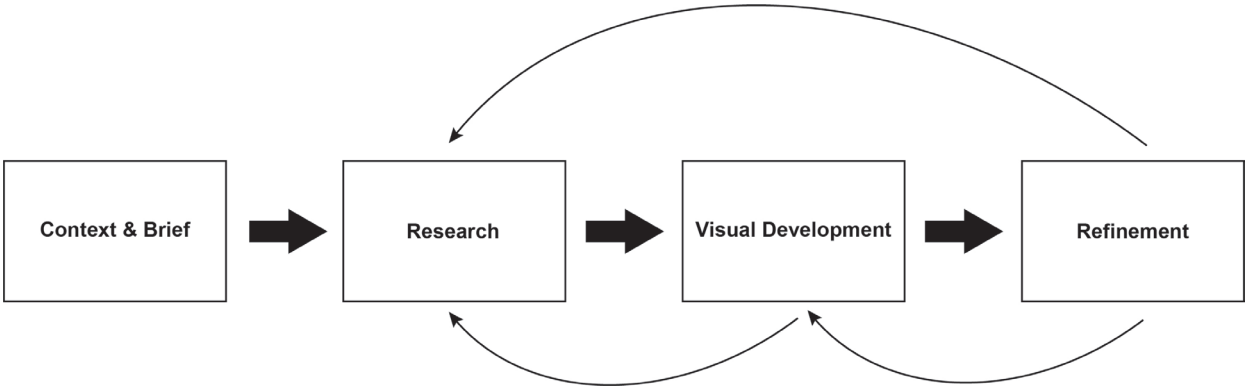

Fig. 1: Design Process (simplified) followed while working on the university's assignment briefs

In the first step of acquainting myself with the brief, I analysed its detailed requirements: a well-researched foundation for the later design through the development of skills in researching primary and secondary sources, and making these available to a general audience. The target group was set: everybody. As the ISTD is a typographer's organisation, the highest level of attention needed to be paid to typographic detail. The design solution needed to be essentially typographic, displaying creativity as well as strategic and innovative thinking.[35] As is natural for design practitioners, primary visual research was conducted to learn about how other students or professionals had approached the brief in the past, using platforms such as Behance. Through this analysis, it seemed that prior awarded projects had a strong graphic and typographic focus, but were not necessarily rich in content.

In the first research phase, a subject was to be chosen as the focus of the design, and a selection of local and international women who had gone relatively unnoticed were identified. Although the shortlisted subjects were not completely unknown, they were often known only to experts in their fields. The subject selected was Otti Berger (1898–1944), a Bauhaus student and later teacher in the weaving workshop. Following initial research based on web-articles and a book that included short biographies of Bauhaus women, an interest to learn more about her was triggered. In-depth research of secondary material, such as papers and books by Smith[36], Droste et al.[37],

35 Ibid., 12.

36 Smith, T'ai: *Bauhaus Weaving Theory*, London: University of Minnesota Press 2014.

37 Droste, Magdalena/Siebenbrodt, Michael/Anger, Jenny: *Das Bauhaus webt. Die Textilwerkstatt am Bauhaus ein Projekt der Bauhaus-Sammlungen in Weimar, Dessau, Berlin*, Berlin: G+H Verlag 1998.

Vargas[38] and Mlikota[39], followed. This research laid a solid foundation for the evaluation of gathered data, and the start of a phase of lateral thinking and conceptualisation to start a visual exploration of the most interesting themes and topics.
Through studying the literature, detailed findings were revealed about Otti Berger and her work. This enabled the establishment of various contexts, for example, collaborations and friendships made within the Bauhaus weaving workshop, as well as politics and questions of gender equality. The literature provided in-depth information, such as Berger's Vorkurs work in the classes of Paul Klee and László Moholy-Nagy, her cooperation with the textile industry, for example in the Netherlands after having founded her own studio in Berlin after the Bauhaus was closed. Although the studio wasn't a full economic success, it drove Berger to strive for fair acknowledgment of her work, like that attributed to architects. Berger was granted a patent for her innovative material »Möbelstoffdoppelgewebe« in 1932, and applied in vain for an emigration visa to the United States before being deported and eventually killed in Auschwitz in April 1944. Interesting and evocative findings were then consolidated into coded lists, and fused into divergent thinking and creative approaches; drawings and mind maps formed the basis for initial design ideas. It can be argued that the detailed secondary research generated far more inspiration and themes for ideas and visual development than visual inspiration alone.
In the next phase, the initial ideas were developed into more concrete concepts through the creation of mood boards and tone of voice, including choice of colours, materials and typographic thoughts. Based on the contextual inspiration gathered from the research, this included experiments such as with photograms (as developed by Moholy-Nagy), geometric and deconstruction approaches, and stitching.
During the idea development stage, the possibility of visiting Otti Berger's hometown of Zmajevac (Vörösmart), which is today in Croatia, near the Hungarian and Serbian borders, arose. Following an ethics approval by the university, a short visit of a few hours was planned. Even though not much data on or material by Otti Berger exists at this location anymore, the visit revealed numerous facts and inspirations, provided by a representative of the local museum. In the museum, crafts, furniture, tools and textiles were displayed. The region (Baranja) has a long tradition in textiles and weaving, and some of these artefacts found their way into collections before 1900.[40] While there are no artefacts from Otti Berger in the museum, influences on her work at the Bauhaus could be found in some of the Baranja motifs and ar-

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38 Varga, Mária: *Ég és föld között. Berger Otti, a vörösmarti textilművésznő, Pannónia könyvek*, Pécs: Pro Pannonia 2017.

39 Mlikota, Antonija: »Otti Berger - tekstilna dizajnerica, teoretičarka, pedagoginja, inovatorica«, in: Jadranka Vinterhalter (ed.), *Bauhaus – umrežavanje ideja i prakse*, Zagreb: Muzej suvremene umjetnosti Zagreb 2015.

40 Simončič, Katarina Nina: »Influence of Ethnic Style on Croatian Fashion in Clothing in the Period of Art Nouveau«, in: Constanța Vintilă-Ghițulescu (ed.), *From traditional attire to modern dress. Modes of identification, modes of recognition in the Balkans (XVIth–XXth centuries)*, Newcastle upon Tyne: Cambridge Scholars Publishing 2011.

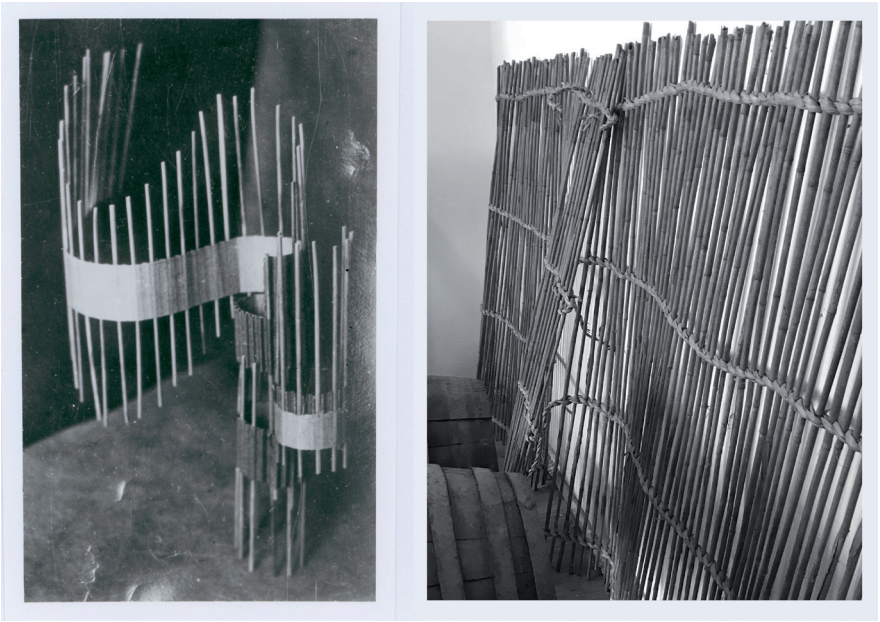

Fig. 2: Otti Berger's *Vorkurs* work, ca. 1926 (left) and a reed-fence in the museum in Zmajevac (right)

tefacts. For example, a Vorkurs work of Berger in Josef Albers' class for material and balance studies has similarities in structure and binding to an exhibit in the museum, a traditional reed fence made of bamboo branches, used on the nearby banks of the Danube (fig. 2), although they differ in material (metal in the Vorkurs work versus bamboo) and function (exploring balance versus fencing and trapping). A local textile piece with a design typical of the region, including a wavy linehaul of the thread in the embroidery that follows horizontal weft blocks of solid colour, could be seen to be cited in Otti Berger's carpet of ca. 1930 (fig. 3), which shows a similar linehaul yet different techniques and colours, and lacks the floral pattern.

While the many visual inspirations from the village and the region added to the flow of inspiration, the information that later proved to be the trigger for significantly re-thinking the design approach was provided by the representative, in answer to an interview question: while some citizens of the region know an artist born in the region was an important member of the Bauhaus, the younger generation knows hardly anything about her and her heritage. This was evident, in that there was no informative material (such as brochures or flyers) about Otti Berger available in the museum at the time of research. Vargas' notable book about Otti Berger in both languages spoken in this area of the Baranja (Hungarian and Croatian), which in detail reports on Berger's life and work, was purchased and shipped from an online bookstore in Hungary as it was not available in local shops at the time.

Fig. 3: Otti Berger's carpet (left, ca. 1930) and a local textile craft piece with embroidery by Julianna Beke (1928–2009), exhibited in the Zmajevac (Vörösmart) museum

A common step in the design process is to constantly revise and reiterate findings and designs.[41] In this case, having started visual development towards a modern, typographically rich design that would satisfy the award committee, the iteration process led back to questioning this design. It would not comply with the first-hand findings derived from the research, a need testified to by interview participants. This meant returning to the research with the intention of creating a novel design that would (a) appeal to (especially younger) people in Berger's home region, by highlighting the regional connections found in her work and biography, (b) encourage people to read and learn about Otti Berger, acting as an entry point for more detailed readings, and (c) follow similar approaches to those used in her practice, (d) ideally be tri-lingual (Hungarian, Croatian and English) and (e) satisfy the design brief. Out of several ideas, the iteration unveiled a new theme, again based on secondary research: telling a story using collage. Collage was a medium often used by Bauhaus artists, including Marianne Brandt and Moholy-Nagy[42], as well as by Otti Berger (fig. 4).

41 Grocott: *Design research & reflective practice*, 222.

42 Otto, Elizabeth: »A ›Schooling of the Senses‹: Post-Dada Visual Experiments in the Bauhaus Photomontages of László Moholy-Nagy and Marianne Brandt, in: *New German Critique* 36/2 (2009).

Fig. 4: : One page of a scrapbook with collages, most probably given to Otti Berger as a present (»Ottis Bauhausbilde Buch«, omitting the »r« in the word »bilder« to connotate the words to educate, teach

Through experimenting with collages inspired by the aforementioned artists as well as contemporary ones, the tone of voice and design direction were redeveloped. An inspirational and novel point of view was generated, which would not have been possible without the research conducted. The collages help to tell Otti Berger's story with concise and insightful texts as well as visuals, in a way that satisfies both the research results and the design brief. They should attract young Baranja residents by showing links to the region where possible, yet also follow the design brief's target group of »everyone«. Original photography, classic collage materials (such as newspapers and advertisements), as well as authorised material (especially photographic material kindly provided by the Bauhaus Archive in Berlin), formed the basis of the design experiments, and for the textual documentation of the final print medium: a brochure (fig. 5) celebrating the life and work of designer, inventor and entrepreneur[43] Otti Berger. While the paths discovered, explored and discarded, were not quantified or measured, both in the research as well as in the visual development

43 Mlikota: »Otti Berger – tekstilna dizajnerica«, 64

Fig. 5: One spread of the pre-final brochure design by the author in English language, showing Otti Berger's tactile board (»Tasttafel«) created in 1928 during the Vorkurs lessons taught by László Moholy-Nagy (left, ca. 1930)

phase, the graphic (fig. 6) visualizes, in a simplified way, the potential unveiled by the unexpected findings during primary research:
The visit to Otti Berger's home town at a time where visual development already had started (1) led to re-iterating and -consolidating the prior research (2) and opened new research directions (3). These, as described, led to a revised, target group driven change in the design direction (4) which again triggered numerous new design experimentations (5) which led to the final design outcome.

o Case study two: responding to the theme »fragment«
The second assignment was conducted in part-time study between October 2019 and March 2019. In contrast to the design award brief, in this case students were tasked to choose one of five themes, one of which was »fragment«. Based on this theme, an original brief was to be created, including specific final outcomes, a target group, design practice sector(s), and plans for how to evaluate and test the design.
As previously outlined, the process involved approaching the brief through constant diverging and converging cycles. Multiple themes were briefly evaluated before one was chosen for further development. Again, multiple ideas were initially sketched to build the brief of the self-initiated project. Amongst other connotations, »fragment« as in fragments of tea leaves was chosen. The initial goal of the brief was to create a fictive tea brand and package design, which could translate to several kinds of tea on

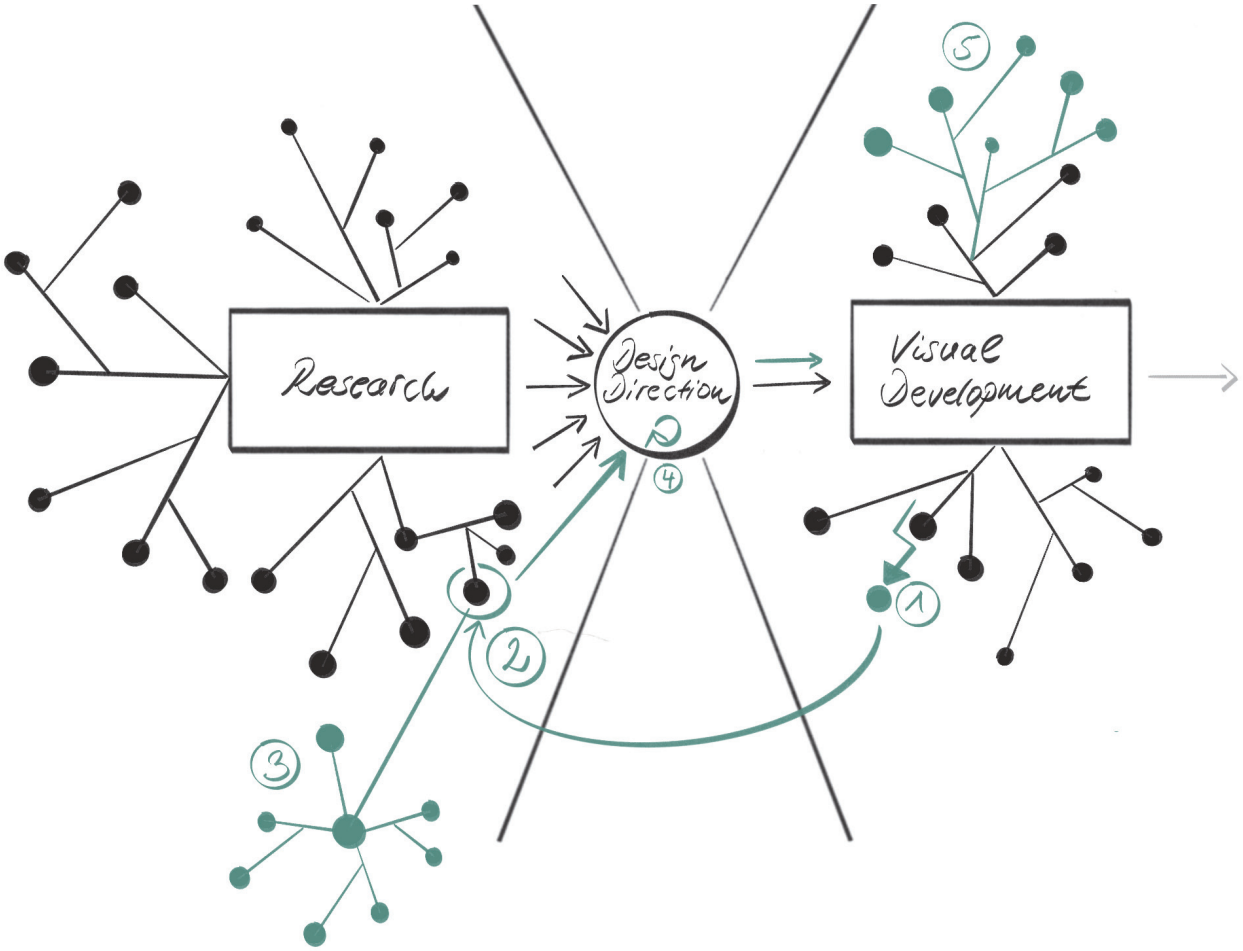

Fig. 6: Simplified visualization of research and visual development paths explored in case study one, sown in black colour. Also highlighted is the process of converging (consolidation of many data items and deciding for one design direction) and diverging (creating as many ideas as possible, based on the design decision taken). The nodes which were triggered by the research visit to Zmajevac (Vörösmart), are shown in green colour

offer. Visual research online and in shops uncovered plenty of beautiful and functional designs for tea packaging, e.g. in ornamental or illustrative style, which provided a large base of inspiration on which to build original ideas. The task was to come up with a novel design that set itself apart from existing ones. The development of ideas into designs could have started here. Yet, again, the funnel of ideas sparking from the visual research would have limited the design result, neglecting the valuable inspiration or even innovation the assignment could hold.

To broaden the range of ideas, secondary research was initiated to understand the history of tea, its various origins, and the processing of the tea plants, from plantation to shop. Learning about the Japanese tea ceremony and the tea regions of India and China led to a solid creative foundation, but the source that changed the flow of inspiration and the subsequent design was Edit Tóth's article about the architectural work of Iwao (1898–1987) and Michiko Yamawaki (1910–2000).[44] Iwao and Michiko Yamawaki, a married couple from Japan, were students at the Bauhaus between 1930 and 1932. Iwao studied architecture and Michiko textile design in the weaving workshop. Tóth describes Iwao Yamawaki's concept of »kuzushi, meaning taking apart (or formal and structural deconstruction)«, which for him »consists of disassembling, testing, and reformulating«.[45] These keywords resonated strongly with the theme of »fragment«. The article revealed several details that pointed the way ahead: inspirational details about Japanese architectural and interior design and their relation to aesthetics philosophies, such as Wabi Sabi,[46] and a discussion of light and shadows[47], which proved helpful in the later definition of the tone of voice. The article connected to initial research ideas about tea through a discussion of the Yamawakis' architectural design of a tea ceremony room in a house in Tokyo.[48] It also included the fact that Michiko Yamawaki's father was a master of the tea ceremony, a skill she acquired from him[49], and provided a general link to the Bauhaus and its teachings in Japan, as well as on the influences Japan had on the Bauhaus. Based on these findings, the secondary research branched off into further exploration of the Yamawakis, as well as of the links and influences between the Bauhaus and Japan, including Japanese architecture and design, and tea. Helena Čapková[50] observed this as »mutual transnational exchanges«[51]: She noted that there was a »perception of the Bauhaus as a place for tea, with the professors as tea-ceremony practitioners and tea masters«,[52] and that for Michiko Yamawaki »the world of tea« was all present at the Bauhaus and that the »concept of tea aesthetic resonated with the idea of the contemporary Modernist Gesamtkunstwerk (total work of art)«[53]. This research also

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44 Tóth, Edit: *Design and Visual Culture from the Bauhaus to Contemporary Art*, London: Routledge 2018.

45 Ibid., Pos. 2871.

46 Koren, Leonard: *Wabi-sabi for artists, designers, poets & philosophers*, rev, Point Reyes: Imperfect Publishing 2008, 1994.

47 Tanizaki, Jun'ichiro: *In Praise of Shadows*, London: Random House 2001.

48 Tóth: *Design and Visual Culture*, Pos. 2874–2955.

49 Ibid., Pos. 2808.

50 Čapková, Helena: »Transnational Networkers – Iwao and Michiko Yamawaki and the Formation of Japanese Modernist Design«, in: *Journal of Design History* 27 (2014) 4.

51 Čapková, Helena: »Bauhaus and Tea Ceremony. A Study of Mutual Impact in Design Education between Germany and Japan in the Interwar Period«, in: Carolien Stolte/Yoshiyuki Kikuchi (eds.), *Eurasian encounters. Museums, missions, modernities, vol. 2: Asian heritages*, Amsterdam: Amsterdam University Press 2017, 104.

52 Ibid., 106.

53 Ibid., 112.

Fig. 7: Otti Berger in the studio apartment at Bauhaus Dessau (1930; photo by Gertrud Arndt)

uncovered connections to Otti Berger beyond the fact that both Yamawaki and Berger were members of the weaving workshop: Otti Berger was a teacher to Michiko Yamawaki[54], and consequently appears in photographs by Iwao Yamawaki.
These connections started to consolidate a direction involving tea, the Bauhaus and its weaving workshop, and photography; it thus built on the research done in case study one. It revealed, for example, a special kind of teapot (a »Kippkanne«, or tipping pot, which infuses the tea-leaves in lying position), manufactured by German company Rosenthal[55], visible on the table in a photograph of Otti Berger taken by Gertrud Arndt (fig. 7). Arndt (1903–2000) was a student in the weaving workshop at the same time as Berger and took several photos of her. Notable are Arndt's photos of Otti Berger dressed in (folk) costumes, and of her in the Bauhaus Dessau building

54 Yamawaki, Michiko: *Bauhausu to chanoyu*, Tokyo: Shinchosha 1995, 89.

55 Horstmann, Mikael G. B.: Die Kippkanne 2014, https://herr-mika.tafelkultur.eu/die-kippkanne/ [25 February 2019].

just before its closure. While the installation of one of Arndt's carpets in director Gropius' room at the Bauhaus in Weimar in 1924[56] could be seen as a successful study result, she initially wanted to study architecture rather than weaving[57]. After the Bauhaus, Arndt did not weave, but created a series of 43 self-portraits, called »Maskenportraits«, [58] in which she wears various costumes. We can partially see some of these draped over a suitcase in the photograph of Otti Berger in the Dessau studio apartment (fig. 7).

Gertrud Arndt's photography, and the fact both that both her and Iwao Yamawaki took photographs of Otti Berger, created a link between the three of them. Further strengthening the link of Bauhaus and tea ceremony, a photograph documents Ise and Walter Gropius participating in a tea ceremony with their Japanese hosts, taken during a trip to Japan. While the hosts obviously showcased western style tea cups, a traditional Japanese setting is visible, also with Ise and Walter Gropius both wearing a kimono (fig. 8).

After pulling together the strings of the research findings, a consolidation and synthesis step was required to pave the way towards a final design direction. Consequently, a phase of broad material and design experimentation began picking up on all the inspirations gathered in the research. The tea ceremony room design by the Yamawakis (with its wooden post and Michiko Yamawaki's rectangular checkered sliding panels,[59] as well as her bark-like patterns on the living room panels[60]) triggered experiments with woodcut-printing, drawing, painting on rice paper, or typographic experiments with loose tea (fig. 9). Many more directions were taken before prototypes were produced for the tea packaging design.

Yet something was missing; the feedback gathered in the evaluative research confirmed this, as it was not completely positive. Participant statements ranged from »nice approach but too commercial«, to »the woodcut prints are too close to Yamawaki's design on the panels«, and »I do not understand the concept, are you promoting tea or are you trying to sell Bauhaus?«

The challenge to be tackled was to find a way of communicating the exceptional design and artistic qualities of the three women, combined with the aspects of fragments and tea, and a link to Japanese aesthetics needed to culminate in a new outcome. It should extend the packaging design towards what a tea ceremony stands for: hospitality, the selection of excellent ingredients, and a combined flow of perfectly executed actions and movements. This should involve all the senses, as outlined in the 16th century by Sen no Rikyū, who is regarded as the spiritual leader of the

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56 Smith: *Bauhaus Weaving Theory*, 42.

57 Ibid., 49.

58 Wolsdorff, Christian: *Eigentlich wollte ich ja Architektin werden. Gertrud Arndt als Weberin und Photographin am Bauhaus 1923–31*, Berlin: Bauhaus-Archiv Museum für Gestaltung 2013.

59 Tóth: *Design and Visual Culture*, Pos. 2000.

60 Ibid., 2580.

Japanese tea ceremony: »See with your eyes. Hear with your ears. And smell the incense. While asking questions. Arrive at understanding.«[61] The importance of the senses connects with Gertrud Arndt's use of unusual, muted, colours in her weaving and her (self-) portraits (Arndt's and Lucia Moholy-Nagy's photographic works were assigned to the movement of »Neues Sehen« [New Vision].[62] And it also connected to Otti Berger: in her 1930 article »Stoffe im Raum« (Fabrics in Space), Berger stressed the importance of the tactility of fabrics. Smith documents Berger's words: »for one must listen to the fabric's secrets, track down the sounds of materials.«[63] She also highlights Berger's use of the German word »begreifen« which connotates »grasping« as well as »understanding«.[64] Michiko Yamawaki as well emphasises the senses, the tactile sense as being the most important, when deriving the concept of beauty in the tea ceremony and linking it to the human senses: the need for paying attention to the human senses as her general principle of approaching a design.[65] The importance of the relationship between Michiko Yamawaki and Otti Berger is documented in Michiko's autobiography: Yamawaki describes how she hands Berger a large red Kakefukusa (cloth, scarf) as a goodbye present when leaving Dessau in 1932. She further noted that, while pointing out Berger's hearing impairment and that she spoke with a slightly strange voice, Berger, »constantly blinking with her eyes, took her own hair jewellery, a red rose made of Celluloid, pointed at my chest and gave me a beautiful necklace as a present«.[66]

Realising and understanding these connections was the Eureka moment, which, as Takala described in his definition of creativity, was the start of a novel design, which could not have been anticipated. The missing connection was the focus on the tactile, and on the senses: The design would need to enable users to see something, to grasp something: to smell it, and to understand and learn. Another iteration of brainstorming began, but this time the results were clear: the design should include a visually appealing, consistently designed package, with additional content that progressively unveiled its elements. The content would be loose tea to taste and smell, a piece of textile to touch and use (e.g. as a placemat), and a teacup that connects touch, smell and textual material to promote understanding and questioning.

The concept of »3t – tea text textiles« was born (fig. 10). It is the idea of a tea ceremony for one person (or more), getting in touch with what the three women created and stand for in the history of design by using all the user's senses. An experience

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61 Odin, Steve: »Blossom Scents Take Up The Ringing: Synaesthesia in Japanese and Western Aesthetics«, in: *Soundings: An Interdisciplinary Journal* 69/3: Penn State University Press 1986, 258.

62 Geissler, Lukas (ed.): *Bauhaus und neues Sehen. Fotografien von Lucia Moholy, Gertrud Arndt, Elsbeth Juda*, Kunsthalle Darmstadt, 23.04.–04.08.2013, Darmstadt: Justus von Liebig Verlag 2013.

63 Smith: *Bauhaus Weaving Theory*, 101.

64 Ibid., 97.

65 Shyoji, Akiko: »Yamawaki Michiko: the Common Concept -Bauhaus and Tea Ceremony«, in: *Special Issue of Japanese Society for the Science of Design* 1 (1993) 1, 41.

66 Yamawaki: *Bauhausu to chanoyu*, 89–90.

Fig. 8: Ise and Walter Gropius drinking tea with Japanese hosts (1954; unknown photographer)

of tasting tea, reading text about the weavers, and grasping textiles, a possibility to retreat from the busy days in today's life and revoke the human senses in a slow, non-digital process. »3t« would act as a fictive brand and design concept for the university assignment, but could also work as a basis for other communication forms, such as events (e.g. tea tastings with readings and a textile exhibition). This experience is a dedication to Otti Berger's constant search for concrete meaning through matter (fabrics), which was keener and more tactile as a consequence of her hearing impairment.[67]

Although textiles and pottery are not the main expertise of Visual Communication students, it was decided to follow this path and create ceramic and textile artefacts. This was a decision taken in order to have a similar experience to that of the three Bauhaus students in their Vorkurs studies at the Bauhaus: experimentation with

67 Koščević, Želimir (ed.): i*vana (koka) tomljenović. bauhaus – dessau, 1920–1930*, 315. edn., Zagreb: galerije grada zagreba 1983.

Fig. 9: Design idea development and experimentation based on initial research findings

materials, colours and different crafts. In several day-long classes with a weaving master, three small woven pieces were created on a handloom, each referencing, but not copying, the Bauhaus artists. The first is a cloth dedicated to Otti Berger, drawing inspiration from one of her last letters in 1941, in which she writes Ise Gropius about a carpet she has started working on. She describes the colours: »first I started really dark and later the colours of spring and summer will end up in it«.[68] Gertrud Arndt's textile was inspired by the unusual colours in her weaving work (orange colour in specific) and elements of her costumes in the »Maskenportraits«, and by mimicking the shiny fabric of her Kimono with a golden wire in the woven piece. The fabric dedicated to Michiko Yamawaki was woven from Japanese paper thread, airy and simple like her designs and design philosophy. The purpose of the textiles was intentionally left open for the user to experience and decide themselves. They could be both a wall hanging or a table runner to place a tea set on. After much experimentation with different forms and patterns, the cups were designed. Studying different types of tea cups, the decision was taken to follow the classic form of a flatter, wider

68 Bauhaus Archiv Berlin: Letter of Otti Berger to Ise Gropius (Bauhaus Archiv Berlin, Inv.nr.: 2108), 1–2.

Fig. 10: Details of the »3t tea text textiles« design work. Upper left: The three editions of the 3t set (outer packaging box; raw prototype mockup file; upper right: the folded booklets with texts and a backside full-page poster about the three designers: Gertrud and Alfred Arndt (1928), Gertrud Arndt in a kimono, self-portrait »Maskenphoto« Nr. 4 (1930), Otti Berger in her studio in Dessau, photo by Gertrud Arndt (1930), Baby Blanket by Otti Berger (ca. 1930–1934), Ise and Walter Gropius drinking tea with Japanese hosts (1954); lower left: the three handwoven textiles, dedicated to the artists; lower right: an overview of all elements of one edition's box (here, edition 3, dedicated to Gertrud Arndt. Tea pouch raw mock-up file by Raul Taciu)

cup, a Chawan (in contrast Yunomi forms that are rather taller than wide)[69]. Learning about the craft of pottery, especially the firing techniques (raku) from a master potter, quickly it was realized that it is a very complex process and is based on years

69 Boeschoten, Anne: Tea bowls, http://kaolin.nl/tea-bowls [6 March 2019].

of expertise of the craftspeople. Pondering time investment to learn and to work with a master potter to create cups in traditional Japanese way, the university assessment timeline could not be held. Thus, the design decision was to keep the cups mainly in white colour, yet with small details of references to the women artists. While for the edition dedicated to Michiko Yamawaki, an important element of the Japanese tea ceremony was fused into the design, the last drop of tea from the cup, which needs to be carefully extracted[70], for the edition of Gertrud Arndt, a recurring detail of her self-portraits was the base for the design: a band which is bound to a bowknot. The process of weaving, along with the painting and firing of the cups, created a strong momentum of learning and appreciation to the crafts. Completing the set content, a multi-page folded brochure (referencing the Japanese Origami technique) was created for each artist, to explain the 3t concept, the relationship between Bauhaus and Japan and the tea ceremony, and details about the artists. The box design finds its inspirational roots in the simplicity and clear aesthetics of Japanese design, while encapsulating an impression of Bauhaus textiles, and playing with the concepts of presentation and unboxing in Japanese packaging design[71], which resulted in a sliding box design for the outer packaging which allows a slow and careful unveil of the inner content. While the outer box very well could stand with no pattern at all to keep the design as simple and reduced as possible, referencing Japanese design, images of the woven textiles were added to the front side of the box. It should directly be visible that there is strong connection to textiles and weaving and that, just as each type of green tea has its own character, each edition celebrates its individuality while being connected in the series of three editions. Clean typography, referencing the Bauhaus lowercase style, was used, with red colour in the logo and headlines, citing Michiko Yamawaki and Otti Berger's gift exchange.

Conclusion

This case study uses two design projects for university assignments, in which detailed primary and secondary research was conducted alongside visual research. Through documenting the research and ideation process, it can be seen that the basis for creative interventions and inspiration can be extended by adding sources from literature, as well as from archives and interview data, to visual research. During the execution of these design projects, the number of ideas and experiments brainstormed were not recorded, in order to allow a metrical analysis. Yet in both cases landmark resources visibly triggered a change in the design direction, initiating further ideation that led to additional creative outcomes and new inspirations: there was a definite »process of being mentally stimulated«.[72] Additionally, the definition

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70 Kusaka, Hiromi: *PRIME JAPAN – Japanese Tea* 1 (2017).

71 Oka, Hideyuki: *How to wrap five eggs. Traditional Japanese packaging*. With photographs by Michikazu Sakai, New ed., Boston, Mass.: Weatherhill 2008.

72 Gonçalves/Cardoso/Badke-Schaub: »What inspires designers?«.

of creativity is validated by the case studies, as the research triggered »something recognizable […] and […] novel«.[73] Both cases showed that the research undertaken resulted in a higher time investment than proposed in the university's study guide, and as such might appear to confirm a common view about the time-consuming nature of design research. However, the case study proves this to be a misconception, as it significantly reduced the number of iterations in the design development process. Further, to address the prejudice that design research is not relevant to design practice:[74] case studies documenting effective design research fused into successful design outcomes is a helpful tool to convince the design community otherwise.
While the first case study's design outcome (a brochure visually and textually reporting on the life and work of a woman), may not at first glance satisfy the innovation criterion of being »a radical novelty«, the number of additional, new ideation nodes that opened up as divergent corridors following the on-site, primary research were essential to the design outcome. Novelty can arguably be found in the method of visual communication for the specific subject matter and target group: by understanding the lack of appealing and concise material available (especially for young people) in Otti Berger's home region, the problem statement could thus be answered. Following Christensen's jobs-to-be-done[75] framework, it can be argued that the product's »job« was determined, which consequently enabled an innovative design for an editorial product.
The second case study might also be regarded as an incremental innovation at first glance. It builds on elements previously designed and produced, such as tea packaging, woven textiles and ceramic teacups. The difference is in its combination of several new ideas and designs into a new experience that tells a story in a novel way: through artists, materials, design practices and design history, brought together in an experience of senses and understanding. In the evaluative research, using the design outcome as study objects, one participant could be observed grasping the textile while reading the brochure.
Scholarly novelty can be claimed, too, as the research and the design experiments unveiled findings and connections not previously documented, which add to the body of knowledge. This case study is limited by reporting results only from a reflective approach with (statistically irrelevant) elicitation of feedback through evaluative research. Actual numbers of ideas (ideation nodes) were not recorded during the execution of the case studies. Methods exist for »assessing design creativity«[76] and for quantifying to what extent (if at all) an ideation process is effective, as proposed

73 Takala: »A neuropsychologically-based approach to creativity«, 91.

74 Grocott: *Design research & reflective practice*, 224.

75 Christensen et al.: »Finding the Right Job For Your Product«.

76 Sarkar, Prabir/Chakrabarti, Amaresh: »Assessing design creativity«, in: *Design Studies* 32 (2011) 4.

by Nelson et al.,[77] or Verhaegen et al.[78]. However, the design projects to be evaluated need to be cautiously tracked, and all ideation nodes recorded, to receive justifiable results. Consequently, this article will not use final design outcomes as a basis on which to evaluate the level of innovation, as the designs were not brought to market to evaluate market success. These limitations offer opportunities for further research: in further design projects (be they university assignments or professional practice), the number of ideation nodes could be tracked and reported over a longer duration, and correlated with evaluative research data from a statistically relevant number of participants. To raise the required data through evaluative research, methods such as creating a semantic differential could be used, with bipolar word-pairs, in which study participants answer (e.g.) whether a design is creative or innovative. The semantic differentials could be used during a survey, when testing design protypes or when the subjects are experiencing a final design.
The findings suggest that practitioners who make the additional effort to undertake initial, rigorous design research will benefit from the knowledge and inspiration gained. Visual research and inspiration gathering via visuals are strongly complementary to design research in order to extend the base of creativity, inspiration and innovation. The uncovering of information and contexts, as well as the analysis of what could be revealed from the researched data, will help add capabilities to enable artists (and designers) to breathe a soul into machine-made objects.[79]

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77 Nelson, Brent A. et al.: »Refined metrics for measuring ideation effectiveness«, in: *Design Studies* 30 (2009) 6.

78 Verhaegen, Paul-Armand et al.: »Refinements to the variety metric for idea evaluation, in: *Design Studies* 34 (2013) 2.

79 Forgács: *The Bauhaus idea and Bauhaus politics*, 10–11.

helping me grow; Ingrid Frank, for uncovering a passion for warp and weft in me and teaching me about textile art; Susanne Schmitt, master ceramist, for teaching me about the Japanese firing technique of Raku; and Satoko and Utaemon Toyota for generously translating Japanese writings by and about Michiko Yamawaki. Finally, thanks to Ena Muraspahić for helping me stay focused, and for fine-tuning my Croatian language writing, Juliet Walker, who so cautiously looked over my transcript with her mastery of the English language, and Sanda Voloder for being a great and constant source of feedback, design critique, and support.

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Fig. 5: Photo by Atelier Schneider, Bauhaus Archive Berlin

Fig. 6: Drawing by the author

Fig. 7: Photo credit: Bauhaus Archive Berlin, © VG Bild-Kunst Bonn

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Fig. 9: Work and photography by the author

Fig. 10: Design and craft work, and photography by the author. Upper left: Outer packaging box; raw prototype mockup file © Creatsy via Creative Market; upper right: photo credits from left to right, then down: Gertrud and Alfred Arndt (1928, Bauhaus Archive, ©VG Bild-Kunst Bonn, Gertrud Arndt in a kimono, self-portrait »Maskenphoto« Nr. 4 (1930, Bauhaus Archive, © VG Bild-Kunst Bonn), Otti Berger in her studio in Dessau, photo by Gertrud Arndt (1930, Bauhaus Archive Berlin, reprint by Markus Hawlik, © VG Bild-Kunst Bonn), Baby Blanket by Otti Berger (ca. 1930–1934, photo by Ernst Nipkow, Harvard Art Museums/Busch-Reisinger Museum, Gift of Mrs. Walter Gropius, © President and Fellows of Harvard College), Ise and Walter Gropius drinking tea with Japanese hosts (1954, Bauhaus Archive Berlin); lower left: the three handwoven textiles, dedicated to the artists; lower right: an overview of all elements of one edition's box (here, edition 3, dedicated to Gertrud Arndt. Tea pouch raw mock-up file by Raul Taciu).

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Aysar Ghassan

A Cyclic Narrative: Will we See a Return to Rationalistic Design Thinking in the 21st Century?

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Introduction

In the last 100 years many influential theorists have researched how designers think. The aim of these investigations has been to understand how design practice may be able to solve wide-ranging problems in society. The term Design Thinking is used by design researchers when they discuss how designers think. Though researchers have been investigating how designers think for some time, this term has not been in use for the whole period. It was coined in 1987 by the architectural researcher Peter Rowe.[1]

The design philosopher Richard Buchanan[2] groups Design Thinking theories into two categories which he defines with respect to time frames. Buchanan[3] terms the first approach the »design theory of the early and middle decades of the twentieth century«. Buchanan[4] terms the second the »new approach[...] to design thinking«. Buchanan argues that the two modes of Design Thinking are oppositional in character. Buchanan is not alone in putting forward a theory of two distinct, contrasting approaches to Design Thinking. This form of classification based on time-spans is common amongst contemporary design theorists.[5] In this chapter I will use the term ›Design Thinking of the Early and Middle Decades of the Twentieth Century‹ to describe the design theory put forward in the early and middle parts of the last century. I will use the term ›Contemporary Design Thinking‹ to describe how modern-day design theorists classify Design Thinking. Fundamentally, the two approaches to Design Thinking differ greatly on the place of mathematics and natural science in enabling designers to solve wide-scale problems in society.

The Design Thinking of the Early and Middle Decades of the Twentieth Century

Buchanan[6] argues that the incarnation of the Staatliches Bauhaus helped to initiate the Design Thinking of the Early and Middle Decades of the Twentieth Century. The Bauhaus was formed in Weimar, Germany, in 1919 by Walter Gropius (1883–1969). Gropius' design philosophy distils the development of Design Thinking of the Early and Middle Decades of the Twentieth Century. Gropius was born in Berlin into a wealthy family which was influential in prestigious fields including politics and the military, and his uncle Martin Gropius designed the Kunstgewerbemuseum in Berlin.

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1 Dorst, Kees: »The Nature of Design Thinking«, in: *Proceedings of the 8th Design Thinking Research Symposium* (DTRS8), Sydney, 19–20 October, 2010, 131–139.

2 Buchanan, Richard: »Design Research and the New Learning«, in: *Design Issues* 17 (2001) 4, 3–23.

3 Ibid., 13.

4 Ibid., 13.

5 For example, Cross, Nigel: »Designerly ways of knowing: Design discipline versus design science«, in: *Design issues* 17 (2001) 3, 49–55.

6 Buchanan: *Design Research and the New Learning*.

Though a successful architect and industrial designer, arguably, Gropius is best remembered for forming the Bauhaus. This institution began its life on the campus that had formerly housed the Grand-Ducal Saxon School of Arts and Crafts in Weimar. In 1926 the School moved premises—to a building designed by Gropius in Dessau. Gropius developed a radical philosophy of design which came in reaction to what he saw as the prevailing aesthetic tastes of his era. At the time, affluent consumers sought highly decorative, hand-crafted artefacts which were expensive so only wealthy people could acquire them. Gropius[7] criticised this elitism, claiming it to be a sign of growing inequality in society. Referring to himself as a social reformer, Gropius stated his aim was to provide people of all social strata with access to what he believed to be good design.

Gropius argued that designers play a significant part in fuelling elitism. He believed that designers have an irrational thinking process which leads them to input their emotions into the design process, which ultimately leads to an excessive amount of decorative additions to products. Gropius argued that to provide everyone with access to good design, the thinking around design had to alter significantly. He called on designers to refrain from including any emotions into the design process. In view of this, Gropius argued that design practice should be: »preceded by the elimination of the personal content of […] designers and all otherwise ungeneric or non-essential features«[8]

Gropius argued that changing design practice into a rational process would eliminate emotions from it. To make design practice rational, designers should be guided by »impersonal [mathematical] standard[s]«[9], numerical measurements that would dictate the form of all artefacts. According to Gropius, the most successful method of effecting transition in the way designers think was to limit designers' use of hand-crafting techniques. Designers should instead create artefacts which can be manufactured using mechanised processes. A revolution in the way designers think would enable them to work for a higher cause, solving social problems: »Mechanisation can have only one object: to abolish the individual's physical toil of providing himself with the necessities of existence in order that hand and brain may be set free for some higher order of activity.«[10] Gropius argued that steering designers to think in a rationalistic manner would make all artefacts more cost-effective to produce. This would in turn allow more people access to good design, thereby improving their lives. Gropius also believed that his philosophy of design would create a situation where all objects would fit effortlessly into the context of a rationally designed modern home or city. In this way, Gropius' rationalism would have a cumulatively

7 Gropius, Walter: *The New Architecture and the Bauhaus*, London: Faber and Faber 1935.

8 Ibid., 26.

9 Ibid., 26.

10 Ibid., 25.

positive effect in »enhanc[ing] civic dignity and coherence«[11], thereby creating social cohesion. Gropius argued that increased social cohesion would lead to a decrease in elitism, thereby successfully tackling the prevailing large-scale problem of the time. He claimed that becoming familiar with scientific ways of thinking would enable designers to create social cohesion. Gropius believed that scientific knowledge is important for two reasons. Firstly, it enables designers to create the objectively correct generic objects which facilitate social reform. Secondly, scientific knowledge helps designers to collaborate with fellow professionals in multidisciplinary practice. The following quote provides insight into these points:

> [A designer] has to absorb a scientific knowledge of objectively valid optical facts, a theory which guides the shaping hand and provides a general basis on which a multitude of individuals can work together harmoniously.[12]

The focus on rationalism and the adoption of natural scientific principles are the foundations of the Design Thinking of the Early and Middle Decades of the Twentieth Century.

In the late 1920s and 1930s, the Bauhaus attracted unwanted attention from the far-right political movement which was growing in dominance in Germany at the time. The far-right believed the radical principles espoused by the Bauhaus challenged their own political beliefs. Political pressure prompted Gropius to leave the institution and the School was closed in 1933 by the ruling Nazi administration. Academics, architects and designers associated with the Bauhaus fled Germany. To illustrate, after a brief period in England, Gropius located to the USA to teach at Harvard and to continue practicing architecture. Former Bauhaus tutor László Moholy-Nagy established the New Bauhaus design school in 1937 in Chicago.[13] The New Bauhaus was created as a spiritual successor to the Bauhaus and further advanced the Design Thinking of the Early and Middle Decades of the Twentieth Century.

o The Post-WW2 Era

The advent of WW2 slowed the progress and dissemination of Design Thinking of the Early and Middle Decades of the Twentieth Century. The eventual end of WW2 however saw renewed interest in advancing values associated with it. WW2 caused an unprecedented level of destruction of infrastructure, creating large-scale social problems. Problems included rebuilding cities and manufacturing goods in sufficient quantities to meet the demands of consumers. Paralleling discussion in the Pre-WW2 era, leading design theorists argued that the subjective decision-making process of designers would limit their ability to solve these large-scale social problems. Echoing the philosophy first set down in the Bauhaus, leading design theorists therefore

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11 Ibid., 27.

12 Gropius, Walter: *Scope of Total Architecture*, New York: Collier Books 1962, 24.

13 Findeli, Alain: »Moholy-Nagy's design pedagogy in Chicago (1937–46)«, in: *Design Issues* 7 (1990) 1, 4–19.

rejected traditional craft methods in favour of automated processes.[14] The post-WW2 era became influenced by an ever more increased focus on rationalistic, natural scientific ways of thinking.

o The *Hochschule für Gestaltung*, Ulm

The *Hochschule für Gestaltung*, Ulm (HfG)—(The Ulm School of Design) is for many a landmark in the renewed effort to forge the Design Thinking of the Early and Middle Decades of the Twentieth Century.[15] Founded in Ulm, Germany in 1953, the HfG aimed to train designers to rebuild German infrastructure. One of the founders, Max Bill, was a graduate of the Bauhaus and aimed to propagate the design philosophy that Gropius had introduced to him. Bill met resistance from Tomas Maldonado, a far more radical thinker. Maldonado stressed even more focus on scientific principles in design. Maldonado's philosophy was accepted in the School and he rose to become its long-serving director. Maldonado's influence meant that HfG framed design as an »applied science«.[16] Maldonado was influenced by the emerging field of ergonomics.[17] Ergonomics was conceived as a natural science as its methods revolve around measurement (of the human body and objects) and subsequent statistical analysis.[18] Ergonomic methods then directly inform the design of artefacts. Indeed, Maldonado argued that ergonomics was an objective discipline which led to the creation of »exact knowledge […] based on the human being«.[19] For Maldonado, the exactness of ergonomics meant that designers across disciplines could view humans as a set of numerical data. Framing them as data would help designers solve design problems: »…men are being transformed into things so that it will be easier to administer them. Instead of working with men, one can work with schemes, numbers, and graphs that represent men«.[20] Maldonado believed that the act of registering people as numerical data would lead to the creation of a better society. On this point, Koskinen et al.[21] argue that Maldonado was convinced that his advancement of Design Thinking of the Early and Middle Decades of the Twentieth Century could end post-WW2 suffering: »By turning design into a science, one could get rid of 'subjective interference' and pave the way to a world of plenty«.[22]

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14 Jones, John C.: *Design Methods: Seeds of human futures*, London: John Wiley & Sons 1970.

15 Krippendorff, Klaus: The semantic turn: A new foundation for design, Boca Raton: CRC Press, 2006.

16 Findeli: »Moholy-Nagy's design pedagogy in Chicago«, 9.

17 Valtonen, Anna: »Six decades – and six different roles for the industrial designer«, Nordes Conference, Copenhagen, 30–31 May, 2005.

18 Dreyfuss, Henry: *Designing for People*, New York, Simo & Schuster 1955.

19 Cited in Valtonen: »Six decades«, 4.

20 Maldonado, Tómas: *Design, nature, and revolution. Toward a critical ecology*, New York: Harper & Row 1972.

21 Koskinen, Ilpo/Zimmerman, John/Binder, Thomas/Redstrom, Johan/Wensveen, Stephan: *Design Research Through Practice: From the Lab, Field, and Showroom*, Waltham, MA: Morgan Kauffman 2011.

22 Ibid., 33.

o The Design Methods Movement

The influence of natural scientific ways of thinking in the formation of the Design Thinking of the Early and Middle Decades of the Twentieth Century is further evidenced in the growth of the Design Methods movement in the 1960s.[23] The Design Methods movement framed design as a formulaic process in which creativity could be reduced to numerical data.[24] In view of this, the Design Methods movement promoted 3-stage process for solving complex design problems.[25] The English industrial designer Chris Jones, the leader of this group of practitioners and theorists, claimed that his model would make the emotions of designers obsolete in the design process.[26] At the time, Design Methods theories were »widely accepted« both in design research and practice.[27] Influenced by the work of the Design Methods movements, the Nobel laureate philosopher and mathematician Herbert Simon attempted to determine numerical formulae to describe the design process.[28] The ultimate ambition of the movement was to completely remove designers from the design process, thereby eliminating all subjective human error from Design Thinking in order to solve social problems. The emotional human could be replaced by a rational computer:

> If the steps in a designer's processes could be identified, examined, and understood, they could be improved, or corrected and in the best circumstance, the designer could be replaced by a mechanical process or a machine – the then emerging computer.[29]

The Rejection of Design Thinking of the Early and Middle Decades of the Twentieth Century

o The Issue of ›Wicked Problems‹

In the early 1970s, the German academic Horst Rittel taught urban planning at the University of California, Berkeley, USA. Rittel was a graduate of the HfG Ulm and so had been schooled in theory which specified that framing people as numerical data could enable designers to solve design problems. Rittel had come to question this principle. Rittel and his collaborator Melvin Webber[30] argued that it is not always possible to frame people as numerical data when tackling design problems. They used the term Wicked Problems to describe problems that cannot be solved using design philosophy that is influenced by ways of working set down in the natural sciences. Rittel and Webber compared problems tackled in the natural sciences

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23 Bayazit, Nigan: »Investigating design: a review of forty years of design research«, in: *Design Issues*, 20 (2004) 1, 16–29.

24 Cross: »Designerly ways of knowing«.

25 Jones: *Design Methods*.

26 Ibid.

27 Downton, Peter: *Design Research*, Melbourne: RMIT University Press 2003, 41.

28 Cross: »Designerly ways of knowing«.

29 Downton: *Design Research*, 41.

30 Rittel, Horst. W./Webber, Melvin. M.: »Dilemmas in a general theory of planning«, in: *Policy Sciences* 4 (1973) 2, 155–169.

with those undertaken by city planners. They argued that problems in the former are expressible as numerical data. Rittel and Webber define these kinds of problems as being tame. The fact that tame problems can be expressed as numbers makes them »definable and separable«[31]. Once described as numerical data, tame problems become solvable though statistical analysis. Statistical analysis can make it possible to discover definitive solutions to tame problems. The following illustrates examples of tame problems:

> consider a problem of mathematics, such as solving an equation; or the task of an organic chemist in analyzing the structure of some unknown compound; or that of the chessplayer attempting to accomplish checkmate in five moves. For each the mission is clear. It is clear, in turn, whether or not the problems have been solved.[32]

In contrast, Rittel and Webber argued that city planning problems are not definable and separable. This is because they involve many stakeholders with different but valid lived experiences. It is therefore impossible to express them as numerical data. There are »no ›solutions‹ [to planning problems] in the sense of definitive and objective answers«[33]. The characteristics of planning problems make them wicked. Rittel and Webber's argument problematises principles set down by leading design philosophers of the Early and Middle Decades of the Twentieth Century. The idea of Wicked Problems critiques Gropius' reliance on impersonal mathematical standards. It also questions the legitimacy of Maldonado's dependence on ergonomics. Furthermore, the notion of wicked problems unpicks the validity of Simon's search for numerical formulae to describe the design process. Resultingly, for designers and researchers of the time, Rittel and Webber's concept highlighted problems with Design Thinking of the Early and Middle Decades of the Twentieth Century. Indeed, mindful of the significance of Rittel and Webber's argument, Design Methods theorists ended the search for universally applicable formulae which could characterise the design process.

o The Idea of Reflective Practice

A decade after Rittel and Webber published their contribution, Donald Schön, an educational theorist, philosopher and professor in urban planning at the Massachusetts Institute of Technology, developed what for many is a defining theory in the story of research into how designers think. Influenced by the idea of Wicked Problems, Schön argued that each design problem is unique.[34] Because each design problem is unique, it is impossible to fully comprehend a design problem when initially faced with it. Design problems instead need to be constructed during the design process.

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31 Ibid., 160.

32 Ibid., 160.

33 Ibid., 155.

34 Schön, Donald: *A: The Reflective Practitioner*, London: Temple-Smith 1983.

This characteristic makes them »puzzling, troubling, and uncertain« in nature.[35]
In contrast Schön believed that scientific problems are not unique—it is therefore possible to comprehend scientific problems when faced with them. Schon therefore argued that design problems are fundamentally different to scientific problems. Because of this »scientific theory and technique«[36] cannot adequately describe design practice. Schön argued that the ambiguous nature of design problems forces designers to think in particular ways. To solve design problems, designers need to engage in a reflective conversation with issues they face when constructing design solutions: »[…] the [design] situation talks back, the practitioner listens, and as he appreciates what he hears, he reframes the situation once again […].«[37]
Schön argued that this conversational way of solving problems is fundamentally different to the way that scientists solve problems. The conversations mean that designers solve problems in an iterative manner. Schön believed that most of the research into problem-solving had ignored the fundamental difference between the way designers think and the way scientists think. He called for the development of a body of work which focusses on fully understanding the way designers think,

> an epistemology of practice implicit in the artistic, intuitive processes which some practitioners do bring to situations of uncertainty, instability, uniqueness, and value conflict.[38]

Schön's research into the way designers think presents a stark departure from principles associated with the Design Thinking of the Early and Middle Decades of the 20th Century. Koskinen et al. argue that Schön's contribution created a perceptible turn in the way Design Thinking would come to be understood.[39] Today, many design researchers view the way designers solve problems as being diametrically opposed to the way that natural scientists solve problems. Many design researchers currently argue that the way that designers think is more beneficial in the quest to solve large-scale societal problems than the way that natural scientists think.

Contemporary Design Thinking

Leading contemporary design researchers argue that the way designers think allows them to be open-minded when tackling problems. This, claim researchers, is because the design problem only becomes truly apparent during the course of the design process. To illustrate this position, Dorst argues that designers work to identify the problem through undertaking a series of cyclic steps in which they iteratively return to the problem in order understand different elements of it.[40] As the problem remains

35 Ibid, 40.

36 Ibid, 21.

37 Ibid., 131-132.

38 Ibid., 49.

39 Koskinen/Zimmerman/Binder/Redstrom/Wensveen: *Design Research Through Practice*.

40 Dorst: »The Nature of Design Thinking«, 131–139.

open in the design process, designers must remain open-minded in order to solve it:

> [Designers] know that bringing the full force of evaluation to bear upon a fledgling idea is a very effective way of killing it, blocking any further exploration and stifling any progress in the project.[41]

The focus on finding an appropriate solution leads Nigel Cross, the former head of the Design Research Society, to term designers solution-focussed individuals.[42] Cross argues that, unlike designers, natural scientists attempt to identify a problem fully early on in the problem-solving process and then work to solve it.[43] The focus on identifying a problem leads Cross to term scientific thinking as a problem-focussed process.[44] Once scientists have identified the problem, they apply rational, evaluative frameworks to solving it.[45] According to contemporary design researchers, this focus early on in the problem-solving process limits both exploration of problems and idea generation and leads to unsatisfactory solutions.[46]

Design researchers argue that the way that Contemporary Design Thinking—known in the design literature simply as Design Thinking—is extremely valuable to society. To illustrate, Dorst claims Design Thinking is an »exciting new paradigm for dealing with problems in many professions«.[47] Similarly, Razzouk and Shute claim that Design Thinking can solve problems »across disciplines«.[48] Design Thinking researchers claim that, with training, non-designers can become versed in Design Thinking.[49] This is because Design Thinking enables professionals to take into account the views of a range of stakeholders. In view of this, Meinel and Leifer claim that Design Thinking can enable individuals from diverse disciplines such as »engineering, medicine, business, the humanities, and education [to collaborate to] solve big problems in a human centered way«.[50] According to Sanders and Strappers the wide-scale applicability of Design Thinking has led to it being »acknowledged in mankind's drive to address the challenges of global, systemic issues«.[51] The United Nations advocates

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41 Ibid., 133.

42 Cross, Nigel: »Expertise in design: an overview«, in: *Design Studies* 25 (2004), 427–441.

43 Ibid.

44 Ibid.

45 Dorst, Kees: »The core of ›design thinking‹ and its application«, in: *Design Studies,* 32 (2011) 6, 521–532.

46 Cross: »Expertise in design«.

47 Ibid., 521.

48 Razzouk, Rim/Shute, Valerie: »What Is Design Thinking and Why Is It Important?«, in: *Review of Educational Research* 82 (2012) 3, 331.

49 Manzini, Ezio: »Design Schools as Agents of (Sustainable) Change: A Design Labs Network for an Open Design Program«. Paper presented at: CUMULUS // DRS SIG on Design Pedagogy 1st International Symposium for Design Education Researchers La Bourse du Commerce, Paris 18–19, May, 2011, 9–16.

50 Meinel, Christof/Leifer, Larry: »Design Thinking Research«, in: Hasso Plattner/Christof Meinel/Larry Leifer (eds.), *Design Thinking: Understand – Improve – Apply*, London: Springer 2011, xiii-xxi.

51 Sanders, Elizabeth. B. N./Stappers, Pieter. J.: »Co-creation and the new landscapes of design«, in: *Co-design* 4 (2008) 1, 14.

the use of Design Thinking in improving a range of public services.[52] Some Design Thinking researchers argue that the potential of Design Thinking means that is one of the most vital »21st century Skills« which everyone should possess.[53] In view of this instruction in Design Thinking is available for learners of all ages and from all backgrounds and occurs at both non-assessed and assessed levels. To illustrate, Stanford University and IDEO have recently collaborated to create open-source teaching material with the aim helping teachers across the world to educate children in Design Thinking.[54] Stanford University and IDEO also run unassessed online crash courses in Design Thinking. Stanford University claim that novices of all ages and from all backgrounds can use the online material to benefit their »personal and professional routines«.[55]

The narrative presented in this chapter seems to suggest that, in the century-long history of research into how designers think, Contemporary Design Thinking has been shown to more effective than Design Thinking of the Early and Middle Decades of the 20th Century in tackling large-scale societal problems. Case closed. End of story... Well, perhaps not quite. Design practices and philosophies of design do not sit outside of socio-political contexts. Indeed, like any human thought or activity, design is intrinsically embedded in them. (The aforementioned closure of the Bauhaus by the Nazi regime in 1933 is a stark testament to the connection between design and socio-political contexts.) There are emerging clues that current socio-political contexts may provide an additional turn in the saga of Design Thinking.

The Beginning of an Era of Diminished Interest in Contemporary Design Thinking?

Recently, some researchers have criticised ideas which are fundamental in promoting wide-scale adoption of Design Thinking by both businesses and public institutions. Maciver et al. critique the extent to which Design Thinking may be useful in enabling interdisciplinary problem-solving: »While in theory the design thinking approach emphasises the value of interdisciplinarity in each phase, in practice this has been problematic«.[56]

Going further, the psychologists Robert Farrell and Cliff Hooker question the validity of a fundamental principle which has allowed design researchers to promote the

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52 Allio, Lorenzo: *Design Thinking for Public Service Excellence*, Singapore City: United Nations Development Programme 2014.

53 Razzouk/Shute: »What Is Design Thinking?«, 331.

54 https://www.designthinkinginschools.com/ [17 January 2020].

55 Stanford University: Welcome to the Virtual Crash Course in Design Thinking, https://dschool.stanford.edu/dgift/ [17 January 2020].

56 Maciver, Fiona/Malins, Julian/Kantorovitch, Julia/Liapis, Aggelos: *United We Stand: A critique of the design thinking approach in interdisciplinary innovation. Proceedings of DRS 2016*, Design Research Society 50th Anniversary Conference, held, Brighton, UK, 27–30 June, 2016, 9.

efficacy of Design Thinking.[57] Design researchers have long argued that the way that designers think both differs from, and is more effective, than the way natural scientists think. Farrell and Hooker claim this is not the case. They claim that both scientific problems and design problems can be wicked in nature. Farrell and Hooker therefore argue that both types of professionals routinely tackle Wicked Problems. In view of this, Farrell and Hooker suggest the existence of an intrinsic relationship between the way designers and scientists think, for both are the »product of a common core cognitive process«.[58]

Research from academics can be influential. The actions of governments however tend to have more sway. Governments tend to use allocations of funding to signal both their support for certain philosophies and practices and their criticism of other. In the UK, the government has focussed on funding STEM subjects (STEM is an acronym for Science, Technology, Engineering and Mathematics) at university level. The government began this course of action by removing all funding to universities which do not teach STEM subjects.[59] Building on this strategy, it allocated an additional »teaching capital fund« of £200 million in the 2015–16 academic year to universities to further promote teaching and research in STEM subjects.[60] High level government officials have consistently reiterated their support for STEM subjects. When in post, the one-time Education Secretary Nicky Morgan argued the rationale for supporting STEM subjects is clear: »the subjects that keep young people's options open and unlock the door to all sorts of careers are the Stem subjects«.[61]

In contrast to the positive effects of studying a STEM discipline, Morgan argued that the future prospects for those studying arts-based subjects may be quite limited—in some cases it may hold people back for the rest of their lives.[62] The UK government classes design as an arts subject, therefore design subjects do not receive additional funding. This has influenced greatly reduced provision in art and design foundation courses.[63] The government's move away from funding design subjects has also affected provision at secondary school (high school) level. The subject ›Design and Technology‹ has been axed from almost half of secondary schools in the UK.[64] The reduction in foundation course places and the decrease in teaching of design

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57 Farrell, Robert/Hooker, Cliff: »Design, science and wicked problems«, in: *Design Studies* 34 (2013) 6, 681–705.

58 Ibid., 701.

59 Prince, Rosa: »Higher education – universities with arts courses bear the brunt«, in: *The Telegraph* [5 November 2010].

60 *Higher Education Funding Council for England Policy Guide: Science, technology, engineering and mathematics* (STEM), [27 January 2015].

61 Morgan cited in, Paton, Graeme: »Nicky Morgan: pupils ›held back‹ by overemphasis on arts«, in: *The Telegraph* [10 November 2014].

62 Ibid.

63 Young-Powell, Abby/Gil, Natalie: »Students occupy Central St Martins in Protest against Cuts«, in: *The Guardian* [24 March 2015].

64 Turner, Camilla: »Design and Technology GCSE Axed from Nearly Half of Schools, Survey Finds«, in: *The Telegraph* [10 March 2017].

and technology at school level may negatively affect the future of design degrees at university level and the status of the design professions. The UK government is not alone in showing reluctance when it comes to supporting design. In 2017, the US government attempted to slash arts funding dramatically. The proposal was eventually overturned by the US Senate. In contrast, the US administration did not recommend a cut to STEM funding. Had the proposal to cut arts funding advanced into legislation, it was predicted to cut the number of teachers of creative subjects in schools.[65]

Conceivably, the trend in the UK and the USA for reduced emphasis on design subjects may lead to a reduced emphasis placed on the value of Contemporary Design Thinking in the quest to solve large-scale problems in society. In contrast, it is conceivable that the focus on STEM funding may precipitate a renewed interest in Design Thinking of the Early and Middle Decades of the 20th Century. Emerging socio-political contexts may therefore play an important part in precipitating a further turn in the 100-year old story of Design Thinking. In an ironic and unfortunate twist of fate, it is possible that the relentless push by a legion of design theorists across the last 40 or so years to distance Contemporary Design Thinking from Design Thinking of the Early and Middle Decades of the 20th Century may have helped to influence the UK government in classing design as an arts-based subject and not a STEM-based subject.[66] Conceivably, decades from now, we may be able to reflect on the idea that design researchers have been partly responsible for the demise of Contemporary Design Thinking. (Although in decades from now, Contemporary Design Thinking will be anything but contemporary.)

Potential Ramifications of a Renewed Interest in Design Thinking of the Early and Middle Decades of the 20th Century

When Walter Gropius sowed the seeds of Design Thinking of the Early and Middle Decades of the 20th Century, he did not see the need to involve users of design in the design process. As this form of Design Thinking progressed, design theorists continued to believe that their own expertise in the use of natural scientific methods would enable them to speak on behalf of users. When experts influenced by Gropius created spaces for living, they assumed that people residing in homogenised tower blocks would behave as the experts thought they should. However, the »social decay, drug use and family breakdown« linked with Sheffield's Park Hill Estate and many similar high-rise architectural schemes around the world evidence that this was not always

65 Miller, Hayley: »U.S. Students Are Struggling in The Arts. Donald Trump's Budget Would Make the Problem Worse«, in: *The Huffington Post* [28 April 2017].

66 Ghassan, Aysar: »Design Thinking: A Rod for Design's Own Back?« Paper Presented at The 50th Anniversary Design Research Society Conference, Brighton, UK, 27–30 June, 2016.

the case.[67] Times have changed a great deal since Gropius' era. More than 50 years of poststructuralist philosophy has consistently critiqued the legitimacy of top-down authority. Citizens in many parts of the world reject the idea that decisions should be made for them. Instead, they expect to be able to have agency in their own lives. The change in times would present a significant limitation to any move to return to philosophies associated with Design Thinking of the Early and Middle Decades of the 20th Century.

The issue of artificial intelligence further complicates discussion on possible directions for 21st Century problem-solving philosophies. When the Design Methods movement of the 1960s attempted to replicate the problem-solving abilities of designers, theorists did not envisage writing code that could ›learn‹ human traits. Their aim was merely to create formulae that could accurately describe human activities. The advent of artificial intelligence has made the prospect of non-human forms mimicking certain human activities a reality. The jury is currently out on whether artificially intelligent beings will, in the foreseeable future, be able to react with humans in a way which enables these forms to pass the famous Turing Test. The closer artificially intelligent forms get to being ›like us‹, the more necessary it will be to consider where they will stand on the issue of problem-solving philosophies. The progress of artificial intelligence may therefore prove to be the ultimate test of how the legacy of Gropius' problem-solving philosophies will be perceived.

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Adham Selim

The Taxonomic Turn: Organizing Architecture as Critique

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The later decades of the 20th century signaled an irrevocable erosion of architecture's capacity to mobilize social change. Such erosion marked not only a disciplinary departure from one given modus operandi to another, but also a decisive turn from an epistemic phase-space in which several 20th century avant-garde groups thrived. The former traditional roles of the 20th century's architect as visionary, ideologue, and provocateur; basically an agency of representing and embodying polity, seemed to have been overtaken by the speeds and scales of change in the material worlds wherein these roles are supposedly deployed. The reasonable doubt about extinct genres of disciplinary critique inherited from the 20th century (*manifesto*, *utopia*, *paper architecture*, etc.); particularly their political futility,[1] effected—or so we are led to believe—a growing shift from radical reorientation of the architectural discipline to tactical reorganization of its premises along the divides of taxonomic classifications, such as ***images*** (Venturi's *duck* and *decorated shed*), ***sizes*** (OMA's *s*, *m*, *l*, and *xl*), ***envelopes*** (Alejandro Zaera Polo's $x \approx y > z$, $x \approx y \approx z$, $z > x \approx y$, and $x \approx z > y$), ***gestures*** (Herzog and de Meuron's *house*, *stack*, *structure*, and *quarry*)[2] etc., which despite carrying the seed of Durand's *Précis des leçons d'architecture*—in particular as being one of the earliest formulations of the notion of ***type***[3]**—** still constitute a significantly different template of disciplinary critique from that of the modern project. The transition toward classifications of type cannot be reduced however to

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1 Although issuing architectural manifestos witnessed an unprecedented surge towards the end of the 20th century, it was rather their capacity to be weaponized against a status quo that was however reduced to a minimum. Mark Wigley accounts for the fact that »the proliferation of the manifesto form as it's currently practiced acts as prophylactic against change [...] Manifesto as weapon becomes manifesto as anesthetic [...] What is going on now is that the students of architecture are being invited to produce a surplus of manifestos in a kind of parody, a massive unwitting Dada event [...].«
See: Wigley, Mark: »Manifesto Fever«, in: Craig Buckley (ed.), *After the Manifesto: Writing, Architecture, and Media in a New Century*, New York: GSAPP Bools T6) Ediciones 2014, 170. Also useful statistics on architectural manifestos produced during the 20th century in: Van Leeuwen, Andrew. »Mapping the Modern Manifesto: 110 Years of Architectural Declarations«, in: *Arcade* (2014), 34–35, http://arcadenw.org/article/manifesto-test [31 January 2020].

2 While taxonomies of *images*, *sizes* and *envelopes* are grounded in seminal literature produced by their respective authors, the lesser-known and -discussed taxonomy of *gestures* comes from a lecture by Jacques Herzog at Harvard GSD, in May 2011, https://www.youtube.com/watch?v=cbIjyVnD3Y8 [31 January 2020].

3 It's widely common to credit Quatremère de Quincy, and to a lesser extent, the abbé Marc-Antoine Laugier for developing the notion of architectural ›type‹. Their *Dictionnaire historique d'architecture* (1832) and *l'Essai sur l'architecture* (1752–3) respectively lie behind much of the contemporary debate on the subject. However, the way Durand approached the notion of ›type‹ varies significantly from how it features in the work of Laugier (as dissected by Durand himself) and in Quatremère's as discussed in Anthony Vidler's seminal article *The Idea of Type: The Transformation of the Academic Ideal 1750–1830* (1977). For one, unlike Quatremère and Laugier, Durand showed much less enthusiasm for the doctrine of imitation. In contrast, he was a fierce critic of Laugier's allegory of primordial hut: a presumably ancient, natural, and thereby, principal model/type from which the essential elements of architecture can be derived. Similarly, the difference is striking when seeing Durand's *type* against a backdrop of Quatremère's assertive Neoplatonism. Whereas Quatremère's type is an original primitive essence, Durand's is rather a systemic tool. So within the scope of this text, I'd argue that the first ›modern‹ deployment of the notion of ›type‹, as both descriptive and generative abstraction of architecture through conceptual and diagrammatic organization, lies with Durand.
See: Durand, Jean-Nicolas-Louis/Picon, Antoine: *Précis Of the Lectures on Architecture: with Graphic Portion of the Lectures on Architecture*, Los Angeles, Calif.: Getty Research Institute 2000.

some simple causality. To argue that rethinking architecture through taxonomies, and as taxonomies, is a subsequent development for, or the antecedent of previous modes of disciplinary critique native to the 20th century is precisely to argue for a *Geistesgeschichte* reading of these taxonomies, a reading which tends to interpret historical evidence as though conforming or reacting to more-or-less conscious undercurrent; a *geist*, which, of course, is not the intention of this text.

On a spectrum that spans a disciplinary binarism (without necessarily embracing it as such) between *project* (a universal theoretical construct) and *practice* (a contingent empirical agency), such taxonomies are definitely more practice.[4] However, as they are growing into a somewhat regular phenomenon, they have the collective effect of something closer to a project. They are thought to be theoretically stable through geographies and times, and although generally based on arbitrary evidence, they often rationalize their findings into generalizable theory. The turn towards taxonomies has gradually amassed some kind of universal relevance, precisely not by extrapolating previous genres of disciplinary critique, rather by developing new conceptual links (between different people, objects, cultures, places, etc.) that are not only incidentally characteristic of their respective critical practices, but are indeed the recurring essence of a disciplinary tactic. What a taxonomy does in architecture, is that it simulates the effect of a grand theory, without necessarily being one.

In producing ways of identifying and sorting built forms and building practices, a taxonomy assumes a dual function: that of a projective tool that organizes and extends previous architectures, and that of a critical medium that justifies future architectures. Simultaneously a map and design brief that renders the totality of architecture graspable and navigable. When Rem Koolhaas, for example, argues that architecture is small, medium, large and extra-large, it is not as though he is suggesting a simple fourfold division of all built objects. He rather puts forward a way of conceiving of what architecture, as a whole, is.[5]

The flipside of the taxonomic turn then looks like an attempt at reversing a historical profusion of postmodern *petit récits* beyond master narratives of modernism;[6] an attempt at restoring a shared basis for the discipline. Building taxonomies normally implies forging into coherent continuities a diverse range of concepts and objects; imparting them with an underlying principle, and in so doing, running the risk of

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4 Allen, Stan: »Practice vs. Project«, in: *Practice: Architecture, Technique and Representation*, Amsterdam: G+B Arts International 2000, xiii-xxv.

5 Koolhaas, Rem/Mau, Bruce: *Small, Medium, Large Extra-Large*, New York: Monacelli Press 1995, 496.

6 A concept developed by French philosopher Jean-François Lyotard to describe the exhaustion of grand historical narratives—primarily that of the liberation of humanity, and that of the speculative unity of all knowledge—that substantiate scientific discourse. In our case, the demise of modernism's grand narratives of autonomy brought with it the need to compensate for absence. »Scientific knowledge« says Lyotard, »cannot know and make known that it is the true knowledge without resorting to the other, narrative, kind of knowledge, which from its point of view is no knowledge at all.« See: Lyotard, Jean-François: *The Postmodern Condition: A Report on Knowledge*, Manchester University Press 2004, 31–37.

exacting anachronistic categories on an ontologically unstable whole[7]—a risk that our pursuit of a principle pertaining to various taxonomies is not either totally impervious to. As such, an architectural taxonomy is deemed ›interesting‹ insofar as it responds to existing disciplinary concerns and engage with previous theory.[8] It is noteworthy however that the above-mentioned taxonomies also emerged from the uncertainties of these very petit récits themselves. They embraced their own instability as a frame of reference. Fredric Jameson elaborately notes this implicit unstable character of theoretical models of totality produced under postmodernism:

> [...] monumental models of »totality,« of an architectonic kind, are reconstructions of those residual fragments in the modern period... The relaxation of the postmodern then determines not a return to older collective forms but a loosening of the modern constructions such that its elements and components—still identifiable and relatively undecomposed—float at a certain distance from each other in a miraculous stasis or suspension, which, like the constellations, is certain to come apart in the next minute.[9]

As though numerating these »undecomposed elements and components« immunized postmodern theories of totality against what Fredric Jameson calls the »prophetic elitism of modernism«,[10] architectural taxonomies of the 20th century were taken with a healthy dollop of skepticism, and deployed as soft gradients against which individual instances would always be misplaced.

Types and groups in these taxonomies are not mutually exclusive; their defining characteristics are often amorphous. A decorated shed could always be simultaneously a duck.[11] Such taxonomies have lesser claim at scientific objectivity or exactitude, inasmuch as they are unapologetically ideological. They emerged in the first place as if surrogates for the grand universal visions of modernisms, however unlike the latter, they remain largely partial, transient, and by far hermeneutic attempts at disciplinary reorganization rather than radical ventures of socio-cultural programming. They espoused the global architectural psyche of their time, abandoning the telegraphic antagonism of avant-garde journals, magazines, pamphlets and posters toward more gentle[12] and retroactive[13] manifestos couched in rather lengthier and slower formats. Anthony Vidler aptly recognizes this turn as one of discursive nature, aiming rather at »reflection on modes of interpretation and compositional strategies than a polemic

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7 Focault discusses in extensive detail various problems incurred in historical attempts of building empirical taxonomies of type as such. See: Foucault, Michel: *The Order of Things: Archaeology of the Human Sciences*, New York: Pantheon Books 1970, 125–162.

8 For example, Alejandro Zaera-Polo modeling his *Global Architecture Political Compass* (2016) after Charles Jenks's infamous evolutionary diagram from *Architecture 2000* (1971).

9 Jameson, Fredric: *Postmodernism: or, the Cultural Logic of Late Capitalism*, London: Verso 1991, 100.

10 Ibid., 78.

11 »[...] We maintain that both kinds of architecture are valid— Chartres is a duck (although it is a decorated shed as well) [...]«, see: Venturi, Robert et al: *Learning from Las Vegas*, Cambridge, MA: MIT Press 1977, 87.

12 Robert Venturi's *Complexity and Contradiction* (1966).

13 Rem Koolhaas's *Delirious New York* (1978).

for a new way of designing.« Although he also ascribes it—perhaps under the pressure of none other than the thematic coherence of his essay—to a renewed interest in manifesto as a discursive form.[14] Similarly, Beatriz Colomina speaks of »a new kind of subtle manifesto, a soft manifesto, refusing to define the future yet organizing it into set of points.«[15] This however shows quite particularly in Alejandro Zaera-Polo's *Global Architecture Political Compass* (2016), itself a taxonomy, which seeks to define and categorize emergent political positions in architecture. The simultaneous compass-map shows the different categories of *techno-critical*, *technocratic*, *compositional*, *austerity-chic*, *activists*, *material fundamentalists*, *constitutionalists*, *new historicists*, *revisionists*, *skeptics* and *populists* as overlapping liquid blobs, suggesting lesser pretension of authority. It seeks to »trigger debate«, says Zaera-Polo, »taken as a broad approximation to be discussed and corrected«, and above all, to »initiate a multiplicity of alternative maps.«[16]

He further adds,

> architecture is no longer a vehicle of substantial transformation but an internal process of thought that may change nothing other than our perception of what happens anyhow, with or without architecture [...] there is so much of everything happening simultaneously that it is almost impossible to develop a critical approach to contemporary work [...] This text is, therefore, an attempt at such theorization.

Furthermore, in his *Politics of the Envelope* he concludes:

> it seems unlikely that a revision of the discipline can be initiated without resorting to some form of taxonomy, however precarious and ephemeral it may be.[17]

While contemporary spatial theory is grappling with a turbulent mix of migrant flows, cloud cartography, informal urbanisms, infrastructural systems, anthropocenic landscapes, and posthuman geopolitics, none of these seems even remotely actionable in architecture as it is practiced today—yet this is precisely where elected and unelected polities of today seem to be operating. Therefore, turning to taxonomies as architectural hermeneutics lacks in the previous hubris of modernist genres of disciplinary critique. To the contrary, it precisely marks a reactionary modesty in the makeup of architectural politics: at the very moment when the scale of disciplinary challenge has become infinitely larger and faster than the discipline, change becomes a reflective question of perceptional organization, a fallback in attempt to understand that which Zaera-Polo calls »so much of everything happening simultaneously«; a question whose answer is bound to be »precarious« and »ephemeral«. Zaera-Polo does not describe an unfamiliar reality though. It is fairly discernible that taxono-

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14 Vidler, Anthony: »From Manifesto to Discourse«, in: Craig Buckley (ed.), *After the Manifesto: Writing, Architecture, and Media in a New Century*, New York: GSAPP Bools T6) Ediciones 2014, 24–39.

15 Colomina, Beatriz: »Manifesto Architecture«, in: Craig Buckley (ed.), *After the Manifesto: Writing, Architecture, and Media in a New Century*, New York: GSAPP Bools T6) Ediciones 2014, 41–61.

16 Zaera-Polo, Alejandro: »Well Into the 21st Century: The Architectures of Post-Capitalism?«, in: *El Croquis*, no. 187 (2016).

17 Zaera-Polo, Alejandro: »The Politics of the Envelope«, in: *Log*, no. 13/14 (2008), 207

mies, ever since their first deployment in architecture, used to be a cognitive retreat in the face of that which is fantastically distorted beyond architectural faculties of the time. Taxonomy hails from old Greek *taxis* »order« and *nomia* »method«, which is in itself derived from *nomos*, a »first measure of all subsequent measures«,[18] bears within its etymological bounds a coping with that to which no order had yet been given.

As histories of architecture—by which is meant here a prevailing modality of reading historical literature by architects—[19] credit the 18th century with a peculiar relevance for organizing things, the first appearance of taxonomies in architecture, as the story goes, is said to be borrowed from 18th century's natural sciences.[20] That architecture was first organized into taxonomies, its constituent parts classified in name-bearing types, groups, and kinships (columns, entablatures, and pediments, for example) is arguably a well-known story.[21] Perrault's *Ordonnance* (1684) Blondel's *Cours d'architecture* (1771-7), and Durand's *Recueil et parallèle* (1801) are commonly held to be, among other things, tools of transferring taxonomic order; instruments of importing rationality—of natural sciences in particular—into architecture; an import which ironically maintains architecture as an internally autonomous discipline in a world increasingly dominated by new episteme.

The missing disruption in this story, however, is that the 18th century was also precisely when classical thought excluded kinship and resemblance as primary constructs of scientific knowledge.[22] Sorting architectural instances according to their resemblance to a 'pure' type was already too outdated a practice by the late 18th century

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18 The definition cited here refers to Carl Schmitt's extensive discussion of the meaning of the word *nomos*. Schmitt, Carl: *Nomos of the Earth: in the International Law of Jus Publicum Europaeum*. Translated by G. L. Ulmen, New York: Telos Pr, 2006, 67

19 Some of the earliest architectural historians had been originally trained as art historians, others as architects, and these two legacies have an enduring impact on the development of architectural historiography vis-à-vis strategies for how the past can be known, systematized and represented. Very often such strategies follow the general logics of stylistic (dis)continuity, periodization, technique, and oeuvre, in pertaining to the essential question of architectural history's *unit*: »the way a historian divides into workable portions the ›total history‹ of architecture.« A summary of methods and limits of architectural historiography in: Leach, Andrew: *What Is Architectural History*, Cambridge/Malden: Polity Press 2010, 41–75.

20 Anthony Vidler argues that following 18th botanist Carl Linnaeus's taxonomy of the zoological universe, architects regarded architecture, a practice that had been thus far thought in terms of imitation to natural order, as something to be similarly taxonomized. Vidler, Anthony: »The Idea of Type: The Transformation of the Academic Ideal 1750–1830«, in: *Oppositions*, no. 8 (1977), 101.

21 Martin, Reinhold: *The Organizational Complex: Architecture, Media, and Corporate Space*, Cambridge, MA: MIT Press 2005, 17–18.

22 Foucault: *The order of things*, 50–58.

that it was deemed mythical and unscientific.[23] The first attempts to sort architecture into taxonomies were not necessarily effected by some sort of transference from one discipline to another inasmuch as by a reconstitution of episteme: a perceptional change in both knowledge itself and the nature of what is to be known. In other words, building a taxonomy is, and had always been, an active epistemic effort that aims at designing an information architecture of reality as it is parsed and consolidated into a census of elements pure of all verbal sedimentation, and in so doing, it reinvents the real.

The *Stack*, which is an operative and diagrammatic model of technological totality proposed by American design theorist, Benjamin Bratton, offers a convenient grounding for this argument. The Stack maps the urban and political geographies of today's world, along with the technologies that make their architectures possible into one planetary-scale model: an accidental megastructure taxonomized into six ***platforms*** (*user, interface, address, city, cloud* and *earth*) where each is understood as a systemic conglomerate in its own right comprising of various technical and architectural devices.[24] While Bratton's taxonomy comes as a design proposal for a new political geography more suited to the era of planetary-scale computation rather than the current Westphalian model, he uses it to procedurally make legible a technological reality so vast and so opaque to be elucidated by a single theoretical gesture, or even a combination of gestures. He writes

> our description of a system in advance of its appearance maps what we can see but cannot articulate, on the one hand, versus what we know to articulate but cannot yet see, on the other.[25]

The Stack is both a cause and effect to extraordinary organizational forms of complexity that constantly solidify polities, economies, and cultures, the very fabric of reality, in their own image. Mapping the Stack, tracing its internal dependencies, and giving specific names to its platforms, is no mere act of description, rather a conjectural leap, an attempt at being a »first measure of all subsequent measures.«[26]

Itself a long-standing organizational model in various technical fields, the Stack is perhaps less alien to taxonomies than what one may think. As with every taxonomy,

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23 Durand in his *Précis des leçons d'architecture* (1802) already showed the fallacy of Vitruvius's allegory about human proportion as the origin of Classical Order. Whereas much of Renaissance authors evidenced the rationality of classical architecture by illustrating hierarchical affinity in relation to ancient or divine exemplary type (as it is the case with Classical Orders according to Vitruvius) the Neoclassical rationale sought to establish universal orders based on inherent identity and difference between types, without necessarily referencing an external ideal. Order, as an 18th century's notion, could only be established by analytical comparison between several architectural objects internally with regards to their measurements and their relative position within such order. Durand, Jean-Nicolas-Louis/Picon, Antoine: *Précis Of the Lectures on Architecture: with Graphic Portion of the Lectures on Architecture*, Los Angeles, Calif.: Getty Research Institute 2000, 81–82.

24 In this scenario a *user*, human and non-human, when cohered to an *interface*, they together provide a synthetic image of an *address* within the physical and virtual landscape of a *city* that lies in turn within the geographic archipelago of the *cloud* running on the consumption of *earth*'s resources to animate all of the above.

25 Bratton, Benjamin: *The Stack: On Software and Sovereignty*, Cambridge, MA: MIT Press 2016, 14.

26 Ibid., 41–43.

Bratton's Stack recasts previous taxonomies, and provides for new ones to come. In particular, Bratton leans on Alejandro Zaera-Polo's taxonomy of architectural envelopes to further develop his own argument for software envelopes.[27] In his notes, he even entertains adding a fifth category to Zaera-Polo's taxonomy.[28] Whereas Zaera-Polo's schema is limited to the political effects of architectural envelopes, Bratton's Stack combines architectural with other software urban-scale envelopes, where they together produce the fuzzy medium that make and unmake publics in ways similar to what Gilles Deleuze describes in his *Postscript on Societies of Control*:

> where one would be able to leave one's apartment, one's street, one's neighbourhood, thanks to one's (dividual)[29] electronic card that raises a given barrier; but the card could just as easily be rejected on a given day or between certain hours; what counts is not the barrier but the computer that tracks each person's position —licit or illicit— and effects a universal modulation.[30]

Being allowed or denied access (to one's own bank account, to a migrant destination, to an e-book, etc.) here is an event mediated through different forms of software, rather than physical envelopes.

The ultimate architectural concern for Bratton pertains to what does, or does not, remain of architecture after delegating the programmatic organization of social connection and disconnection of populations, things, and information in space and time—traditionally, if also hypothetically, a function of architecture—to technical software and hardware. The political program that simultaneously produces, and is produced by, such delegation is not only a matter of traditional architectural envelopes, and traditional politics thereof, but also of the machines and systems that are themselves *politics*.[31] Mapping these politics requires the universal addressability of »every ›thing‹ therein that might compute or be computed« in one taxonomic totality: an information architecture that engulfs the planet in its entirety. Such a task, while architectural in nature, has never been thus far a normative part of any architectural design theory.[32]

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27 Software (per Bratton) is now tasked with structuring flows of social organization that had once been the assignment of architecture under modernism, and as such qualifies for new theory of envelopes.

28 In his notes, Bratton proposes an *elongated wedge* (probably $x > y \approx z$) such as the Berlin Wall or the Israeli Security Barrier: a pure geopolitical interface cleaving an absolute inside and outside without hosting any regular interior program within itself. Bratton: *The Stack*, 167; 408.

29 The »dividual« is a concept developed by Gilles Deleuze and Felix Guattari that refers to a physically embodied human subject that is endlessly divisible and reducible to data representations via the modern technologies of control. Deleuze, Gilles/Guattari, Félix: *A Thousand Plateaus*, London: Continuum, 2012, 376.

30 Deleuze, Gilles: »Postscript on the Societies of Control«, in: *October* 59 (1992).

31 Bratton: *The Stack*, 43-44.

32 Ibid., 191.

While this may partly explain much of the renewed interest in architecture as a historical depository of metaphors, toolkits, and tactics for building totalizing schemas, it also complicates architecture's relationship with time. Architecture, weighed down by its own slowness, is inopportune position from which to build a taxonomy of everything. In his essay *Everything is Already an Image*, John May explains that

> the specific conception of time embedded in a technical system is inseparable from the forms of thought and imagination it makes possible or impossible.

In other words, as memory is externalized, saved and cumulated as culture, the storage speed of the medium, in this case architecture, is decisive for the forms of consciousness with which it is associated. According to May, one of the inadequacies of architecture as a recording medium lies in that it had been surpassed by the speed of that which it tries to record, a condition that characterizes architecture's transition from orthographic systems built on linear historical time to postorthographic systems enmeshed in »real time« that relates the present to »all possible futures at once.«[33] Austrian philosopher Armen Avanessian and British writer Suhail Malik however offer a different reading. They propose that as the leading conditions in our societies today are becoming those of systems, infrastructures and networks rather than individual cultural agency (such as that of architecture), historically inherited semantics and politics based on it are no longer sufficient to explain the present or predict the future. Further, the linear and causal path connecting past, present, and future becomes convoluted and at times reversed rather than multiplied as in May's argument.[34] Examples used by Avenassian and Malik include *derivatives* that use the unknown future price of an asset and the risks involved therein to draw profits against its present price, *preemptive policing* intended to apprehend crimes before they are committed, *preemptive personalization* which uses algorithmic procedures to pre-order in the present items a customer will actually learn that they need in the future, and so on. For Avaenassian and Malik, this *time complex* is a structural condition of complex societies, rather than a predicament specific to the transition to postorthography.

As such, it is becoming increasingly common for established architectural firms to set themselves in a speculative relationship with a past future that we have already exceeded. One recurring manifestation of this is architectural research-arm subsidiaries, that also pass as internal specialized units—although with separate identity and mission from their mother firms. They operate in fields as diverse as market research, management consultancy, and strategic planning (AMO of OMA, est. 1998), branding and behavior design (GXN of 3XN, est. 2007), simulation and information management (BIG IDEAS of BIG, est. 2014), and digital solutions and data technology (UNSense of UNStudio, est. 2018). While often avoiding the designation ›architec-

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33 May, John: »Everything Is Already an Image«, in: *Log*, no. 40 (2017).

34 Avanessian, Armen/Malik, Suhai: »The Speculative Time Complex«, in: Armen Avanessian/Suhail Malik, *The Time Complex. Post-Contemporary*, Miami: Name Publications 2017, 7.

ture‹ in order to facilitate a strategic relationship with more diverse markets, they are often depicted as though outposts set in conceptually leading time zones with respect to their mother firms. They are supposed to occupy a frontal position in time wherein the knowledge they produce is supposed to go back and inform decisions taken by their firms. On the other hand however, as architects' authorship over urban form is more than ever relegated to the hands of management consultants, such as IBM, Cisco, PwC and McKinsey[35]—basically corporate sovereignties with means to author and organize complex and large systems that operate in what Avenassian and Malik call the »pre-future«—it is perhaps too facile to counter for this by deploying corporate pop-ups within more-or-less traditional architectural firms.
Architectural theorist Keller Easterling explains that rather than singular architectural forms, consultancy giants and management policies around the world nowadays foster reproducible urban products, brands and systemic recipes set within modular technological, infrastructural and logistical arrangements that make up the infrastructural space of our reality. This infrastructural space is in itself the fruit of networked action-forms: routines and protocols for sourcing, delivery and consumption of labor and materials, as well as a vast array of technological, financial, planning, and management solutions. Taken together, the infrastructural space and the action-forms which make it possible, they consolidate an extra-human agency in the form of a spatial operating system that does not merely facilitate the architecture of the world, it is rather *itself* the architecture of the world.[36] However, this operating system that Easterling tries to depict is not at all something immediately legible, she explains:

> Information resides in the technologies—from telecommunications to construction—as well as in the declared intent or story—from decentralization to stealth. Yet information also resides in a complex of countless other factors and activities. All these activities, taken together, lend the organization some other agency or capacity—a disposition—that often escapes detection or explanation.[37]

In the place of Easterling's not-so-easily detectable »disposition«, Benjamin Bratton uses the metaphor »blur«, to describe that which gaps the oscillation between a present that cannot be fully described yet, and a future whose impact can already be imagined. He says:

> It may be that our predicament is that we cannot design the next political geography of planetary computation until it more fully designs us in its own image or, in other words, that the critical dependence of the future's futurity is that we are not yet available for it![38]

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35 More details about consultant-driven urbanism is found in Rory Hyde's report in Al Manakh / Volume, see Hyde, Rory: »Measuring the Presence of Consultants«, in: *Volume* 23 (2010), 161.

36 Easterling, Keller: *Extrastatecraft: the Power of Infrastructure Space*, London: Verso 2016, 14.

37 Ibid., 112.

38 Bratton: *The Stack*, 15.

While Bratton suggests an investment in such blur; in mapping its emergence for what it is, and pose it as a design problem, rather than an unalterable fate, British artist and writer, James Bridle, however, takes it for what he believes to be a ›new dark age‹. He writes in the first few pages of his book with the same name:

> The abundance of information and the plurality of worldviews now accessible to us through the internet are not producing a coherent consensus reality, but one driven by fundamentalist insistence on simplistic narratives, conspiracy theories, and post-factual politics. It is on this contradiction that the idea of a new dark age turns: an age in which the value we have placed upon knowledge is destroyed by the abundance of that profitable commodity, and in which we look about ourselves in search of new ways to understand the world.[39]

While aptly diagnosing the problem: the impossibility of a human-centric information architecture of everything, a taxonomy of omniscience, and to act meaningfully upon it, Bridle's conclusion welcomes this cognitive limitation as an inevitable condition that must be grappled with. He concludes that

> the ability to think without claiming, or even seeking, to fully understand is key to survival in a new dark age because, as we shall see, it is often impossible to understand.[40]

Bridle's statement reflects an existential threat that has to do with human agency: our inability to understand the need for, and enact change. However, and by the same token, his new dark age harbors this threat as a tactic for a rather romantic, if also futile, downscaling of the problem back to human cognition: at least we understand that we cannot understand. While Bridle's diagnosis is evident, his recipe falls back to a genre of humanism ill-suited for the challenge.

Contrary to Bridle's statement, perhaps the taxonomy we need, unlike any taxonomy we previously had, must cater for our limited cognitive capacity. The taxonomy to come is evidently of networked intelligence, built by more than individual human agencies, and it necessarily paints previous architectural attempts of taxonomic reorganization as obsolete.

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39 Bridle, James: *New Dark Age: Technology and the End of the Future*, London: Verso 2018, 12.

40 Ibid., 10.

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3. Ecologies of the Future

Arthur Crucq

Sustainable Architecture: Meditations on New Repertoires of Forms

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Introduction

In recent years a debate has arisen amongst architects and theorists on architecture that concerns the extent to which sustainable architecture could be the foundation and imperative for a new repertoire of forms. The current ecological crisis not only raises questions about how to design the built environment in such ways that it demands less use of natural resources and energy; it also raises questions about the degree to which this can and should be expressed in form. To what extent and in what ways is it possible to exploit the design of a building so as to make the viewer aware of the building's sensible use of natural resources and thereby raise awareness about the human impact on the ecological environment? A negative answer would be that sustainability is mainly an economic and ecological imperative and as such is not applicable to form-related considerations. From this perspective it is irrelevant whether a sustainable building looks sustainable, as long as the building *is* sustainable. It can even be argued that the demand for sustainability in fact gets in the way of formal considerations. The counterargument would be that being part of the environment by definition, architecture thus by definition also relates to environmental issues. As such, the architectural form implicitly expresses how this relation is understood by the architect, how it is made explicit through its architectural form and subsequently how it is approached and contemplated by the beholder.
In this chapter I will discuss different arguments from the debate on the feasibility of sustainable architecture and will relate them to a number of examples from contemporary architecture. I will argue that there are indeed repertoires of forms that are fuelled by modern technology and that appear to be particularly connected to sustainable architecture. These repertoires of forms elicit aesthetical experiences that can also signify rational and moral concerns for the environment. However, it is not possible to state definitively that such an experience is also and always a necessity in the light of sustainability as a functional and moral imperative.

On sustainable architecture

From the perspective of the ›ecological‹ crisis, sustainability is often defined as the (moral) imperative that we are responsible for making sure that the needs of the present day do not harm the ability of future generations to ensure their needs.[1] The issue of sustainability therefore always relates to how we imagine possible futures.[2] Used as an adjective, sustainable in relation to architecture is then defined as architecture that does minimal harm to the environment and whose material and energy sources have a low impact on the environment, leaving future generations to make

1 Lane, Melissa: »A New Professional Ethics for Sustainable Prosperity«, CUSP Essay Series on the Morality of Sustainable Prosperity, 1, 5. See also Abreu, Pedro Marques de: »Sustainable Aesthetic in Architecture«, in: W. Leal Filho et al. (eds.), Handbook of Lifelong Learning for Sustainable Development: Springer 2018, 323–324.

2 Guy, Simon/ Farmer, Graham: »Reinterpreting Sustainable Architecture: The Place of Technology«, in: *Journal of Architectural Education* 54, 3 (2001), 142.

their mark on a future built environment as well.[3] The question is if sustainability can also be a formal imperative and thereby give it aesthetical relevance.[4] This question reverts to the 20th-century debate on the relation between form and function. Many of the functional aspects of modernist buildings resulted from new technology and the new or different use of materials.[5] As such, new technology and materials have expanded existing repertoires of form.[6] This also came with certain values and ethical concerns.[7] In the modernist debate it was often held that standardised production reduced costs and prevented the waste of material resources and labour, and was therefore more ethical.[8] Besides this, it would result in new forms of beauty and therefore raised aesthetic concerns.[9] These ideas were expressed in the form of manifestos that pervaded the progressive nature of their advocates, who derived a certain authority from being ahead of their times. Although in the Bauhaus manifesto Walter Gropius initially referred to past practices, in his later writings, new ideas about architecture and its social and cultural significance come to the fore.[10]
Manifestos still appear today, such as for instance the sustainist manifesto by Michiel Schwarz and Joost Elffers. It is too early to judge what the impact of these texts will be on the future and thus indirectly also on the history of the arts, architecture and design, but as in the 20th-century manifestos they express a concern for the relationship between form and function and its ethical implications framed in terms of sustainability and ecological awareness.[11]

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3 »sustainable, adj.«, in: *OED Online*, Oxford University Press, June 2019, www.oed.com/view/Entry/195210 [21 June 2019].

4 Baumberger, Christoph: »The Ethical Criticism of Architecture: In Defense of Moderate Moralism«, in: *Architecture Philosophy* 1, 2 (2015), 179.

5 Keeney, Gavin (ed.): »Chapter 3. Façades after the facade«, in: Rem Koolhaas (ed.), *Elements of Architecture*, Cologne: Taschen 2018.

6 As the ›usual‹ term ›formal language‹ comes with linguistic connotations, I want to avoid that term for now, although I do not deny that forms in architecture are related to language, for instance, as stylistic devices comparable to means of style in language, or in the sense of being able to index semantic content. My primary concern, however, is how to denote the possibility of a (more or less coherent) set of new forms that has the potential to constitute a distinguishable visual style in architecture for which I find ›repertoire of forms‹ more appropriate.

7 Raizman, David Seth: *History of modern design*, London: Laurence King Publishing 2010, 240–242; Heskett, John: *Industrial Design*, London: Thames & Hudson 1980, 21–26.

8 Gropius, Walter: *The New Architecture and the Bauhaus*, Cambridge (MA): The MIT Press 1965, 37–38.

9 Ibid., 43–44.

10 Gropius, Walter: *Programm des Staatlichen Bauhauses in Weimar*, Weimar: Staatliches Bauhaus 1919. See further, Curtis, Louise: »Architecture«, in: Olivier Gabet/Anne Monier (eds.), *The spirit of the Bauhaus*, London: Thames & Hudson 2018, 158–164; Wilhelm, Karin: »Die drei Direktoren am Bauhaus«, in: Jeanine Fiedler/Peter Feierabend (eds.), *Bauhaus*, Cologne: Könemann 1999; Gropius: *The New Architecture and the Bauhaus*, 19–29.

11 Schwarz, Michiel/ Elffers, Joost: *Sustainism is the new modernism: a cultural manifesto for the sustainist era*, n.p.: self-pub 2010. In these manifesto's, sustainability has a broader context and concerns not only the reduction of the use of energy or the most economical use of natural resources; it also relates to durability in a social sense. See also Meyer, Elizabeth K.: »Sustaining Beauty: The performance of appearance«, in: J*ournal of Landscape Architecture* 3 (2008) 1. Furthermore, see Guy, Simon/Farmer, Graham: Reinterpreting Sustainable Architecture, 143; Schwarz, Michiel/ Krabbendam, Diana (eds.), *Sustainist Design Guide: How sharing, localism, connectedness and proportionality are creating a new agenda for social design*, Amsterdam: BIS Publishers 2013, 12–13.

The possibility of sustainable aesthetics

The recent debate on sustainable architecture centres on whether and how the visual appearance of sustainable buildings can be endowed with specific formal properties, a repertoire of forms, that signify the specific sustainable nature of the built environment through an ›aesthetic‹ experience.

In defining aesthetics, architect Sang Lee departs from how Baumgarten denoted the term as a specific kind of knowledge not derived from reason but from sensual experience. The aesthetic quality of a building can thus be construed as the formal exterior quality that allows the subject to extract certain knowledge about the building in particular.[12] As the outer appearance of objects and bodies, and thus also of buildings, reveals information about the inner qualities of the object, the aesthetic experience allows the subject to also obtain knowledge about the interior qualities of the object as such, precisely through the perceptual properties of the object's surface.[13] With regard to architecture, this means that the aesthetic quality of a building relates to the way the building is perceived, comprehended and judged as a purposely designed and constructed form or assemblage of forms, designed and built from the context of a certain situation and a certain condition. According to Sang Lee, the built form articulates the fundamentals of its »programmatic, structural, material and spatial qualities.«[14] Lee argues that the aesthetic quality of a building arises from the order that connects these qualities to form a single whole. From this Lee draws the conclusion that, in the case of a sustainable building, the notion of its aesthetic quality thus concerns the way the built form is informative with regard to »how it was conceived and situated, and what makes it be so [sustainable] under what kind of conditions.«[15] He goes on to argue that as an aesthetic quality sustainability should be perceivable and comprehensible from the outer appearance of the building as the building's proper objective.[16] It can therefore be argued that the aesthetic quality of sustainable buildings resides, as with any architectural structure, in the expression of the qualities of the built form as a unified whole. It is through the building's distinctive visual appearance that these qualities find expression and allow the perceiving subject to acquire precise knowledge of the built form.[17]

In a paper from 2006 Tom Spector approaches the issue not by departing from a specific definition of aesthetics but by starting from the fundamental question of what constitutes architecture in the first place. To this end Spector refers to Vitruvius, who

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12 Baumgarten, Alexander Gottlieb: *Aesthetica*, 1750–1758, $ 1.

13 Lee, Sang: »Introduction«, in: Sang Lee (ed.), *Aesthetics of Sustainable Architecture,* Rotterdam: 010 Publishers 2011, 11.

14 Ibid.

15 Ibid.

16 Ibid.

17 Jauslin, Daniel: »Landscape Aesthetics for Sustainable Architecture«, in: Lee: *Aesthetics of Sustainable Architecture*, 109.

defined the constitutive values of architecture as structure, function and beauty of form.[18] Spector successively argues that sustainability is not such a constitutive value because a building that is not sustainable does not therefore cease to be architecture, whereas a construction lacking structure, function and form, does.[19] Furthermore, Spector argues that as a moral imperative, sustainability conceived in functional terms can easily turn into an economic motive to reduce ecological impact at the highest possible profit. Viewed from such practical considerations, Spector argues that form is likely not regarded as a necessary concern but probably as something that from the perspective of sustainability would rather be subject to limitations.[20] Pedro Marques de Abreu emphatically rejects the modernist imperative of novelty that according to him led to a succession of repertoires of forms which would indeed have proved to be unsustainable. The limited lifespan of such repertoires would become immanent from the deplorable situation of many of the post-World War II large-scale urban projects, some of which were already demolished shortly after their construction, such as Pruitt Igoe in Saint Louis.[21] De Abreu argues, therefore, in favour of a sustainable repertoire of forms based on what has proved to be successful in vernacular tradition or one that is inspired by organic forms in nature.[22] If such repertoires of forms are the outcome of a sustainable aesthetic, then it appears that De Abreu is arguing that the formal repertoire of forms of the sustainable architect should indeed be limited. After all, too many formalistic novelties would entail the danger of rapidly becoming outdated and obsolete, and therefore not being sustainable.

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18 Vitruvius: *De architectura*, Book I.2.

19 Spector, Tom: »Does the sustainability movement sustain a sustainable design ethic for architecture?«, in: *Environmental Ethics* 28 (2006), 279. Vitruvius was nevertheless deeply concerned with the building's proper site and with how temples in particular are built in adaptation to nature and on sites with access to healthy water. But with regard to residential buildings, Vitruvius is concerned too with how, for instance, sleeping rooms and libraries are attuned to natural light sources. This shows that the relationship between the building and its environment was a concern for Vitruvius indeed and moreover a matter of ›decorum‹. Vitruvius: *De architectura*, Book I.2.7. See further Vitruvius: *De architectura*, Book I.4–7 about Vitruvius' concern for how the city as a whole is situated within the natural environment as well as the orientation of city walls, streets, and the fora and temples. See also Steiner, Frederick: »Toward an ecological aesthetic«, in: *Socio-Ecological Practice Research* 1 (2019) 34.

20 Spector: »Does the sustainability movement sustain a sustainable design ethic?«, 69.

21 Abreu: »Sustainable Aesthetic in Architecture«, 329–331. Many of these large-scale urban projects were founded on idealist visions of a new society inspired by, for instance, the ideas of the Bauhaus or those of Le Corbusier. However, their scale and formal characteristics were often experienced as monotonous and inhumane. As a result, many neighbourhoods were soon inhabited by socially vulnerable inhabitants with lower incomes who brought in social problems such as unemployment, criminality and drug abuse. This demonstrates how the repertoire of forms of the built environment affects communities; in essence it shows that aesthetic and ethical concerns are indeed closely related. See also Kirkpatrick, Sale: »There is a human scale at which everything works«, in: Schwarz, Michiel/Krabbendam, Diana (eds.): *Sustainist Design Guide: How sharing, localism, connectedness and proportionality are creating a new agenda for social design*, Amsterdam: BIS Publishers 2013, 46-47; Baumberger: »The Ethical Criticism of Architecture«, 184.

22 Ibid., 346-355. See also Guy/Farmer: »Reinterpreting Sustainable Architecture«, 144.

Spector argues that only a non-anthropocentric conception of sustainability could lead to a serious reduction in ecological impact and perhaps form the starting point for sustainability as a design philosophy underlying a specific architectural repertoire of forms.[23] However, he considers this impossible because he cannot see how a non-anthropocentric ethic would change from within what is essentially an anthropocentric activity, namely architecture.[24] Spector therefore concludes that sustainability does not offer a foundation for a new building philosophy.[25]

In a critical response to Spector's article, Roger Paden departs from the Kantian premise that the aesthetic experience is one of disinterested pleasure. When confronted with the form of an object, the aesthetic experience applies to the form of the very object and does not depend on any possible interest in the object.[26] We can find a painting ›beautiful‹ even though we do not own the painting and regardless of the painting's content, context or economic value.[27] Paden argues that nature evokes similar aesthetic experiences and therefore can urge humans to protect nature. Of course, we depend on nature and the natural environment because natural resources provide humans with food. Furthermore, natural resources can, for instance, be a source for medicines. Humans depend on the earth's atmosphere because it provides us with oxygen, and on trees because they filter out carbon dioxide. It therefore makes sense to protect nature from these very utilitarian objectives. However, by referring to the protection of nature arising from an aesthetical motive, Paden touches upon another attitude that humans develop towards nature, namely that we tend to imbue nature with an intrinsic value and it is this intrinsic value that is also aesthetically appealing. Paden thus basically argues that based on this value alone, the protection of nature is in itself already justifiable, irrespective of all our interests. Therefore, Paden assumes that what he refers to as 'environmental aesthetics' can also form the point of departure of a building philosophy. With regard to the environment, the subject is always part of that environment; the subject dwells in the environment and something similar applies to architecture in the sense that buildings are also always part of the environment; they are built precisely in the environment. From that perspective, sustainability could stimulate a building philosophy in which the emphasis is on the integration of architecture with its surroundings.[28]

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23 Spector: »Does the sustainability movement sustain a sustainable design ethic?«, 69. In explaining what he means by non-anthropocentric, Spector refers to Warwick Fox who argues that part of the ethical issue of sustainability concerns not departing solely from human interests but from those of the planet in its entirety, from a concept of humanity as unified with nature as opposed to conquering nature.

24 Ibid., 267–273.

25 Ibid., 283.

26 Paden, Roger: »Aesthetics and Sustainable Architecture«, in: *Environment, Space, Place*, Vol. 4, No. 1 (2012), 22–27.

27 Kant, Immanuel: *Kritiek der Urteilskraft*, Königlichen Preußischen Akedemie der Wissenschaften (red.), Akademieausgabe: Kants Gesammelte Schriften, Georg Reimer: Berlin 1910, 204–205.

28 Paden: »Aesthetics and Sustainable Architecture«, 22–27.

To understand how this could be achieved, it should first be clear in what ways buildings relate to the environment. Given that architecture comprises both the exterior form and the interior space of buildings, the exterior surface of the built form will at first sight appear to the viewer as the building's visual appearance. This exterior surface is in architectural terms traditionally referred to as the building's façade. This does not, of course, mean that the aesthetic experience of a building is limited to the formal qualities of its exterior. However, in the following sections I concentrate the discussion on the formal aspects of the exterior of buildings because the beholder's first confrontation with a building and her or his first response is with and to the exterior.[29] Therefore, if there is such a thing as a moral imperative underlying a sustainable aesthetic, then this should be expressed first and foremost in the building's façade – all the more so because the façade could be regarded as the very membrane between the built space and the environment in which the built object is situated and from which it draws its resources.[30]

The façade as the mediator between inner space and environment

There are two ways in which architecture can stress this relationship. First, architecture as a mediator between the interior and the exterior and second, architecture as a means to integrate the internal and external space. In both cases the façade plays a key role.

The mediation takes place in the form of the passing of light, heat and air and thereby in the possibility of the regulation of the internal climate by means of resources used from the external climate. The surface thus has a transgressive character. It functions as an interface between one realm and the other. However, being the visible divider between an inside and an outside space, the surface also has a potentially expressive quality and with that the ability to communicate, to be an agent of some kind.[31] As such, the surface is implicitly referential with regard to the notion of architectural space and its place in the world itself.[32]

In both cases, as an interface between two climates and as a signifying surface, the façade appeals to the human senses. It is this sensual aspect of the surface through which the subject acquires sensual knowledge about the building from which a sustainable aesthetic should be contemplated. Architects Matthias Sauerbruch and Louisa Hutton argue that this sensual aspect should not be limited to the visual but should include the whole range of bodily perception, including touch, hearing and smell.

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29 Ingold, Tim: »Surface visions«, in: *Theory, culture & society* 34 (2017) 7–8, 103.

30 Trüby, Stephan: »Chapter 2. Façade façades«, in: Rem Koolhaas (ed.), *Elements of Architecture*, Cologne: Taschen 2018, 896–905.

31 Lee, Sang/Holzheu, Stefanie: »Building Envelope as Surface«, in: Lee: *Aesthetics of Sustainable Architecture*, 127.

32 Zaera-Polo, Alejandro: »A material and environmental perspective«, in: Rem Koolhaas (ed.), *Elements of Architecture*, Cologne: Taschen 2018, 914.

They state that the objective of a building that stimulates bodily perception is to provide the subject with a sense of what a building after all still is: a construction which provides both shelter and security but which at the same time can evoke wonder and astonishment. Furthermore, the building should promote openness and should be comprehensible to such an extent that the subject is able to acquire knowledge about the building's underlying aesthetical and ecological concepts, as well as about its place within the immediate environment.[33]

Reasoning from the experience of beauty as we perceive it in response to a landscape, Elizabeth Meyer also argues that such an experience is multi-sensorial and involves the whole body. Moreover, she argues that the aesthetic experience can inform our rational and moral considerations in important ways.[34] The very fact that we can experience a sense of beauty in the first place, whether it relates to nature, artworks or buildings, and that we can consider this experience in relation to rational and moral concerns is a given that the architect can deliberately employ when designing the building's façade.

Sauerbruch and Hutton stress the importance of colour as a means to highlight the qualities of the façade's surface. It allows the architect to endow the surface of a building with optical effects, not only to emphasise the qualities of the surface as such but also to manipulate, as it were, the supposed flatness of the surface. They point to the fact that distance influences the ways in which a subject perceives a surface. From a distance, façades, even those that are curved and have depth, tend to appear flat. The architects argue that this also changes the bodily engagement with architecture. The more distant the view the more distant the engagement. As an example, Sauerbruch and Hutton refer to the façade of the building they designed for the Museum Brandhorst in Munich. The outer skin of this façade is a layer that consist of a series of coloured glazed vertical ceramic batons that are hung offset in front of a two-coloured horizontally folded metal wall. The architects explain that as a result the frontal view of the building generates a completely different bodily and visual experience as opposed to the oblique view. In the first case the layered façade is clearly recognisable, while in the second the two layers tend to merge together and almost become immaterial. Walking around the building, the spectator's experience would change from a concrete bodily experience of space and material to a more intangible, purely visual experience, and vice versa.[35] (Fig. 1)

Sauerbruch and Hutton explain that by treating the façade in such a way the architect is able to make the subject aware of the very act of perceiving itself. Moreover, it also makes the beholder aware of the effect of visual perception on how we as humans bodily engage with our surroundings. With regard to buildings the subject

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33 Sauerbruch, Matthias/Hutton, Louisa: »What Does Sustainability Look Like?«, in: Lee: *Aesthetics of Sustainable Architecture*, 46.

34 Meyer: »Sustaining Beauty«, 7–8.

35 Sauerbruch/Hutton: »What Does Sustainability Look Like?«, 48.

becomes aware of the surface's essential quality of being a mediation between an internal and external space, and of the surface being the separation between the internal and external space and thereby being the denominator of what defines the building as a form on its own.[36] While approaching the Museum Brandhorst the beholder becomes aware of the façade's layers because the patterns of both layers shift rhythmically with the changing position of the beholder. In using colour as an index for the layered patterns, the two architects aim to highlight how façades, and contemporary façades in particular, should no longer be perceived as single-layer separations between an inside and an outside. (Fig. 2) Rather, in mediating between the inner and the outer climate, façades are increasingly highly porous and indeed often multi-layered, as with the Museum Brandhorst. As such, the multi-layered façade questions the very idea of a clear separation between an inner and an outer realm. Furthermore, in its mediation between the inner climate and outer climate lies what both architects refer to as ›the performative aspect of the surface‹.[37]
This performative aspect refers back to the beholder. As the beholder moves towards the building, a dialogue, as it were, arises between building, beholder and environment. In her manifesto, Elizabeth Meyer also rightly points out how our experiences in the natural landscape, and this counts for the urban landscape as well, are performative in the sense that we move through space and we experience the objects and bodies that surround us as also moving in space. In short, our experience of the environment is dynamic and cannot be reduced to a specific moment or point of view. As beholders, we become aware of how the bodies and objects of both the natural as well as the built environment appeal to us perceptually while we are moving. Meyer argues that these experiences encourage us to think about our responsibility towards the environment and incite us to act and take care of this environment. On this point her manifesto seems to connect to Paden's argument that it is specifically the aesthetic experience of nature that inspires us to protect nature for the very sake of nature itself. What Meyer thus argues for with regard to sustainable design is to design experiences, which is exactly what Sauerbruch and Hutton appear to have done with regard to the architectural façade.[38]

Façades, technology and new repertoires of forms: the solar, parametric and biomimetic

At this point I think it is possible to draw the preliminary conclusion that sustainable architecture is indeed about more than the functional and moral imperative of a sensible use of natural resources, minimum harm to the ecological environment, and the consideration of the imagined future of generations to come. The moral imperati-

36 Ingold: »Surface Visions«, 103.

37 Sauerbruch/Hutton: »What Does Sustainability Look Like?«, 48–49.

38 Meyer: »Sustaining Beauty«, 18–19.

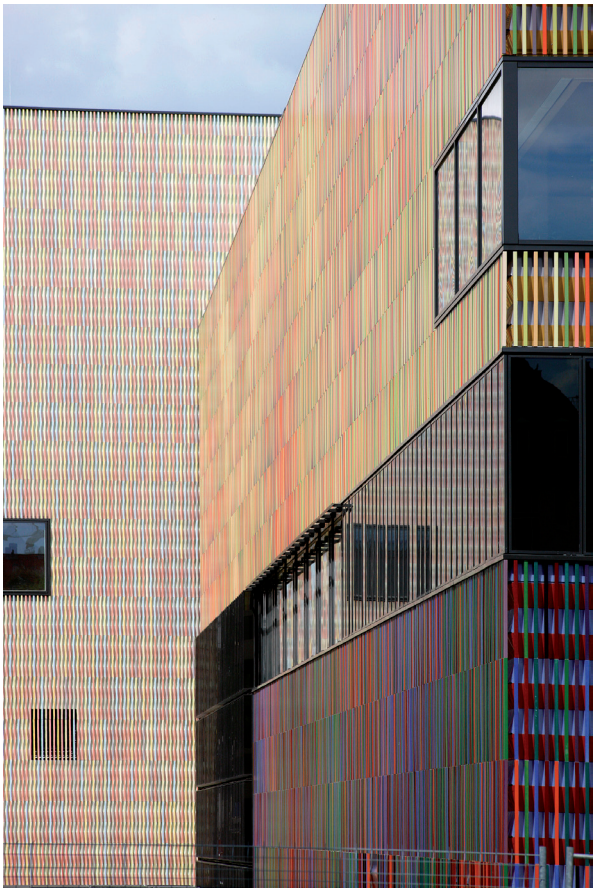

Fig. 1: Sauerbruch & Hutton, Museum Brandhorst, Munich, Türkenstraße 19, 2008, eastern and frontal Façade, viewed from northeast

Fig. 2: Sauerbruch & Hutton, Museum Brandhorst, Munich, Türkenstraße 19, 2008. Back front façade and western façade, viewed from inner court southwest

ve of sustainability can be the foundation of a sustainable design philosophy and an aesthetics as well, to the extent that within the context of a building as sustainable in terms of functionality and (social) meaning, ethical concerns are also relevant aesthetically.[39] This design philosophy should take the aesthetic experience of the building as situated within the spatial environment as the point of departure. It appears that the façade as the visually most prominent part of the building is the obvious architectural element to be endowed with the capacity to evoke such an experience. In this section it will be clear that whether or not the demand of sustainability limits the possibilities of the architect largely depends on the technological possibilities available to the architect. Many design solutions in contemporary architecture particularly affect the façade.[40] Most of these result from the increase in technological solutions to design problems as well as more advanced software used in design processes making possible repertoires of forms that go beyond more traditional and straightforward geometrical architectural forms and are more comparable to the organic and capricious forms found in nature, such as for instance those visible in parametric design.[41] Parametric design has contributed to a significant increase in possibilities that are both aesthetically challenging as well as technically realisable within a construction. Many of the parametric designs were inspired by forms in nature.[42] As such, parametric design could be used to design an architecture which in a more formal sense could integrate more closely with the natural surroundings. Parametric design not only makes possible new repertoires of forms but can also generate forms that minimise the resistance that natural forces such as wind impose upon the building's surface and maximise the benefits from natural conditions.[43]

Other repertoires of forms build on existing ones but their possibilities are extended due to new technology. The use of glass in curtain walls for high-rise buildings has since its advance been applied worldwide and has seen many adjustments and inventions. The latest is the use of ceramic printing on glass to equip buildings with more sustainable and aesthetically appealing façades. It is made by imprinting an ink made of a ceramic frit (the glass is therefore also called ›fritted glass‹) onto the glass. As opposed to earlier techniques such as UV printing, the ceramic is now fused with the glass and is therefore more durable. These partly translucent glass panels can be used, for instance, to regulate daylight and temperature and as such in a literal sense perform the mediation function of the façade. Above all, these panels are perfect for making highly decorative surfaces. Using this technique thus contributes to reducing

39 Baumberger: »The Ethical Criticism of Architecture«, 187.

40 I want to thank Dr Juliette Roding from Leiden University for making me aware of some of the most notable examples of sustainable buildings.

41 Guy/Farmer: »Reinterpreting Sustainable Architecture«, 144.

42 Phillips, Steven: »Parametric Design: A Brief History«, in: *arcCA* 10 (2012).

43 Lotfabadi, Pooya; Alibaba, Halil Zafer; Arfaei, Aref: »Sustainability; As a Combination of parametric patterns and bionic strategies«, in: *Renewable and Sustainable Energy Reviews* 57 (2016).

the building's energy consumption while at the same time the motifs on the panels create intricate decorative patterns to cover the building's surface.[44] In recent years fritted glass has been applied by architects such as Frank Gehry for the Interactive Corporation Building in New York and more recently by Norwegian architects Snøhetta for the Ryerson University Student Learning Centre in Toronto. (Fig. 3)
Ralph. L. Knowles highlights another way in which the façade is used to mediate between the inner climate of the building and that of the outside, namely by adjusting the form of the ›envelope‹ of the building to natural patterns such as the path of the sun. As a result, the form of the building will, for instance, not be the same on all sides. Knowles points to examples of terraces where houses are designed towards a slope in such a way that they all maximally benefit from the incoming solar energy. Singapore's Solaris building by T.R. Hamzay & Yang is an example of a building of which the envelope is designed such that different parts of the building continuously increase in height so that each part at specific moments benefits from the radiation of the sun according to the angle of radiation at certain times of the day.[45] (Fig. 4)
The Pearl River Tower by Skidmore, Owings&Merill in Guangzhou China contains many sustainable solutions. One of those which also affects the aesthetic appearance of the façade is the use of panels with photovoltaic cells on the western and eastern elevation of the building. These panels capture energy from the sun while at the same time they also form the shading system of the building.[46] (Fig. 5) These panels bring to mind the persienne, also known as the Venetian blind, but applied as an important and recursive functional element within the Pearl River's envelope these panels contribute to the form of the building as a whole and as such have the potential to elicit an aesthetic response.
The façade of Chicago's Acqua Tower is an example of a parametric surface founded on a concept of the façade which is at the same time ecological, environmental and social. (Fig. 6) At each different level of the tower the floor has bulges that function as the floor of balconies. These balconies are not only created to provide different views of the surroundings but, because each balcony is not in line with the other, it makes it possible for residents to see each other's balconies and therefore to communicate. This creates a different potential for social contact. (Fig. 7) Viewed from the front, the building's façade appears as a surging landscape of curved lines which according to the architects resemble the lines of natural valleys and hills.[47] In this example the façade has almost become a social landscape in itself.
The most obvious association between landscape and façade are the many green façades that have been erected in recent decades. Some of those are even literal extensions of parks such as is the case with Jean Nouvel's One Central Park building

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44 Keeney: »Facades after the facade«, 982.

45 Knowles, Ralph L: »Solar Aesthetic«, in: Lee: *Aesthetics of Sustainable Architecture*, 61–63.

46 https://www.som.com/projects/pearl_river_tower__sustainable_design (14 February 2019).

47 http://studiogang.com/researchproject/a-morphology-of-tower-research (14 February 2019).

Fig. 3: Snøhetta, Ryerson University Student Learning Centre, Toronto, 341 Yonge Street, 2014, facade, view from Gould Street

Fig. 4: T.R. Hamzay & Yeang, Solaris building, Singapore, 1 Fusionopolis walk, 2011, external façade, View from northeast

in Sydney.[48] (Fig. 8) Green façades obviously add aesthetic qualities to the surfaces of buildings but also pose the question of whether the natural forms of the plants and trees applied to those façades could be considered a new repertoire of forms. Perhaps, it problematises the notion of a repertoire of forms in the first place. Designing a green façade after all comes down to the use of an existing repertoire of forms in a radical new way. It is a product of technology in the sense technology allows the green façade to be maintained as such while the green of the façade also obscures the very same technology as it hides all the underlying draining and piping. Furthermore, plants, moss and trees have always ›colonised‹ human structures. The green façade is therefore an example of a very deliberate and organised exploitation of a natural principle. However, green façades use the literal stuff and this is relatively new while the mimicking of natural forms in design is an integral part of design's history.[49] Biomimetic architecture builds on this tradition and the repertoire of forms is obviously inspired by natural forms such as those of cells and crystals. The principle of growth in which cells regularly expand and form a coherent fabric is often expressed in the façades of biomimetic buildings and clearly inspired the Biosphere 2 and the Eden Project whose designs have almost become iconic for the genre. The surface of the domes in the Eden Project are made with an inflatable foil which is light in weight and therefore drastically limits the necessary bearing power of the structure.[50] (Fig. 9)

Façades integrating into the landscape

I stated earlier that besides stressing the relation between the inner space of the building and the outer space of the environment, the façade also plays a key role in buildings which have been built from the objective of integrating the built environment into the landscape. Being integrated in a designed landscape, the Eden Project could be considered as an example of how Paden envisages a possible environmental aesthetic in architecture. Paden argues that this should be accomplished in such a way that buildings take up a modest position.[51] According to Paden, sustainable buildings should not be self-referential objects but should express in a meaningful manner the different ways in which the relationship between humans and their environment can be conceived.[52] De Abreu argues that a sustainable design philosophy should be

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48 http://www.jeannouvel.com/en/projects/one-central-park/ (14 February 2019).

49 See, for instance, Pugin, A.W.N.: *Floriated ornament: a series of thirty-one designs*, London: H.G. Bohn 1849; Dresser, Christopher: *Art of decorative design*, London: Day & Son 1862.

50 Jodidio, Philip: »Nicholas Grimshaw: The Eden Project: St Austell«, in: Jodidio, Philip: *Green architecture*, Cologne: Taschen Biblioteca Universalis 2018. About the material see also Keeney: »Façades after the façade«, 1017.

51 Frank Lloyd Wright's Falling Water House could be considered as such an example. More recent examples include the Juvet Landscape Hotel in Norway from 2007–2009, and the Glass Wood House in New Canaan, Connecticut. Jodidio: *Green architecture,* 342–347; 398–401.

52 Paden: »Aesthetics and Sustainable Architecture«, 18–26.

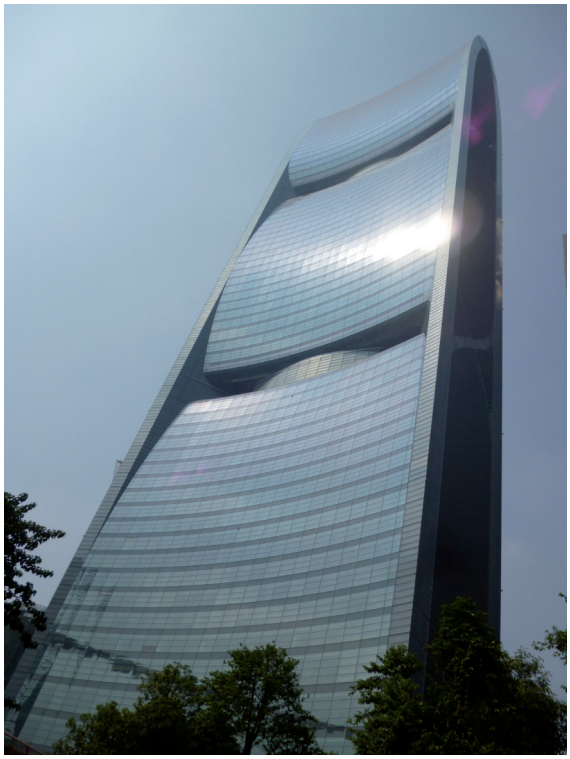

Fig. 5: Skidmore, Owings&Merill, Pearl Tower, Guangzhou, 15 Zhujiang W Road, façade, view from southeast

Fig. 6: Studio Gang, Acqua Tower, Chicago, IL, 225 N Columbus Drive, south and east façade, viewed from southeast, 2009

Fig. 7: Studio Gang, Acqua Tower, Chicago, IL, 225 N Columbus Drive, 2009. Balconies

Fig. 8: Jean Nouvel, One Central Park Building, Sydney, 28 Broadway, Chippendale, 2013. Hanging gardens, view from north

founded on what he refers to as a »dialectics between Nature and Culture« which should be expressed in a specifically organic repertoire of forms.[53]
The Nanyang Technological University School of Art, Design and Media in Singapore, designed by CPG Consultants, could be regarded as such a building as it is comprised of three interlocking curved wings covered with green roofs that integrate with the hilly and wooded surroundings. The wings of the building encircle a lower-lying inner courtyard with two ponds, trees and stairways that run between two of the wings and lead up to street level. The façades of the wings that face the courtyard are made of glass curtain walls allowing the space of the building to extend into the courtyard, which lies as a kind of micro environment protected by the wings of the buildings from the elements, although not isolated from the scenic architecture as a whole. Its openings allow the students, staff and visitors to move from the courtyard to the higher level of one of the green roofs on which a path in the form of a stairway lets the roof to function as an urban meadow.[54] (Fig. 10)
The buildings of the Chenshan Botanical Garden in Shanghai China are designed from the same principle of integrating buildings into the landscape. Here, one can also witness the repertoire of forms that is characteristic for many of the bio-mimetic designs.[55] (Fig. 11)
A sustainable and modest architecture does not necessarily mean a literal integration of the built environment with the natural surroundings. For architects Terunobi Fujimori and Keichi Kawakami it particularly revolves around the sustainable use or re-use of natural materials. The architects aim to take sustainability beyond the mere functional meaning and by using materials such as wood, stone, grass or sand want to promote sustainability with a unified architectural expression. The architects take into account the natural characteristics of the materials and try to exploit these characteristics in the design. The irregular surface of wood and stone therefore becomes part of the building's architectural expression. Their objective is furthermore to create a style not referring to national or historical styles but one which alludes to ecological concern as a universal given. They are therefore inspired by ancient cave dwellings such as Lascaux whose characteristics they are trying to emulate, for instance, in the Yakisugi house in Nagano City, Japan. The house looks from one side like a small church but on closer inspection it appears to unfold as a relatively long cave-like hall which recedes in height towards the rear. What appears as a tower is actually a small, square, free-hanging room topped with a gable roof that is connected to one corner of the structure and that rises significantly higher than the rest

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53 Abreu: *Sustainable Aesthetic in Architecture*, 355.

54 https://www.cpgcorp.com.sg/CPGC/Project/Project_Details?ProjectID=1022 [17 February 2019]. CPG consultants is a a subsidiary of CPG corporation.

55 These buildings are designed by Auer Weber, Munich, together with the Shanghai Institute of Architectural Design and Research, and Schlaich Bergermann + Partner, Beratende Ingenieure, Stuttgart. Jodidio, Philip: »Auer + Weber + Assozierte: Buildings in Chenshan Botanical Garden: Shanghai«, in: Jodidio, Philip: *Green architecture*, Cologne: Taschen Biblioteca Universalis 2018.

Fig. 9: Nicholas Grimshaw, The Eden Project, St. Austell, 1998-2005. View from southeast

Fig. 10: CPG Consultants, a subsidiary of CPG Corporation, The Nanyang Technological University School of Art, Design and Media, Singapore, 81 Nanyang Drive, view from east

of the structure. The façade of the house is made from an alternating arrangement of charcoaled cedar woods that increase the durability of the wood, and white strips of plaster, adding rhythm to the outer surface of the building. The surrounding garden is also designed as a kind of small landscape and contains several small hut-like structures.[56] (Fig. 13)

Discussion

The above examples make clear there are many innovative ways of producing architectural form with which new repertoires of forms are developed that could be considered to express an ecological concern and which could therefore be regarded as proof that there is indeed such a phenomenon as sustainable or environmental aesthetics. With the increase in technological possibilities, it is only to be expected that more and perhaps for us still inconceivable repertoires of forms will be designed by future architects, provided that we do indeed succeed in establishing a sustainable economy and allow future generations access to resources to fulfil their needs. In future, buildings might become expanded or merge with virtual spaces in ways that are currently still unimaginable. It may well be that humans will live in some kind of virtual Platonic caves. Perhaps the floating cities or extra-terrestrial colonies known from science fiction movies will one day be a reality.[57] But rather than speculating on the possible nature of future repertoires of forms, I want to finish this chapter with some thoughts on the sustainability of the aesthetic and ethical aspects underlying sustainable architecture. I think that the question is not only whether the moral imperative of sustainability *can* be the foundation for a design philosophy but also whether as a design philosophy it will be sustainable.

Let us therefore finally imagine a future in which every building - every man-made structure -is by definition sustainable. Sustainability as such will no longer be a distinctive feature but buildings and objects will still be admired or condemned in response to their formal properties. They will still be judged on the extent to which they are aesthetically pleasing whatever the design philosophy underlying their repertoire of forms. Considered from this perspective, Spector is right in arguing that sustainability is not a fundamental principle of architecture and is therefore also not an imperative for a new design philosophy. For the sake of form, architecture can do without sustainability.

In a future in which everything is sustainable, new design philosophies will still emerge and will be contemplated by the beholder. New technologies will also continue to emerge and will make possible what by then will be regarded as future repertoires of forms. Humans might still approach those new architectural forms from

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56 Feireiss, Kristin/Feireiss, Lukas: *Architecture of change 2: Sustainability and humanity in the built environment*, Berlin: Die Gestalten Verlag 2009, 100–105.

57 See, for instance: Callebaut, Vincent: »Lilypads«, in: Joachim Mitchell/Mike Silver (eds.), *XXL–XS: New directions in ecological design*, New York/ Barcelona: Actar Publishers 2016, 49.

Fig. 11: Auer Weber, Munich, with Shanghai Institute of Architectural Design and Research, Shanghai, and Schlaich Bergermann+Partner Beratende Ingenieure, Stuttgart, Shanghai Chenshan Botanical Garden

Fig. 12: Terunobi Fujimori and Keichi Kawakami, Yakisugi house, Nagano City, Nagano Prefecture, Japan.

a sustainable perspective; it is self-evident that in a future in which everything is sustainable, sustainability remains a functional imperative. However, if sustainability is no longer considered a distinctive feature of a building as opposed to non-sustainable buildings, simply because there will no longer be any non-sustainable buildings and buildings will be sustainable by definition, the need to express sustainability in visual form will either cease to exist or it will – in the form of a dominant repertoire of forms (bio-morphism may be a likely candidate) – dictate the visual appearance of any kind of built form. I would however like to advocate architectural variety and consider the possibility that sustainability should perhaps therefore be perceived as a temporal imperative, one that for the reasons sketched above will some day become obsolete.

Although I have discussed some enlightening examples of how sustainability can be expressed so as to evoke an aesthetic experience, it can still be maintained that there is no necessary relationship between sustainability as a functional property of a building (founded on the moral imperative to be sustainable) and a specific repertoire of forms, let alone aesthetic experience. It can be argued that it is preferable that a sustainable building should be aesthetically pleasing but it is not necessary for a building to be sustainable to be aesthetically pleasing as well or to be designed according to a specific repertoire of forms. A building which is not aesthetically pleasing can be sustainable, so one might wonder why we should then bother about a sustainable aesthetic in the first place. Perhaps because, as the examples discussed show, expressing sustainability through architectural form *can* contribute to increasing the awareness of the ecological crisis amongst the users of the building. The potential of what a building makes architecture is its ability to communicate or signify certain content. It does so through its form and, as Spector showed referring to Vitruvius, form *is* one of the foundations for a building to be architecture.

I therefore conclude by stating that a sustainable building should express its sustainability in form as well, at least in the times we are living in, because expressing sustainability in form is the appropriate and worthy thing to do for a building designed from the perspective of ecological concerns. In other words, from the perspective of the urgency of our environmental concerns this is simply a matter of ‘decorum’, especially in the light of those who will judge our merits from the functional, moral and aesthetic standards of a present yet to come.

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Arvid Krüger

The double Legacy of Weimar. Urban Design and Public Housing 1919–2019 and its Consequences for Teaching Urban Planning

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Not in Weimar, but in Dessau urban design on a larger scale became part of the teaching at Bauhaus. Building new large-scale settlements for the new democratic republic became essential to solve the housing crisis after World War I, and especially Meyer pushed that thought into teaching.[1] In these years world heritage was erected. Just to name a few: the today UNESCO heritage settlements in Berlin, the Weißenhof settlement in Stuttgart and the first Bauhaus settlement in Dessau-Törten. In Frankfurt, Ernst May brought together housing policy, new urban design principles and a holistic approach to living conditions.[2]

In the 1920s the times have been changing for urbanism. As part of the Weimar Culture[3] housing became what we today call »modern«. On the one hand, modern architecture and a new form of settlement building at the fringes of the cities began. On the other hand, the erection of tenant buildings started to be economically based in a different manner. Both fundaments for modernist housing were laid out in 1919, in Weimar – Bauhaus and the republican constitution. Both ended in 1989 (which I will explain later). It is a double legacy of Weimar.

This chapter will consider the decades between 1919 and 1989 as a period of modernist housing – in terms of urban design and in terms of the production of cities. After 1989 these settlements have been solely a matter of urban renewal (their renewal began mostly in the 1980s). The half-centennial between 1919 and 2019 is marked by the establishment of schools of urban/spatial planning in Germany as a discipline. Its establishment around 1969 will be explained in a chapter of its own like an excursus. Afterwards in the beginning of every following chapter an insight in the further development of schools of planning will be given. My attempt is to show the changing relevance of housing and settlement building within the discipline's history and vice versa.

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Innovations for housing after 1919: Modern Times, Fordism and progressive urban policies

The innovation in settlement building was not only its design, contradicting the ›old town‹ like the garden city had already done. The new cities should form a new way of urban living at all: ›light, air and sun‹ was the leitmotiv,[4] overcoming the slum-like living conditions of the »Mietskasernen« (literally: caserns for rent), the 19th century tenement blocks.[5] The role of the Bauhaus itself was to inspire, e.g. by the Haus am Horn in Weimar, built 1923.[6] Innovative mass-housing occured because of progressive municipal policies, not because of some small, but inspirational school in Weimar respectively Dessau. The new modern urban design was not only design. The non-profit housing sector that shall benefit to the public (»Wohngemeinnützigkeit«) and a progressive tax systems were part of the Weimar Constitution. The speculation of the terrain trusts that built 19th century Berlin[7] should be ended, because they caused the bad living conditions that became (in)famous e.g. by the drawing oeuvre of the chronicler Heinrich Zille, who not only caricatured, but politically criticized what he saw and draw.[8] Berlin around 1900 was a pure capitalist city. The new modern city after 1919/20 contrasted it with housing associations and public, especially municipal housing companies. Especially the two former capitals of the German 'Axial Empires' stand for it: Berlin and Vienna. The new model of housing should better integrate the every-day-life requirements into architecture and urban design. Mobility was to be new, too: car-oriented but pedestrian-friendly. And starting with the Frankfurt kitchen,[9] new settlements should pay respect to the reproductive means of life – something we call today social infrastructure in these quarters.[10] Outside Germany the emigration of the Bauhaus members all over the world following the closure of the school in 1933 spread these ideas all over the world.[11] And one should not forget to mention that they actively took part in cultural politics of the Weimar Republic (e.g. Mies van der Rohe being president of the November Group.[12]

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6 Siebenbrodt: »Architektur am Bauhaus in Weimar«.

7 Bodenschatz, Harald: *Platz frei für das neue Berlin! Geschichte der Stadterneuerung in der »größten Mietskasernenstadt Welt« seit 1871*, Berlin: Transit 1987.

8 Flügge Gerhard (Hrsg.): *Das dicke Zille-Buch*, Berlin: Eulenspiegel-Verlag 1971.

9 Weber: »Die wechselseitige Beeinflussung der Frankfurter Ernst-May-Gruppe«.

10 Krüger, Arvid: *Neue Steuerungsmodelle in der Stadterneuerung und daraus folgende Anforderungen an die Städtebauförderung, die Kommunen und die gemeinnützige Wohnungswirtschaft*, Weimar: PhD Thesis, Bauhaus-Universität Weimar 2019.

11 Klemek: *The transatlantic collapse of Urban Renewal*.

12 Burmeister, Ralf/Köhler, Thomas/Nentwig, Janina (Hrsg.): *Freiheit – Die Kunst der Novembergruppe 1918–1935*, München: Prestel 2018.

Thus, the ideas of the Weimar Culture (see above) also spread. But the time for Bauhaus as a school in Germany was over. There were attempts in Ulm until 1968 to reinvent Bauhaus as a design school; and there is indeed a small link to the emerging discipline of urban planning: The follow-up institution of Ulm after its closing, the Institut für Grundlagen der Planung (institute of fundamental matters of planning) of Horst Rittel at the University of Stuttgart, indeed contributed to planning theory. Ulm students in 1968 moved to that institute to finish what they began in Ulm.
The erection of modern settlements restarted after WWII in East and West, in the height of the Fordist era.[13] The Schelskyan »levelled middle class society«[14] of postwar West Germany was to live in these large-scale settlements that became larger and higher in the 1960s/70s. The progressive concept of »urbanity by density«[15] was also rooted in the planning of social infrastructure in these areas, for that the reproductive work should not all be done alone by the ›suburban housewife‹.[16]
Less in the west, more common in the east and north of Europe these large-scale settlements became New Towns. With the literary character of Franziska Linkerhand, an architect for such a new town entered the canon of German literature with the novel by Brigitte Reimann,[17] who wrote about the prospects and struggles from the (female) architect's point of view to achieve the societal effort to industrialize the rural East. The *Interbau*, the International Buildung Exhibition[18] of 1957, erects further world heritage icons of the modern era, the Hansaviertel area. This heritage is complementally completed by East-Berlin's modernist Karl-Marx-Allee from the same

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13 Knorr-Siedow, Thomas: »Innovations from below? A new concept for social housing in Germany«, in: Kathleen Scanlon/Christine Whitehead (eds.), *Social housing in Europe. A review of policies and outcomes*, London LSE 2008; Klemek, *The transatlantic collapse of Urban Renewal*.

14 Found in: Braun, Hans: »Helmut Schelskys Konzept der nivellierten Mittelstandsgesellschaft und die Bundesrepublik der 50er Jahre«, in: A*rchiv für Sozialgeschichte* 29 (1989), 199ff.

15 Referring the classification of the term by: Kompetenzzentrum Großsiedlungen (Hrsg.): P*erspektiven grosser Wohnsiedlungen*. Berlin: Kompetenzzentrum Großsiedlungen 2015, 40.

16 Cf. Krüger: *Neue Steuerungsmodelle in der Stadterneuerung*.

17 Reimann, Brigitte: *Franziska Linkerhand*, Berlin: Aufbau-Verlag 1974.

18 International Building Exhibitions are a format of presentation of innovations in architecture, urban design and urban planning in Germany. The historical *IBA*s of the early 20th century have been the erection of the quarter Mathildenhöhe in Darmstadt 1913 and the Weißenhof quarter in Stuttgart, the latter as a showpiece especially for architects related to Bauhaus and the *Neues Bauen* movement of the 1920s. After Worls War II the *Interbau* of 1957 presented modernist building in the walled-in town of West-Berlin. The *IBA*s of the 1980s in Berlin and in the Ruhr Area (Emscher Park Area) in the 1990s were innovations on urban design and urban planning; followed-up by *IBA*s in the Lausitz (Fürst Pückler Land) and Saxony-Anhalt on urban development in de-industrialised regions (that was also the theme for the *IBA Emscher Park*, to transform a post-industrial area). Since the 2010s there are several *IBA*s in Germany at the same time, often intermunicipal or regional like the *IBA Emscher Park* has been first, sometimes even cross-border, including neighbouring countries. *IBA*s are meant to give impulses to the field of urban design and planning by focusing on several development projects at the same time in the same place under a certain topic.

time.[19] In the first post-war decades modernism kept unchallenged. Klemek describes the visit of MIT professor John Burchard in West-Germany, who

> […] saw German citizens in 1963 in complete sympathy with both means and ends or urban renewal [like Hansaviertel, A.K.]. He attributed this to a healthy political culture …: ›Germans have been used for a long time to considerable state control of the land and to serious restrictions on uninhibited private exploitation and development.‹[20]

That changed after 1968. The second International Building Exhibition, since then abbreviated as *IBA*, of West-Berlin in 1987 (see below) marks a paradigmatic turn, globally embedded into the emergence of an era we usually call post-modernism.[21] Its innovations: the ›critical reconstruction‹ and then ›cautious renewal‹ will have changed urban planning and design fundamentally.

Excursus: Urban Planning as a discipline

The years after 1968 saw the emergence of urban studies and planning as a discipline of its own in Germany. Starting points were Dortmund, West-Berlin and again Weimar. This was part of a greater international movement: A

> […] converging element was the professionalization and credentialing of experts in disciplines of urbanism: modernist architecture, planning, urban design, and related social science. Rooted, like parallel developments in other fields, in the expansion of postwar universities …, this undergirded the rising social prestige of technocratic elites […]. At Ivy League centers of advanced research, cities became a growing focus of disciplinary interest.[22]

The first German programs of Raumplanung (spatial planning) in Dortmund (1969) and Stadt- & Regionalplanung (urban & regional planning) in West-Berlin were established (1972). Independently they embraced the societal changes after 1968. The study programs of Dortmund and West-Berlin were named ‘reform programs’, because they established a new study practice: the study project. It is today’s fundamental teaching method of urban planning programs in Germany. The post-war Hochschule für Architektur und Bauwesen (University for Architecture and Building, *HAB*) in Weimar introduced Gebietsplanung (territorial planning) as a division in the same year as Dortmund: 1969 (fig. 1).
Study projects – the core of the newly established planner’s education – integrate different disciplines of the – above all – interdisciplinary field of urban/spatial planning with the help of a case study. Ideally, different chairs (or at least: different lecturers) work together with the students by applying the scientific knowledge as well as the knowledge that derives from a thorough analysis of the existent spatial situation of

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19 Flierl, Thomas: »Der Streit über den 2. Bauabschnitt der Karl-Marx-Allee nach 1990 und das Schicksal der DDR-Moderne«, in: Thomas Flierl (Hrsg.): *List und Schicksal der Ost-Moderne – Hermann Henselmann zum 100. Geburtstag*, Berlin: form + zweck 2008.
Schwenk, *Berliner Stadtentwicklung von A-Z*.

20 Klemek: *The transatlantic collapse of Urban Renewal*, 226.

21 Ibid.

22 Ibid., 19.

the very case. The combination of theoretical and practical learning and the typical amount of one third of a student's time and credit points give the study project an outstanding role in the life of an urban/spatial planning student. Especially in the 1970s, but still today, some universities offer a self-organized study project, where the students themselves create the case-study and the teaching program for one term. The *HAB* Weimar established its own teaching tradition: the communal internship. The planning theorist Harald Kegler, once a student and student assistant in Weimar, describes it as follows: »Since 1978 urban sociology was established as a chair with empirical urban studies as its core competence [Fred Staufenbiel, A.K.]. There also the Communal Internship was established at the end of the first year. Four weeks, lectures and students together went to one town to analyze different aspects of the societal patterns: Surveys, observations, document evaluations, structural-spatial analyzes, inventories etc. They created a socio-spatial portrait of the town that allowed knowledge about the realities of life there and empowered urban design solutions based on its applicability. The results of the students were presented in public and it surely it was necessary by the lecturers and the local authorities to 'secure' the publicity of the results under the circumstances of the East-German regime. At least, the local officials needed to be open for the student's experiment more open than officials from 'above' in the regime.«[23] Summing up, independent from each other and not directly linked to the Bauhaus way of teaching the new established study programs of urban/spatial planning in both parts of Germany established a tradition that also could have been inspired by one important aspect of old Bauhaus: the applicability of the results of teaching – industrial applicability in the field of design, municipal applicability in the field of the Communal Internship. Today's Institute for European Urbanism (*IfEU*) at the Bauhaus University in Weimar is linked to both traditions. It was founded in 1999, after the section of Territorial Planning was ceased in 1991. The tradition in Weimar has been interrupted, not ended.

From post-war reconstruction to post-modernism

But back to the realities of urban design. For a speedy fast-forward ride through post-war developments a few remarks shall suffice. Siedler mourns the old town,[24] Mitscherlich blames the »inhospitality of our cities«;[25] houses are squatted to keep them ›alive‹, growth has reached its limits[26] and the European Year of Urban Heri-

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23 Kegler, Harald: Aufbruch in die »alte Stadt«. Zur Städtebauausbildung an der HAB Weimar Ende der 1970er und Anfang der 1980er Jahre – eine persönliche Momentaufnahme, http://dr-kegler.de/aufbruch_in_die_alte_stadt.html [28 February 2019].

24 Siedler, Wolf-Jobst: *Die gemordete Stadt: Abgesang auf Putte und Straße, Platz und Baum*, Berlin: Herbig 1964.

25 Mitscherlich, Alexander: *Die Unwirtlichkeit unserer Städte. Anstiftung zum Unfrieden*, Frankfurt am Main: Suhrkamp 1965

26 Meadows, Donella H./Meadows, Dennis/Randers, Jørgen/Behrens, William W.: *The Limits to Growth. A Report for the Club of Rome's Project on the Predicament of Mankind*, New York: Universe Books, 1972.

Fig. 1

tage brings back the conscience for the historicity of the urban fabric. The peak of post-war settlement building in West-Germany had been in the 1960s.[27] The 1950s

27 Overview in: Zupan, Daniela: »Von der Großsiedlung der Spätmoderne zum kompakten nutzungsgemischten Stadtquartier Verlaufsformen eines städtebaulichen Erneuerungsprozesses«, in: *Informationen zur Raumordnung* (2015) 3.

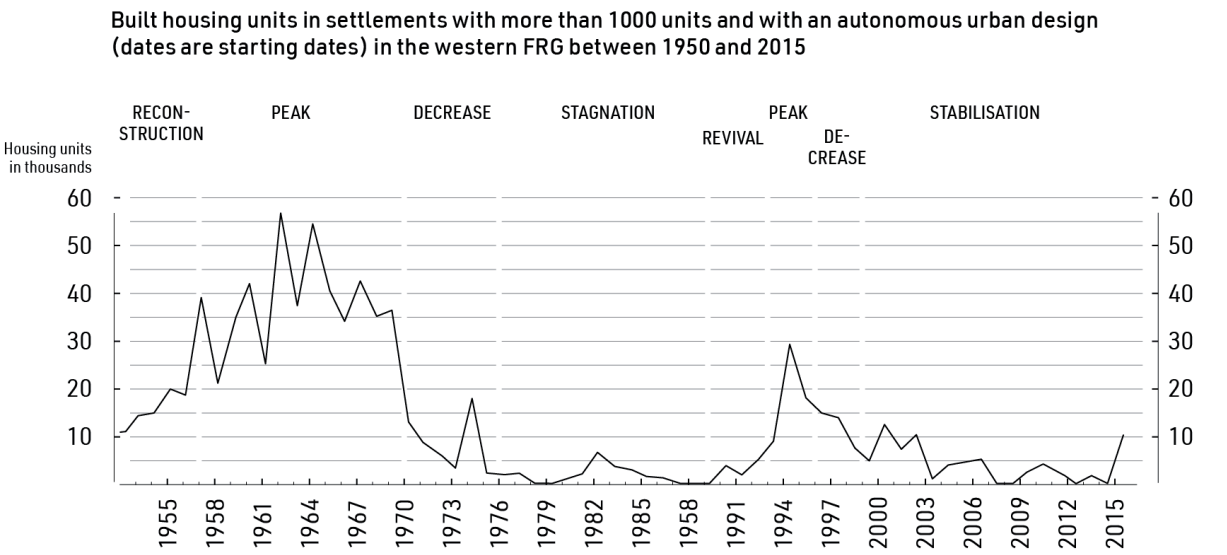

Fig. 2

and 1960s are decades of rebuilding post-war West-Germany as well as decades of growth and the expansion of German cities. Globally the 1950s-1970s mean the height of late modernism and the last height of the Fordist era. Since the late 1960s public settlement building declines; the recession of the 1970s, a shrinking demand and the focus of private investors on suburbanization have been factors to acknowledge in this time.[28] The biggest West-German ›Fordist‹ housing company, the union-owned *Neue Heimat* (literally: New Homeland), collapsed in the 1980s. Only after reunification a second peak of new erected housing areas became visible (fig. 2). In 1987 there was another *IBA* in Berlin. The post-modern leitmotivs of the second Berlin *IBA* framed the agenda of urban design.[29]

> In contrast to their colleagues in the Unites States, German social scientists […]had to await the arrival of the '68er-generation on the urban political scene, which took place over the course in the 1970s. […] An architectural community gradually awakeing from dogmatic modernist urbanism played catch-up in response to the popular reaffirmation of the nineteenth-century neighborhood fabric. Postmodern approaches […] were integrated into a still vital institutional planning apparatus by the mid-1980s.[30]

28 Ibid.

29 Schlusche, Günter: *Die Internationale Bauausstellung Berlin. Eine Bilanz. Planung und Durchführung 1979–1987 und Einfluss auf die Berliner Stadtentwicklung*. Berlin: Technische Universität Berlin 1997.

30 Klemek: *The transatlantic collapse of Urban Renewal*, 235.

New quarters since the 1990s followed the principle of the block and the corridor street as it has been exercised in the tradition city of the 19th century, open space and private space became clearly divided. They should resemble as integrated parts of the town's morphological structures, old modern settlements were meant to be new towns. These are some aspects, Zupan uses as criteria to substantiate the paradigmatic shift of the urban design of housing that happened between the 1970s and 1990s in West-Germany.[31] East-Germany followed as far as possible the idea of modernism almost until its end, more about that below. It would lead too far to go into deep to link that general shift with the leitmotivs of the so-called New Section of the *IBA* Berlin, the ›Critical Reconstruction‹ and its international ties.
Not surprisingly, this shift of paradigm also went along with a reinterpretation of the urban qualities of modernist settlement. The report on large-scale settlement of the German Parliament, written just after unification in 1994, gives in its end an outlook on new settlement buildings. New settlements shall be different from the things built until 1989.[32] The large-scale settlements before 1989 became an adverse leitmotiv for urban design, based on the establishment of cautious renewal as an urban principle for the upcoming reurbanization and ecologic aspects as an imperative for planners.[33] Thus, it is necessary to look not only into the New Section of the *IBA*, but also its Old Section. This was the very part of the *IBA*, that made the Kreuzberg neighborhood famous as an international icon of reurbanization. It changed the meaning of the term urban renewal in the German language forever. Based on twelve principles renewal became cautious, thus it meant no more to tear down the old to build the new on the same place. It always meant a procedural incrementalism in planning, changing step by step the city scape – always taking social, economic and ecologic aspects into consideration, thus being meant to be sustainable, the 'new' slogan for development from the 1990s. A perspicuous document from that time is the brochure »step by step« by the makers (S.T.E.R.N. 1987),[34] hence it has been a subject of urban research.[35] Careful renewal of the *IBA* originates in the city of the 19th century, not in the attempt to overcome it as the housing policy of the Weimar Republic seven

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31 Zupan: »Von der Großsiedlung der Spätmoderne zum kompakten nutzungsgemischten Stadtquartier«.

32 Deutscher Bundestag: *Großsiedlungsbericht 1994. Unterrichtung durch die Bundesregierung*, Bonn: Deutscher Bundestag 1994 (Drucksache 12/8406).

33 Zupan: »Von der Großsiedlung der Spätmoderne zum kompakten nutzungsgemischten Stadtquartier«.

34 S.T.E.R.N. (Hrsg.): …. Step by step. Careful urban renewal in Kreuzberg. Berlin: S.T.E.R.N. [Gesellschaft für behutsame Stadterneuerung] 1987.

35 E.g.: Krüger, Arvid: *Erneuerung der Erneuerung. Die Rolle der Stadterneuerung im Kontext von Benachteiligungsphänomenen*, Graue Reihe des Instituts für Stadt- und Regionalplanung der Technischen Universität Berlin, Nr. 10, Berlin: Technische Universität Berlin 2008, further readings from that very time in the anthology of Marcuse, Peter/Staufenbiel, Fred (Hrsg.): *Wohnen und Stadtpolitik im Umbruch, Perspektiven der Stadterneuerung nach 40 Jahren DDR*, Berlin: Akademieverlag 1990; and by Senatsverwaltung für Bau- und Wohnungswesen (Hrsg.): *Stadterneuerung Berlin*, Berlin 1990; critical vies in the application of these renewals schemes, see: Holm, Andrej: *Die Restrukturierung des Raumes. Stadterneuerung der 90er Jahre in Ostberlin: Interessen und Machtverhältnisse*, Bielefeld: transcript 2006; Bernt, Matthias: *Rübergeklappt. Die »behutsame Stadterneuerung« im Berlin der 90er Jahre*, Berlin: Schelzky & Jeep 2003.

decades before. This planning approach became not only valid for Kreuzberg, but internationally acknowledged for reurbanization of the today-gentrified, hence highly-appreciated neighborhoods of many metropolises all over the world.

1989 as the end of eras

The students in Weimar observed these shifts of paradigms in the 1970s and 1980s. Harald Kegler writes:

> The functionalization of urban regeneration to increase the motivation of the working class is part of the ideological ritual of formulation, but the clear emphasis on the importance of a preserved historic center for the urban, even societal future is remarkable. For the students, this became a self-evident matter: conservation before demolition, new construction in the context of existing structures. In addition, the term 'Cautious Urban Renewal' entered the terminology of German planners on both sides of the wall, a term that just started his career at the International Building Exhibition in West Berlin.[36]

Since then, the term urban renewal (»Stadterneuerung«) in the German language differed from the use of this term elsewhere.
This paradigmatic shift happened simultaneously to the East-German Peaceful Revolution in 1989 and the unification in 1990. It is worth to link the political demands of the East-German people with the demands, citizens articulated towards urban development on a neighborhood level around 1989. It would lead too far here; an overview can be found in Marcuse and Staufenbiel's anthology from 1991.[37]
The major result of that shift for the built settlements of the modern era, that started in 1919, was, that they became history. The report on large-scale-settlement report of the German Parliament from 1994[38] can be read that way: Large-scale settlements are acknowledged as built artefacts, necessary to serve the housing needs, but challenged by other suburban forms, especially detached housing. They lack urban qualities, especially the quickly-built examples from the East-German 1980s. Experiments of cautious renewal in large-scale-settlements – as undergone in the West-German 1980s – shall be extended. Renewal strategies shall integrate social, ecologic and economic aspects as it is done in the 19th century's neighborhoods. Especially the variety between different settlements in different regions of Germany shall be acknowledged.[39] Indeed, modern-era settlements became an own branch of urban renewal, later urban funding schemes (see below). Recently the Competence Center on Large-Scale Settlements published a study on that subject[40] with a very concise typology of that era (fig. 3).

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36 Kegler: Aufbruch in die »alte Stadt«.

37 Marcuse/Staufenbiel: *Wohnen und Stadtpolitik im Umbruch*.

38 Deutscher Bundestag: *Großsiedlungsbericht*.

39 Ibid.

40 Kompetenzzentrum Großsiedlungen: *Perspektiven grosser Wohnsiedlungen*.

The final years of the epoch of settlement buildings of the modern era fall together with the success of cautious renewal (marked by the Berlin *IBA* in 1987) and the Peaceful Revolution in the GDR 1989. This year was not only the year when the wall came down. It was also a year where the neoliberal turn in West-Germany lead to the ending of the non-profit housing sector benefit to the public (›Wohngemeinnützigkeit‹), introduced back in 1919.[41] It would lead too far in this article to rewrite the circumstances in West-Germany in the 1980s, that paved the way politically for this decision, a 2019 exhibition on the *Neue Heimat* building company gives an insight.[42] A fundamental economic principle for the erection of large-scale settlements has ended: progressive mass-housing with all its benefits and disadvantages became history in Germany.

Between image and reality: Modern-Era Settlements after 1989

But all this did not play a relevant role in the teaching of the urban and spatial planning programs in the 1980s and 1990s, which have been mentioned above. If so, large-scale settlements became a negative layer for urban design students in the 'reform programs' like Dortmund and West-Berlin. Former exemplary large-scale settlements like the Märkisches Viertel in West-Berlin or Chorweiler in Cologne may still give today some architects physical indispositions because of all the bad clichés, that seem to have come true at first glance. In a way, the Märkisches Viertel became a constitutent negative foil for the students in West-Berlin:

> In 1968 activist architecture students as well as professional and academic sympathizers mounted a provocative exhibition an Berlin's Technical University, »Diagnosis of Construction in West-Berlin«, documenting with interviews and photographs the lamentable outcomes of urban renewal projects[43]

– the Märkische Viertel most prominent among them. Among them most likely have been urban planning lecturers of the 1980/90s.
In the early 1990s Western practitioners even thought of the necessity to get rid of the freshly inherited large-scale settlements of the former GDR.[44] These areas had no advocates after 1990, it was forgotten that these places have been the progressive results of a family-friendly housing policy, no matter if it was Brandt's housing policy in the West or Honecker's one in the East.

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41 Jenkis, Helmut »Die gemeinnützige Wohnungswirtschaft im Widerstreit der Interessen und Meinungen, eine kommentierte Dokumentation zur Aufhebung des Wohnungsgemeinnützigkeitsgesetzes«, in: *Zeitschrift für öffentliche und gemeinwirtschaftliche Unternehmen*, Beiheft 26 (2000), Baden-Baden: Nomos 2002.

42 Ibid.; Lepik, Andres/Strobl, Hilde (Hrsg.): *Die Neue Heimat (1950–1982). Eine sozialdemokratische Utopie und ihre Bauten*, München: Detail 2019.

43 Klemek: *The transatlantic collapse of Urban Renewal*, 226.

44 Fuderholz, Günter: »Wem gehört die Platte?«, in: SenBW (Hrsg.), *Montagebau in Berlin (Ost). Bestandsaufnahme und Bewertung der industriell errichteten Wohngebäude*, Berlin: Senatsverwaltung für Bauen und Wohnen 1992.

> The fact that large-scale housing became a problem is due to a systemic contradiction based on planning decisions of the 1960s and 1970s on the one hand and on political decisions of the 1980s on the other hand. [...] It was never intended as housing for the poorest and most needy, because for these the rent in so-called social housing has always been very high. At the time of the Weimar Republic ... this was called »non-profit«. The term »social housing« only became established during National Socialism and represents a confusion of languages.[45]

Large-Scale settlements in East and West were blamed with a bad image. The architecture journalist Wolfgang Kil (also once a student in Weimar) observed on the occasion of a photo exhibition about Germany's second-largest settlement, Leipzig-Grünau: The exhibition organizers

> [...] of the Leipzig Contemporary History Forum, apparently familiar only with hearsay by Grünau's realities, named the exhibition, as it could not be more misleading: »Dream and Tristesse«. Although it had missed the spirit of the images shown [from the founding time of Grünau, A.K.], a stubborn stereotype was served. Life in the large housing estates could only be »dull«. To relieve the directorate may be assumed that this vocabulary would have occurred in relation to large-scale settlements of any West German cities. This aversion knows no boundaries. As experience shows, each generation tends to scourge the ideas and deeds of its predecessors; and as a rule, it shoots far beyond the goal, stylizing the old urban model, that has just been praised, into an enemy picture.[46]

The critique on large-scale settlement seemed self-evident – given the context of the rise of post-modernism and the fall of the Eastern regime, which just had built the youngest large-scale settlements of the modern era, among them the well-known eastern outskirts of Berlin. The critique on large-scale settlements fit into the victory of the western world, something that meanwhile got porous.[47]

> The current challenges of housing, the renaissance of the 1920s and mid-century culture and design and the simple well-being of existent large-scale settlements may lead to the assumptions that the critiques of these settlements were wrong in the 1980s/1990s. Especially the inconspicuousness of a high amount of large-scale settlements built between 1919 and 1989 needs the conclusion that these urban artefacts are a normal part of our cities.[48]

It seems a little, that these critiques of modern-era urbanism are relevant in their time; but outdated like Hegemann's critique of the 'stony Berlin' before – acknowledging re-urbanization and gentrification od today. The New Towns of the 20th century are still there – and meanwhile they been culturally recoded since the turn of the century.[49]

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45 Häußermann, Hartmut/Kapphan, Andreas: *Berlin – Von der geteilten zur gespaltenen Stadt? Sozialräumlicher Wandel seit 1990*, Wiesbaden: VS Verlag für Sozialwissenschaften 2002, 157f.

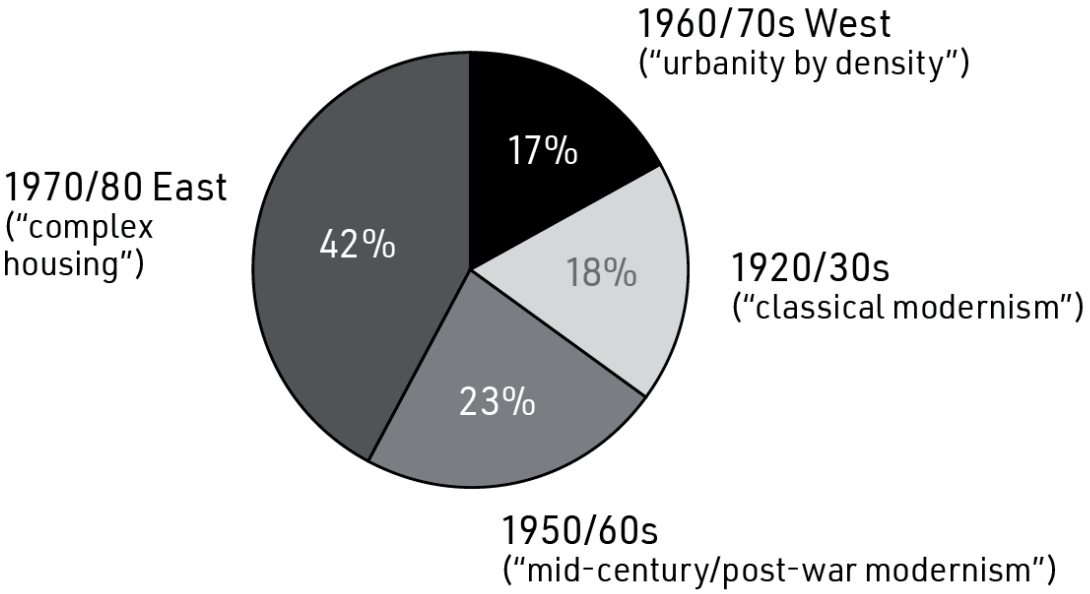
46 Kil, Wolfgang: »Wie steht es um das Bild der großen Wohnsiedlungen in der Öffentlichkeit?«, in: Kompetenzzentrum Großsiedlungen (Hrsg.), *Klimaschutz und Energiewende, Potenzial der grossen Wohnsiedlungen*, Berlin: Kompetenzzentrum Großsiedlungen 2012.

47 Winkler, Heinrich August: *Geschichte des Westens*, Band 4, München: C.H. Beck 2016.

48 Krüger: *Neue Steuerungsmodelle in der Stadterneuerung*, 9.

49 Harnack, Maren: »Wie steht es um das Bild der großen Wohnsiedlungen in der Öffentlichkeit?«, in: Kompetenzzentrum Großsiedlungen (Hrsg.), *Leben in großen Wohnsiedlungen, Soziale Stadt, stabile Nachbarschaften, bezahlbares Wohnen*, Berlin: Kompetenzzentrum Großsiedlungen 2013, 36–47.

Typology of German Large-Scale Settlements 1919-1989



4 Million housing units altogether

Fig. 3

After unification this settlement type became a standard type of urban renewal that regularly followed the cautious paradigm. East-Germany's large-scale settlements from the 1960s-80s had similar needs that have been targeted by the first experiments of cautious renewal of West-German large-scale settlements in the 1980s. These 'new towns' of the GDR were ordinary spatial elements for GDR towns of all sizes. Thus, the sheer amount of that settlement type in the East made it necessary to just have them and keep them. That is, why they became a type of cautious urban renewal. The then new introduced funding schemes – Social City (»Soziale Stadt«) in 1999 and Urban Transformation East (»Stadtumbau Ost«) in 2002 – acknowledged large-scale settlements as a normal aspect of their own settlement typologies for the application of these funding schemes. Especially Stadtumbau Ost has often been

regarded as a special program for these Eastern settlements, although it was always more than just that.[50]

The report on large-scale settlements for the German Bundestag from 1994 revealed that threats and opportunities for these settlements do not differ much between East and West. Here and there were structural damages that could be regarded even as a potential, because its repair might happen in a serial manner, thus generate economies of scale when investing into these areas. That resulted in the chance to reposition these buildings in terms of energetic efficiency. Rather effectual in East-Germany was the fact that the housing companies were often more rooted in these settlements, because their housing stock dominated them as companies. Without much noise they contradicted the planners that want to get rid of 'their' settlements by action. They worked against the picture that after unification these settlements were doomed to become a ghettoized banlieue.[51] By the way, many of these actual planners of that time and place graduated in Weimar.

Cautious Urban Renewal in the 1990s and 2000s: from Kreuzberg (*IBA* 1987) to Leipzig (EU Leipzig-Charter 2007)

One decade before, Weimar's HAB became known for its experimental approach to the building techniques of the Eastern 'plattenbau', the typical serial building technique in the GDR became famous for. The renaissance of Bauhaus in the GDR had just started, when postmodernism sneaked into the rooms of the dignified van de Velde building in Weimar. At the same time, the conflict with the beginning of postmodernism in the FRG, Western Europe and the USA had already begun. »It was an exciting situation between departure and defense, which intruded the debates in our seminars.«[52] The idea was to integrate the modern serial building technique into the post-modern urban design. Tourists in Berlin may recognize the Nicolai Quarter around Berlin's oldest church. That quarter has been a showcase display for the use

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50 See on Stadtumbau: Bernt, Matthias/Haus, Michael/Robischon, Tobias (Hrsg.): S*tadtumbau komplex, Governance, Planung, Prozess*, Darmstadt: Schader-Stiftung 2010; Breuer, Bernd: »Stadterneuerung in Großwohnsiedlungen in den neuen Bundesländern – Probleme und Erfahrungen«, in: Ronald Kunze, Ursula von Petz, Dirk Schubert, Max Welch Guerra (Hrsg.), *Jahrbuch Stadterneuerung 1999 des Arbeitskreises Stadterneuerung an deutschsprachigen Hochschulen*, Berlin: Technische Universität Berlin 1999; Grossmann, Katrin/Kabisch, Nadja/Kabisch, Sigrun: »Understanding the social development of a post-socialist large housing estate, the case of Leipzig-Grünau in eastern Germany in long-term perspectives«, in: *European Urban and Regional Studies* 24 (2015) 2; Grunze, Nico: »Stadtumbau Ost und die ostdeutschen Großsiedlungen. bunte Vielfalt statt graues Plattenbaueinerlei«, in: Uwe Altrock/Ronald Kunze/Ursula von Petz/Dirk Schubert (Hrsg.), J*ahrbuch Stadterneuerung 2012 des Arbeitskreises Stadterneuerung an deutschsprachigen Hochschulen*, Berlin: Technische Universität Berlin 2012; Haller, Christoph: »Leerstand im Plattenbau. Eine Herausforderung für den Stadtumbauprozess in den neuen Ländern«, in: Uwe Altrock/Ronald Kunze/Ursula von Petz/Dirk Schubert (Hrsg.), J*ahrbuch Stadterneuerung 2002 des Arbeitskreises Stadterneuerung an deutschsprachigen Hochschulen*, Berlin: Technische Universität 2002; and on Soziale Stadt: Walther, Uwe-Jens (Hg.) Walther, Uwe-Jens (Hrsg.): *Soziale Stadt – Zwischenbilanzen, ein Programm auf dem Weg zur Sozialen Stadt?* Wiesbaden: VS Verlag für Sozialwissenschaften 2002.

51 Overview in: Krüger: *Neue Steuerungsmodelle in der Stadterneuerung*.

52 Kegler: Aufbruch in die »alte Stadt«.

of ‘plattenbau’ techniques for a post-modern urban design,[53] that as a GDR-urbanism did not carry the name post-modern – but fits into its international leitmotivs. Other examples have been researched[54] recently in the Bauhaus-University referring to the old towns of Halle and Erfurt, where ‘plattenbau’ techniques has been used for infill projects in the historical parts of these towns. The results of these works show, how planners in the late GDR of the 1980s started to play with modernist »plattenbau techniques” to create no other large-scale settlements, but their own urban design variation of the internationally emerging post-modern urbanism.

Today, large-scale settlements are as well a product of cautious urban renewal as a product from the era of urban modernism of the 20th century (for Germany: 1919–1989). By this, they are in terms of research and teaching as well a matter of the Bauhaus from the 1920s, as of the more recent faculties of urban and spatial planning like Dortmund or (West-)Berlin, where cautious urban renewal has always been accompanied by teaching, research and student activities post-1968. And they are as well a matter of the teaching and research traditions of the HAB Weimar and these »hidden reformatory discourses,«[55] that took place in the 1970s and 1980s at the original site of the Bauhaus.

Just a few remarks, what cautious renewal of large-scale settlements meant since the 1980s/1990s:[56] They became trailblazers of energetic renewal on a neighborhood scale. Some kind of ›demographic remodel kits‹ were applied to keep an aging tenantry in their apartments. Not every time following an industrial norm, a bunch of small, but serially applicable measures transformed the original family-oriented modern-era apartments into elderly-friendly ones (especially in bathrooms, kitchens and on balconies). Together with an often-well-developed health infrastructure including medical centers (often in buildings erected already for that purpose), pharmacies, few grocery shops and discounters/supermarkets in foot distance and green spaces and local parks nearby, these large-scale settlements became attractive for an ageing society. And still they are still attractive for families, because of an often above-average child care and school infrastructure in relation to its own city-region. Especially the non-necessity of a car to get the children to their school and/or daytime activities is an attractive contrast to the too-often true cliché of a mother’s everyday life in suburbia. The experiences of three decades of cautious urban renewal of large-scale settlements could recently be used to write a manifesto for new settlements[57] in

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53 Stahn, Günter: *Das Nikolaiviertel*, Berlin: Verl. für Bauwesen 1991.

54 Angermann, Kirsten/Hilse, Tabea: *Altstadtplatten. »Komplexe Rekonstruktion« in den Innenstädten von Erfurt und Halle*, Weimar: Bauhaus-Universitätsverlag Weimar 2013.

55 Flierl: »In neuem Licht«.

56 Krüger: *Neue Steuerungsmodelle in der Stadterneuerung*.

57 Kompetenzzentrum Großsiedlungen (Hrsg.): *Prinzipien für den Bau neuer Wohnsiedlungen. Lernen von Beispielen für den aktuellen Siedlungsbau im Rückblick 1920–2016*, Berlin: Kompetenzzentrum Großsiedlungen 2017.

2017, learning from the principles of the erection and of the renewal of these type of housing.

From today's point of view, it seems awkward that around the turn of the millennium large-scale settlements seemed to be just history. 1999's celebration of Weimar as European Cultural Capital included little aspects from the 1920s. Just one decade before, 1989, the non-profit housing sector benefit to the public (›Wohngemeinnützigkeit‹) was abandoned in West-Germany, as mentioned above. Eventually the year 1989 ended ›Weimar‹ in a double sense in terms of housing. It ended the socio-economic goals on housing, and it ended the modern era, because the final representatives of that era are the just-then-built last settlements of the GDR. Just to mention this: in the GDR, housing has been a solely public matter and the housing question was pointed out as crucial for the socio-economic well-being of the Eastern state. The developments in West-Germany contradicted this after its neoliberal turn in the early 1980s. This stands also in contrast to Austria, where housing since 1919 uninterruptedly should be a benefit to the public and the way of planning and building new settlements e.g. in Vienna has undergone a step-by-step progress from the iconic Karl-Marx-Yards from the 1920s to the Seestadt Aspern today.

Cautious Renewal was not anymore just an experiment for some special alternative milieus just behind the Berlin Wall in Kreuzberg. The 1990s *IBA Emscher Park* in the Ruhr Area[58] developed its ideas further and created the paradigm of an Incrementalism with Perspectives. The urban face of deindustrialization and the transformation of 'rust belt'-like could be found in the Ruhr Area in the West of Germany – with a bunch of former coal and steel cities and 5 Million inhabitants. The *IBA* not only consisted of the re-naturalization of the Emscher River, upgrading quarters for the service economy (as in the Duisburg inner harbor) and the landscape design for former mining areas, now urban recreation areas. They also cared for the different stocks of settlements and neighborhoods of the Ruhr cities. Followed just before and after 2000 by IBAs in the Lausitz area and Saxony-Anhalt, both in East-Germany, economic and population shrinkage became a working field for planners. Shrinkage was a very rapid process after unification; most deindustrialization happens within decades, in the former GDR often within years or even months.[59]

Thus, practitioners, researchers and educators all over Germany – Weimar among others – needed to re-interpret the cautious renewal as a transformatory program for the existent stock for cities and (small-)towns, that at least partly lost elements of their economic meaning. Other programs like urban heritage (1991), Social City (1999) and this transformatory program named Stadtumbau (2002) – both already

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58 Reicher, Christa/Uttke, Angela (Hrsg.): I*nternationale Bauausstellung Emscher Park. Impulse*, Essen: Klartext 2011; Ganser, Karl/Siebel, Walter/Sieverts, Thomas: »Die Planungsstrategie der IBA Emscher Park«, in: *Raumplanung* (1993) 61, 112–118.

59 Kil, Wolfgang: »›Freies Feld von Bitterfeld bis Böhlen…‹ – wo die Menschen davonlaufen, verlieren selbst Grund und Boden alle Heiligkeit«, in: *Berliner Debatte Initial* 13 (2002) 2.

mentioned above – became steps towards a National Urban Development policy that found its completion – at least for the time being – in the 2007's Leipzig Charta. This document describes the European urban policy towards cohesion and the German renewal programs were according to their leitmotivs embedded into the EU funding schemes, programmatically named URBAN I (1994–2000) and URBAN II (2000-2007).[60] »So, despite an initial aversion to politicized advocacy planning, and a reaction against [in German language so-called demolitional, A.K.] urban renewal that came a decade later than in the United States, Germans in cities like Berlin became the true heirs of New Left urbanism.«[61]

Housing and Urban Planning in our times

But all this was – and is – non-growth-oriented development of the existent urban stock. Just recently new settlements for growing cities came back on the urban agenda in Germany. And the old settlements from the modern era have been rediscovered for two aspects. First, as existing stock they make up a reserve portfolio of affordable housing in times of increasing rents. Second, serial building techniques enable price caps for new housing. Both aspects are embedded into the overall »new housing question«[62], which has been recently reestablished as a research group on housing based in a planning school – situated in Weimar at Bauhaus University.

Housing research – which is a focus of the Institute of European Urbanism in Weimar – is the crucial link from today into urban design in the old Bauhaus and the social policy traditions of the Weimar Republic. Erecting settlements in the modern era was neither only an urban design mode by old Bauhaus and others nor just a social measure by the new democratic republic. It was both, and the incorporation of both thoughts makes it understandable why there has been an era of new large-scale housing under so different circumstances as Brandt's Western Federal Republic of Germany (in the 1960/70s) and Honecker's Eastern GDR (in the 1970/80s). They both rooted (as biographically both politicians) in the social policies of the Weimar republic and the battle for a right of housing as promised by the republican constitution of Weimar (Art. 155 WeimVerf). Settlement building as in Dessau-Törten – and

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60 Overviews on the development of urban renwal funding can be found in: Altrock, Uwe: »Von der Stadterneuerung zur Bestandspflege. Wandlung oder Ablösung eines Aufgabenfeldes?«, in: Uwe Altrock/Ronald Kunze/Ursula von Petz/Dirk Schubert (Hrsg.), *Jahrbuch Stadterneuerung 2002 des Arbeitskreises Stadterneuerung an deutschsprachigen Hochschulen*, Berlin: Technische Universität Berlin 2002, 17–38; Bernt, Matthias: »Die Herausforderer der Behutsamen Stadterneuerung«, in: Uwe Altrock/Ronald Kunze/Gisela Schmitt/Dirk Schubert (Hrsg.), J*ahrbuch Stadterneuerung 2013 des Arbeitskreises Stadterneuerung an deutschsprachigen Hochschulen*, Berlin: Technische Universität Berlin 2013, 53–88; Krüger: *Erneuerung der Erneuerung*; especially on »Soziale Stadt«: DIFU (Hrsg.): *Die soziale Stadt, eine erste Bilanz des Bund-Länder-Programms Stadtteile mit besonderem Entwicklungsbedarf – die soziale Stadt*, Berlin: Deutsches Institut für Urbanistik (DIFU) 2002; especially on »Stadtumbau Ost«: BMVBW (Bundesministerium für Verkehr, Bauen und Wohnungswesen) (Hrsg.): *Auswertung des Bundeswettbewerbs Stadtumbau Ost – Für lebenswerte Städte und attraktives Wohnen* (with contributions by: Anja Röding, Ulrich Pfeiffer, Marta Doehler-Bezadi and Bertram Schiffers), Bonn/Berlin: Bundesministerium für Verkehr, Bauen und Wohnungswesen 2003.

61 Klemek: *The transatlantic collapse of Urban Renewal*, 237.

62 Schönig, Barbara: »Die neue Wohnungsfrage«, in: *Blätter für deutsche und internationale Politik* (2013) 2.

the many others like in Frankfurt and Berlin – became possible because of a redistributive taxation that enabled the state to push these projects. The state must afford serial building to create affordable housing. And one general leitmotiv of old Bauhaus was indeed the possibility of an industrial application of the very design idea. Urban design was no exception. Insofar it is consistent to put settlement design (from old Bauhaus) and territorial planning (from old HAB Weimar) as traditions into the current Weimar Housing Research.
Today's teaching of Urbanism at the Bauhaus university (the author has gladly been part of for six years) can be traced in the several traditions of teaching urban planning since the introduction of urban design into old Bauhaus (in Dessau). There are traces back to the 1920s, back to the post-1968 years, when planning has been established in these era of societal reforms (including the teaching method of a study project), back to the 1980s of the HAB Weimar and its special reaction on the new postmodernism 'behind' the wall in the west and as well to the last decades of planning in unified Germany and Europe – referring to the 2007 Leipzig charta. Especially the bachelor program of urbanism in Weimar is rooted in the schemes of the project study work as mentioned above – coming from the traditions rooted in the reform programs of Dortmund and West-Berlin after 1968 as well in the local HAB traditions of the communal practice. Thus, it is no surprise that large-scale settlements stood and stand on the agendas of today's Bauhaus University.

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Leander Thiel

Vom Gestalter zum Schöpfer – Appell zur Positionierung der synthetischen Biologie als neue Disziplin des Designs

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> Was ist also möglich? Nahezu alles, vielleicht mit einer Ausnahme. In einigen 10.000 Jahren könnten die Menschen, nachdem sie miteinander zu Rate gegangen sind, eines schönen Tages beschließen: »Genug; so wie es jetzt ist, soll es von nun an immer sein. Wir wollen nichts mehr verändern, nichts mehr erfinden, nichts mehr entdecken, denn besser als jetzt kann es nicht sein, und selbst wenn es besser sein könnte, so wollen wir es nicht.« Das erscheint mir [...] als das unwahrscheinlichste von alle[m].[1]
>
> Stanislaw Lem, 1981

1 Lem, Stanislaw: *Summa technologiae*. 7. Aufl. 2016, Frankfurt am Main: Suhrkamp 1981, 582.

Synthetische Biologie, Gentechnologie, Mikro- und Molekularbiologie: Unter dem Begriff der Biotechnologie vereinen sich eine Vielzahl ineinander übergehender Teildisziplinen, welche die Nutzbarmachung und Erforschung organischer Materie antreibt. In den letzten 100 Jahren wurden in fast regelmäßigen Abständen neue vermeintliche Meilensteine verkündet und jeder Schritt als Paradigmenwechsel gefeiert. Handelt es sich bei der Biotechnologie in den meisten Köpfen noch um einen abstrakten Begriff, bei der die technologischen Prozesse unbekannt sind, werden sich die Konsequenzen aus der Forschung zunehmend in den Alltag des Menschen eingliedern. Fallen in der Außenkommunikation der Forschung und Unternehmen meist edle Zielsetzungen und Schlagworte wie die Revolution der Medizin, maßgeschneiderte Medikamente zur Heilung einer Vielzahl von Krankheiten wie etwa Krebs, die Bekämpfung der drohenden Lebensmittelknappheit durch nährstoffreichere Nutzpflanzen[2] oder auch die Aufhebung von Begleiterscheinungen wachstumsorientierter Konsum- und Wegwerfgesellschaften, so erstrecken sich die Erfolge in der Forschung auch auf alle anderen Bereiche des weltlichen Lebens und bergen dementsprechend auch große Gefahren für Mensch und Umwelt.
Taktgebend für die Geschwindigkeit, mit der die Forschung in den letzten Jahren voranschreitet, sind neben Start-ups und Pharmarunternehmen nicht zuletzt die Konzerne aus dem Bereich der Informationstechnologie, welche durch Kooperationen und der Gründung eigener Tochterunternehmen im Zukunftsmarkt der Biotechnologie eine zunehmend größere Rolle spielen. Während eine kleine Zahl dieser Forschungsergebnisse, wie das klonierte Schaf Dolly 1996, medial breit kommuniziert werden, wird ein Großteil der Erkenntnisse nur auf fachlicher Ebene veröffentlicht. Im Alltag des Einzelnen sind derlei Errungenschaften kaum sichtbar oder zu spüren, obwohl gerade die jüngsten Durchbrüche im Gene-Editing[3] den Weg aus den Kinderschuhen hin zu einer fundamentalen allumfassenden Technologie des 21. Jahrhunderts weisen. Als modernste Form der Biowissenschaften steht die synthetische Biologie zugleich für wissenschaftlichen Fortschritt und Allmachtsfantasien, da sie das künstliche Erschaffung nie dagewesener Organismen als Ziel verfolgt. Die Signifikanz der möglichen Folgen – positive wie negative – steht im direkten Widerspruch zur weitestgehend ausbleibenden aber notwendigen gesamtgesellschaftlichen Debatte. Dieser Zustand deutet darauf hin, dass es verdeckte Faktoren gibt, welche eine offene Diskussion einschränken und damit die Entscheidungsgewalt darüber, welche Erkenntnisse verwertet werden und wie diese zum Einsatz kommen, den Forschenden und Unternehmen überlässt. Zur Erzeugung von Mündigkeit durch Mitspracherecht und einer Meinungsbildung ist es notwendig, die Biotechnologie in die gesellschaftliche Mitte zu tragen, um anschließend einen zukunftsfähigen, bewussten und selbstbestimmten Umgang mit der Technologie zu etablieren. Diese soll die Kontrol-

2 Wißmann, Constantin: »Ein weites Feld«, in: *fluter* – Magazin der Bundeszentrale für politische Bildung, Herbst 2016/Nr.60, 25.

3 Gene-Editing als Sammelbegriff von Verfahren, die gezielt Teile der DNA manipulieren können.

lierbarkeit der Risiken und Chancen gewährleisten und den Weg in eine gewollte, da selbstverantwortete, Zukunft ebnen.

Status Quo: Forschungsstand und Motivation

DNA ist Information. Für jedes Lebewesen existiert durch ihre DNA eine Anleitung, die einen Großteil der körperlichen Beschaffenheit – Aussehen, Geschlecht, Art – bestimmt, es von anderen Individuen der gleichen Familie und Art unterscheidet oder, wie beispielsweise beim Klon-Schaf Dolly, reproduzierbar macht. Die in diesem Zusammenhang entstandene Debatte über den Menschen in Zeiten seiner technischen Reproduzierbarkeit prägt den fachlichen Diskurs bis heute und die vertretenen Positionen schwanken weit zwischen Fortschrittseifer und reaktionären Versuchen, jegliche Forschung zu unterbinden.
Die Erkenntnis, dass die Veränderung des Erbguts eine Anpassung der innerlichen wie äußerlichen Beschaffenheit eines Organismus zur Folge hat, stellt die Grundlage der modernsten Teildisziplin der Biotechnologie dar: die synthetische Biologie. Sie basiert auf der Entschlüsselung kompletter Genome, einer ganzheitlichen Betrachtung biologischer Systeme und verfolgt ingenieurswissenschaftliche Prinzipien.[4] Das Ergebnis ist dabei – der Definition der Biotechnologie entsprechend – die gezielte Manipulation von Organismen zur Nutzbarmachung durch den Menschen.
Dem freien Manipulieren von DNA-Strängen kommen die Biochemikerinnen Emmanuelle Charpentier und Jennifer Doudna mit der von ihnen entwickelten und 2012 veröffentlichten CRISPR/Cas9-Methode bedeutend näher. Sie basiert auf dem Abwehrmechanismus eines bakteriellen Immunsystems zum Eigenschutz vor Viren und kann an weitestgehend frei wählbaren Stellen der DNA Veränderungen herbeiführen. CRISPR/Cas9 ist im Vergleich zu bisherigen Verfahren zur Umstrukturierung von DNA-Abschnitten um ein vielfaches preiswerter, leichter, präziser und hat binnen kurzer Zeit der Branche neuen Auftrieb beschert und Träume geweckt.
An diesem Aufschwung versuchen verschiedenste Akteure zu partizipieren, um sich ihren Teil eines Zukunftsmarktes zu sichern. Die dahinterstehenden Intentionen und Ausrichtungen variieren. Während bei einem Großteil der Biohacker-Aktivisten Idealismus ein wichtiger Antrieb ist, sind bei den global agierenden Konzernen Patente und Wettbewerbsvorteile dominierende Themen. Das Sichern von Patenten ist dabei ein begehrtes Ziel und die Entwicklung sowie das Aufkaufen von Schlüsseltechnologien für die Zukunft essenziell.[5] Der Markt der Zukunft in einer Wissensgesell-

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4 Deutsche Forschungsgemeinschaft (DFG), acatech – Deutsche Akademie der Technikwissenschaften, Deutsche Akademie der Naturforscher Leopoldina (Hrsg.): S*ynthetische Biologie – Standpunkte*, Weinheim: WILEY-VCH Verlag, 2009, 8.

5 Braidotti, Rosi: »Zur Transposition des Lebens im Zeitalter des genetischen Biokapitalismus«, In: Martin G. Weiß (Hrsg.), *Bios und Zoë – Die menschliche Natur im Zeitalter der technischen Reproduzierbarkeit*, Frankfurt am Main: Suhrkamp 2009, 120.

schaft ist durch Wissen und Patente bestimmt.[6] Auch von staatlicher Seite besteht ein großes Interesse, die eigene Wirtschafts- und Militärmacht weiter auszubauen, Unternehmen an den Standort zu binden und sich als Unterstützer innovativer Technologien auszuweisen.

Dabei sollten als vorderste Instanz zur Regulierung der Forschung und des Marktes eigentlich politische Instrumente greifen. Dass diese aufgrund verschiedener Voraussetzungen nicht funktionieren, lässt sich an dem Ausbleiben einer konsequenten Linie bezüglich der Biotechnologie ablesen. Die Voraussetzungen sind durch ein Nicht-Wollen und ein Nicht-Können zu unterscheiden:

Ein dominierender Faktor für das Nicht-Wollen ist das Verhältnis zwischen Politik und Wirtschaft. Die Nähe, die die Politik zu den Unternehmen in einer hochkapitalistischen Welt pflegt, dem Umwerben der Konzerne zur Machtsicherung im globalen Nationenwettbewerb – all das hat nicht zuletzt Einfluss auf die nationale Gesetzeslage. Über Lobbypolitik haben umsatzstarken Firmen die Möglichkeit, Gesetze auszuhöhlen und entsprechend ihrer wirtschaftlichen Interessen zu optimieren. Investitionen in diese Zukunftstechnologie versprechen wirtschaftliche Vorteile, also auch politische Stabilität und Machterhalt. Ebenso muss auch auf die militärische Dimension zum Machterhalt hingewiesen werden: Im globalen Wettrüsten gleicht die Einführung der molekularen Biotechnologie einem Paradigmenwechsel in der Entwicklung biologischer Waffen.[7] Die militärische Erforschung dient dem Machtausgleich oder hegemonialen Bestrebungen.

Im Geiste des Nicht-Könnens lässt sich die dezentrale, länderübergreifende Entwicklung der Forschung anführen. Selbst wenn ein Staat eine konsequente Position etablieren möchte: Ein simples, nationales Verbot der Forschung hat in einer globalisierten Welt nur eingeschränkte Wirkkraft. Die Zustimmung und dementsprechend die Gesetzeslage zur Biotechnologie variieren von Staat zu Staat. Konzerne können über die Ansiedlung ihrer Firmenzentralen relativ frei den für sie passenden Standort und Gesetzesrahmen auswählen. In Europa gilt beispielsweise weitestgehend das Vorsorgeprinzip: Können Risiken und mögliche Folgen nicht ausreichend geklärt werden, wird ein Produkt eher nicht zugelassen. Auf dem US-amerikanischen Markt muss einem Produkt erst die Schädlichkeit nachgewiesen werden, bevor es zu einem Verbot kommt. Hier gilt also ein Nachsorgeprinzip.[8] In diesem Fall können zwar internationale Organisationen wie die UNO vereinheitlichend wirken, aber diese sind der staatlichen Souveränität nur bedingt übergeordnet. Während beispielsweise die Erforschung nuklearer Waffentechnologien durch andere Staaten anhand von Seis-

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6 Poltermann, Andreas: »Wissensgesellschaft – eine Idee im Realitätscheck«, Fassung vom 9. September 2013, http://www.bpb.de/gesellschaft/kultur/zukunft-bildung/146199/wissensgesellschaft?p=all [24. Februar 2018].

7 Geissler, E.: »Militärischer Missbrauch der molekularen Biotechnologie und seine Verhinderung«, In: Peter Brandt (Hrsg.), *Zukunft der Gentechnik*. Basel/Berlin/Boston: Birkhäuser 1997, 137.

8 Grefe, Christiane: »Die Natur ist komplex«. Im Interview mit Oliver Gehrs, in: *fluter* – Magazin der Bundeszentrale für politische Bildung, Herbst 2016/Nr.60, 29.

mik, Strahlung oder radioaktiver Stoffe in der Luft nachgewiesen werden kann, stellt sich eine gegenseitige Kontrolle von geheimen Forschungseinrichtungen als unmöglich dar.
Aber auch die Geschwindigkeit, mit der die Entwicklung voranschreitet, ist ein Hindernis im politischen Entscheidungsprozess: Die Komplexität der Thematik und die weitreichenden gesellschaftlichen Konsequenzen benötigen einen ausgedehnten Diskurs. Der bürokratische Apparat des Staates hat Probleme, auf die Dynamik der Forschung zu reagieren. Als Beispiel für die Trägheit der Bürokratie lässt sich die Markteinführung des genmanipulierten und patentierten »GloFishs« zu Beginn des 21. Jahrhunderts in den Vereinigten Staaten anführen. Die DNA von Zebrabärbling, Sumatrabarbe und Trauermantelsalmler wurden dafür mit einem bestimmten Genstrang der Qualle Aequorea victoria erweitert. Diese Kreuzung führt bei den Fischen zu der Bildung eines Proteins, welches ein grünes Leuchten des Fisches ausbildet. Während des Zulassungsprozesses für den US-amerikanischen Markt fühlte sich keine der drei großen US-Zulassungsbehörden für das neue Produkt zuständig und eine unerwartet schnelle Markteinführung war möglich. Die Vereinigten Staaten verfolgen zwar das bereits erwähnte Nachsorgeprinzip, was einen Anteil an dem schnellen Einführen des »GloFishs« haben kann, aber Situationen wie diese zeigen, wie schwerfällig bürokratische Strukturen mit neuen Technologien umgehen. Auch wenn die Gesetzeslage in Deutschland strikter und die Einfuhr des »GloFishs« verboten ist, lässt sich ein Warenaustausch in einer globalisierten Welt kaum vermeiden.
Der Reiz an der Forschung, die Möglichkeiten die sie bietet, die Macht, die mit ihr einhergeht, wecken Begehrlichkeiten und werden von den verschiedenen Akteuren weiter vorangetrieben. Die Tatsache, dass die Forschung dezentral voranschreitet, die vielen verschiedenen Protagonisten mit ihren unterschiedlichen Motivationen, die Verworrenheit und Abhängigkeit zwischen Forschern, Start-ups, Konzernen und Staatsführung: Es bedarf keines sonderlich stark ausgeprägten Pessimismus, um zu erkennen, dass sich die weitere Erforschung – sollte sie in diese Richtung weiterlaufen – nicht mehr revidieren lässt. Hinsichtlich der Auswirkung auf Mensch und Umwelt drohen irreversible Schäden, die sich ohne einheitliches Vorgehen und dem Einbeziehen der potentiell Leidtragenden nicht verantworten lassen.

Zucht der Zukunft: Evolution ohne Zufall

Die möglichen Auswirkungen und Folgen, die mit der Entwicklung der Technologie einhergehen, beherbergen ein enormes Risikopotenzial. Die Zucht, als geistiger Vorgänger der ingenieursartigen Biologie zur Formung der belebten Umwelt, hat die Flora und Fauna dieser Welt in großen Teilen verändert. Sie basiert auf dem bewussten Bevorzugen gewünschter Attribute der Nachkommen einer Art und unterbindet durch den menschlichen Eingriff die klassischen Umweltfaktoren, die die Entwicklung dieser Art sonst in eine andere Richtung drängen würde. Im Lebensmittelhandel existieren quasi keine Obst- und Gemüsesorten, die die ersten Homo sapiens vor über 300.000 Jahren in der Natur hätten finden können. Über die Zucht machte sich

der Mensch die belebte Umwelt über Tausende Jahre hinweg Untertan und formte sie nach seinem Willen. Die moderne Biotechnologie ändert dabei an der ursprünglichen Motivation wenig: Ziel ist es weiterhin, die Organismen dieser Welt in einer für den Menschen nutzbringenden Weise anzupassen. Der entscheidende Wandel vollzieht sich in dem grundlegenden Ablauf, wie die Wandlung eines Organismus herbeigeführt wird.

Bei der Zucht sind vor allem drei evolutive Faktoren ausschlaggebend: Selektion, Rekombination und Mutation. Der selektive Faktor – in der natürlichen Evolution die Umweltfaktoren – wird in der Zucht durch den Menschen abgebildet. Dieser bestimmt, welche Eigenschaften des Organismus gewünscht sind und dementsprechend, welchen Nachkommen eine weitere Fortpflanzung zur weiteren Ausprägung der Eigenschaft gewährt wird. Die Rekombination geht diesem Schritt voraus und findet bereits auf molekularer Ebene statt. Sie erzeugt durch Zufall eine neue Kombination der mütterlichen und väterlichen Erbanlagen in der genetischen Zusammenstellung des Nachkommens. Spontane Mutationen an Keimzellen erzeugen letztlich die größte Varianz in der Entwicklung einer Art. Diese Fehler sind ein wichtiger Teil im evolutiven Prozess, da sie Eigenschaften hervorbringen können, die zuvor kein Vorfahre besaß und eine Art ihre Anpassungsfähigkeit auch bei schnellem Wandel der Umweltfaktoren behält.

Die Zucht ist somit an biologische Faktoren gebunden, die die Geschwindigkeit der Entwicklung einer Art einschränken: Die Durchführung der Paarung für die nächste Generation kann erst ab Beginn der Geschlechtsreife initiiert werden. Die Eigenschaften der Nachkommen sind Zufall und die gewünschte Richtung oder Ausprägung kann ausbleiben. Mutationen können in seltenen Fällen sprungartig begehrte Ausprägungen erzeugen. Die Zucht ist im Vergleich zur natürlichen Auslese ein schnell ablaufender Prozess, benötigt mitunter Tausende Jahre, um beispielsweise aus dem Wolf den domestizierten Hund und dessen vielfältige Rassen zu formen. Die Entwicklung durchläuft dabei Schleifen, bei der unerwünschte oder nicht überlebensfähige Nachkommen keine Chance zur weiteren Reproduktion erhalten. Zucht ist damit genau wie manche Disziplinen der Biotechnologie ein menschliches Eingreifen in die Entwicklung von tierischen und pflanzlichen Arten.

Durch die neuen biotechnologischen Verfahren – dem Gene-Editing oder in der synthetischen Biologie – wird versucht, den Zufall, auf dem die Evolution beruht, auszuhebeln. Im Weltbild der Genetik des 20. Jahrhunderts werden die Gene als Informationseinheiten und Bausteine für die ausgeprägten Merkmale eines Organismus angesehen.[9] Diese vereinfachende Sichtweise konnte zwar am Ende des 20. Jahrhunderts durch Initiativen wie das Human-Genom-Projekt korrigiert werden, hält sich in den Köpfen und Visionen allerdings bis heute. Nicht alle Eigenschaften des Menschen, wie etwa Intelligenz oder Musikalität, lassen sich über die Gene

9 Rheinberger, Hans-Jörg/Müller-Wille, Staffan: »Technische Reproduzierbarkeit organischer Natur – aus der Perspektive einer Molekularbiologie«, in: Weiß, *Bios und Zoë*, 29–32.

steuern.[10] Dennoch: Es wird versucht, die Funktion der Gene und dessen Auswirkungen auf den Organismus zu erforschen, um mit diesen Erkenntnissen bewusst neue Eigenschaften herbeizuführen oder auszuschalten – wie am Beispiel des leuchtenden »GloFishs« zu erkennen. Dabei steht auch die Entwicklung von komplett neuen Organismen im Raum. Die Forschung konzentriert sich dabei vorerst auf das Erschaffen von Mikroorganismen mit überschaubarer Komplexität. Dass auch größere Organismen auf Dauer ein begehrtes Ziel sind, ist anhand von Beispielen wie dem Klon-Schaf Dolly abzusehen.
Der Unterschied zur Zucht zeichnet sich sowohl durch die Geschwindigkeit aus, mit der neue Organismen der Biosphäre hinzugefügt werden können, als auch durch die Möglichkeit, Eigenschaften zu kombinieren oder zu ergänzen, die auf herkömmliche Weise nur unter enormen Aufwand – oder gar nicht – herbeizuführen gewesen wären. Die Auswirkungen auf das Ökosystem können durch das Hinzufügen einer modifizierten Art minimal bis maximal ausfallen: Ein nicht-selbst-überlebensfähiges Stück künstlichen Fleisches oder ein lediglich im Wachstum gehindertes Schwein kann nur mäßig Einfluss auf seine Umgebung ausüben. Ein Malaria übertragendes Moskito kann durch CRISPR/Cas9 binnen weniger Generation mittels Gene-Drive[11] ausgerottet werden, bedeutete aber auch den Wegfall einer gesamten Spezies in einem Ökosystem mit nur bedingt überschaubaren Folgen.
Die Biosphäre, also der gesamte belebte Raum eines Planeten, ist ein dichtes Netzwerk verschiedenster Spezies und Ökosysteme, die in gegenseitiger Wechselwirkung stehen. Sie ist nie statisch, sondern ständig in Bewegung und gleicht Missverhältnisse ununterbrochen aus. Die Konsequenzen, die sich aus einem neuen Einfluss auf ein sich selbst regulierendes System ergeben, sind im Vorfeld nur schwer abzusehen. Eine neue Art, die dem System hinzugefügt wird, stellt eben jenen neuen Einfluss dar und beherbergt das Potenzial das System oder Teile davon zu beeinträchtigen. Die regulativen Prozesse, in diesem Fall die Anpassung durch evolutive Funktionen, benötigen Zeit, um auf neue Parameter zu reagieren. Je kleiner der Einfluss des neuen Faktors, desto geringer sind die Auswirkungen auf die Stabilität des Systems und die Anpassung läuft ihrer eigenen Dynamik folgend ab.
Die Geschichte der australischen Fauna dient dabei häufig als Musterbeispiel für den Einfluss neuer Tierarten auf ein weitestgehend isoliertes Ökosystem. Bedingt durch die geologische Distanz zu den anderen Kontinenten konnte sich die Tier- und Pflanzenwelt unabhängig entwickeln. Die durch die Kolonialherren eingeführten Tiere wie Wildkatzen, Kamele, Aga-Kröten oder Kaninchen konnten sich in der neuen Umgebung ohne Konkurrenz ungebremst ausbreiten. Maßnahmen zur Regulierung der explosionsartigen Vermehrung der Tiere zeigten nur eingeschränkt Wirkung und

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10 Winnacker, Ernst-Ludwig: »Vom Gen zum Genom«, in: Gerhard Gottschalk (Hrsg.), *Das Gen und der Mensch – Ein Blick in die Biowissenschaften*, Göttingen: Wallstein 2000, 19.

11 Gene-Drive bezeichnet Vorgänge, die zur beschleunigten Ausbreitung von Genen in einer Population angewendet werden.

sind bis heute Thema in der australischen Gesellschaft und Politik.[12] Einen ähnlich großen Einfluss können demnach synthetisch erzeugte Lebewesen auf die Umwelt haben. Erhalten sie neue Eigenschaften und kommen in Kontakt mit dem nicht darauf vorbereiteten Ökosystem, können die Auswirkungen mitunter gravierend sein, da es beispielsweise keine Konkurrenten oder Fressfeinde gibt – die Möglichkeit zur unbeschränkten Ausbreitung wäre in diesem Fall gegeben. Die Technologie greift hier fundamental in den Prozess der Lebenserzeugung als solches ein und dementsprechend ist auch ihr Bedrohungspotential beachtlich.

Öffentliche Wahrnehmung: Diffuse Ängste prägen das Bild der Technologie

Die persönliche Vorstellung der zivilisatorischen Zukunft wird dominiert durch Inhalte der Literatur, Mythen, Religion und der Medien im Allgemeinen. Die Palette an Szenarien enthält alles, was sich ein Mensch auszudenken vermag und reicht von Dystopien einer zerstörten Welt bis hin zu transhumanistischen[13] Träumen einer gesundeten Menschheit. Im Gegensatz zu anderen Zukunftsthemen wie die Weltraumforschung, Computer- und Informationstechnologie, wird die Forschung in der Biotechnologie deutlich kritischer gesehen. Das Erklären dieser ablehnenden Haltung ist Inhalt diverser Publikationen, die versuchen, das Verhältnis zwischen Öffentlichkeit und Forschung genauer zu erfassen.[14] Das Bild, welches sich von dieser Grundstimmung abzeichnet, ist diffus und speist sich aus verschiedenen Faktoren, die vornehmlich mit der Komplexität und mit den zuvor genannten Befürchtungen des Missbrauchs dieser Technologie zusammenhängen.
Die Biotechnologie stellt ein Konglomerat unterschiedlichster Teildisziplinen dar und hat in der Breite an Tätigkeitsfeldern in den letzten Jahren deutlich zugenommen. Eine Differenzierung der Teildisziplinen ist kaum möglich, da hier ein fließender Übergang untereinander stattfindet. Die Resultate dieser Überschneidungen, von Enzymmanipulation bis klonierten Lebewesen, sind so weit gefächert, dass eine präzisere Betrachtung durch den Laien nicht möglich ist.[15] Forschungsergebnisse werden daher vom Individuum zwangsläufig als Einzelnes betrachtet, müssen aber zugleich aufgrund der Korrelationen der Biotechnologie im Ganzen zugeordnet

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12 N.N.: »Wilde Kamele sorgen für Ärger im Outback«, in: *SPIEGEL ONLINE*, Fassung vom 1. April 2009, https://www.spiegel.de/reise/aktuell/australien-wilde-kamele-sorgen-fuer-aerger-im-outback-a-616741.html [28. August 2019].

13 Transhumanismus: Philosophische Denkrichtung, die die menschlichen Beschränkungen hinsichtlich Intellekt, Geist und Körper durch technologische Verfahren durchbrechen will.

14 Weitze, Marc-Denis/Pühler, Alfred et al. (Hrsg): *Biotechnologie-Kommunikation. Kontroversen, Analysen, Aktivitäten* (acatech DISKUSSION), Heidelberg u.a.: Springer 2012; Schummer, Joachim: *Das Gotteshandwerk. Die künstliche Herstellung von Leben im Labor*. 1.Aufl., Berlin: Suhrkamp 2011.

15 Hampel, Jürgen: »Die Darstellung der Gentechnik in den Medien«, in: Marc-Denis Weitze/Alfred Pühler et al. (Hrsg), *Biotechnologie-Kommunikation. Kontroversen, Analysen, Aktivitäten* (acatech DISKUSSION). Heidelberg u.a.: Springer 2012, 254–255.

werden. Die Stimmung bezüglich verschiedener Teilbereiche variiert daher: Die medizinische Anwendung findet dabei noch die höchste Zustimmung, während sich der vorwiegende Teil der Bevölkerung gegen Klonierung und den Einsatz in der Landwirtschaft ausspricht.[16] Die persönliche Entscheidungsfindung wird erschwert, da die inneren Widersprüche keine klare Meinung zulassen. Eine Blockadehaltung, das Ablehnen des gesamten Komplexes, ist durchaus nachvollziehbar.
Der Soziologe Ulrich Dolata sieht im geschichtlichen Rückblick die konfrontativen Strategien als wirksamste Methoden, Parlament und Unternehmen zur Kooperation zu bewegen.[17] Er verweist dabei speziell auf die Erfolge der Anti-Atomkraft-Bewegung sowie die Regulierung zur Kennzeichnungspflicht von gentechnisch veränderten Lebensmitteln. Konsequenzen für nationale Märkte sind also durch Protest möglich, da die Politik – als Repräsentanten des Volkes – auf die Gesellschaft reagieren muss und so gegebenenfalls mit Gesetzesänderungen antwortet. Diese Entscheidungen können auch gegen den Wunsch der Wirtschaftslobby gefällt werden. Der Hebel, den die Bevölkerung als bevollmächtigte zur Legimitierung einer Regierung ansetzt[18], ist größer als der der Wirtschaft. Auch wenn die dezentrale Veranlagung der Forschung die Macht von politischen Initiativen einschränkt: Wenn sich kein Widerstand aufbaut, kann die Forschung weitestgehend ungestört weiterlaufen. Dieser Entwicklung folgte ansonsten ein schleichender Prozess, bei der die Technologie ungehemmt vertieft wird und unbemerkt ein integraler Bestandteil des Alltags wird. Die Industrie scheut die negativen Schlagzeilen und arbeitet weniger öffentlichkeitswirksam oder in Ländern, die der Forschung toleranter entgegentreten.
Die im Verborgenen ablaufenden Prozesse unterliegen dadurch ihrer eigenen Dynamik. Die Forschungsmotivationen speisen sich in diesem Fall aus den Faktoren, welche zu einer positiven Entwicklung des jeweiligen Unternehmens führten. Im Konkreten wäre das etwa der Wunsch, die eigene Vormachtstellung im globalen Wettbewerb zu festigen, Aktionären positive Prognosen vorzeigen zu können oder schlichtweg den eigenen Umsatz zu steigern.[19]
Um dem Menschen eine wünschenswerte und selbstverantwortete Zukunft zu ermöglichen, muss dieser mit den eigenen Träumen und Ängsten im Prozess und der Entwicklung der eigenen Zukunft involviert sein. Vor allem dann, wenn die Wissenschaft selbst keine Antworten auf die dringenden Fragen bereitstellen kann. Damit

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16 Wolf, Miriam: *Ethische Kontroverse – demokratische Mitwirkung. Bio- und Gentechnologie als Thema der politischen Bildung*, Schwalbach/Ts.: WOCHENSCHAU Verlag 2009, 68ff.

17 Dolata, Ulrich: Die Bio-Industrie – Märkte, Unternehmen, politische Alternativen. In: Michael Emmrich (Hrsg.), *Im Zeitalter der Bio-Macht. 25 Jahre Gentechnik – eine kritische Bilanz*. 2. Aufl., Frankfurt am Main: Mabuse Verlag 1999, 254–259.

18 Der Punkt der Legitimierung trifft zumindest bei vorwiegend demokratisch organisierten Staaten zu. In autoritären Regimen kann Protest vom Volk auch einen Hebel darstellen, in diesen bedarf der Prozess einer anderen Dimension um erfolgreich zu sein.

19 Kramer, Bernd: »Big Apple«, in: *fluter* – Magazin der Bundeszentrale für politische Bildung, Herbst 2016/ Nr.60, 32.

die Bevölkerung Gehör findet oder sich eine Meinung überhaupt erst entwickeln kann, bedarf es der Konfrontation mit der Thematik. Die Technologie muss ihren Weg in den öffentlichen Raum finden. Erst durch die Abwägung der Risiken und Möglichkeiten, durch Zustimmung oder die Ablehnung kann sich auf demokratische Art und Weise ein Konsens darüber bilden, wie mit den Forschungsergebnissen umzugehen ist und sich letztlich ein Weg in die Zukunft eröffnen, der von einem Großteil der Bevölkerung gewollt ist.

Wie sich diese Zukunft letztlich ausgestaltet, kann aufgrund der vielen Akteure und der allumfassenden Möglichkeiten kaum vorhergesehen werden. Und auch die Entscheidung, was sich dabei als ein positiver Weg bewerten lässt, steht offen. So führt auch der Designer Max Bill an: »Erst eine von der Gesellschaft gewünschte und geförderte Gestaltung der Umwelt kann eine humane Umwelt werden, vorausgesetzt, dass dies aus vernunftgemäßem Grund geschieht.«[20] Am Ende steht demnach immer die Frage nach der Verantwortung im Raum, unabhängig davon, ob die technologischen Entwicklungen komplett unterbunden oder aber euphorisch integriert werden. Die Konsequenzen müssen von den Menschen getragen werden: Sollte die Menschheit ihren Abgesang einläuten, dann kann sie nur mit offenen Augen reagieren. Angesichts dieser erdrückenden Ausgangslage für die Gesellschaft stellt sich die Frage, ob es überhaupt Möglichkeiten gibt, nach Auflösung der allgemeinen Erstarrung und erfolgreicher Motivation der Bevölkerung zur Partizipation, Einfluss auf die Geschicke der Politik und der Wirtschaft auszuüben. Es gilt also einen Weg zu finden, der die im früheren Teil dieser Argumentation als Nicht-Können- und Nicht-Wollen-Faktoren zur Regulierung der Technologie aufzuheben vermag:»Kein Mensch kann eine gefühlte Beziehung herstellen zwischen seiner Fortbewegung mit dem Auto, der Bahn oder dem Flugzeug und jener geruchs- und geschmackslosen und überdies noch unsichtbaren Substanz, die unter der chemischen Bezeichnung CO_2 das Weltklima zugrunde richtet. […]. Gegenüber dem, was man in der Welt der Gegenwart erleben, anfassen, kaufen, verbrauchen und verschwenden kann, ist das alles total fern, abstrakt, mathematisch und – so seltsam sich das anhören mag – zu gut begründet.«[21]

Diese psychologische Zwickmühle, die der Soziologe Harald Welzer hier, und in diesem Fall bezogen auf den Kampf gegen den Klimawandel, beschreibt und als grundlegendes Problem für eine zukunftsfreundlichere Kultur anführt, lässt sich gut als ein möglicher Ausweg aus dem Biotechnologie-Dilemma lesen. Die Biotechnologie ist zu abstrakt und steht nur in den seltensten Fällen mit Dingen des Alltags in

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20 Bill, Max: »Max Bills Antwort auf eine Umfrage des Internationalen Design Zentrums Berlin 1970«, in: Friedrich von Borries/Jesko Fezer (Hrsg.), *Weil Design die Welt verändert… Texte zur Gestaltung*, Berlin: Die Gestalten Verlag 2013, 114.

21 Welzer, Harald: Futur Zwei. Die Wiedergewinnung der Zukunft. In: Ders./S. Rammler (Hrsg.), *Der FUTURZWEI Zukunftsalmanach 2013*, Frankfurt am Main: S. Fischer 2012, 35f.

Zusammenhang. Stattdessen überlagert sich die Gedankenwelt zur Biotechnologie mit diffusen Ängsten und Vorstellungen.
Der Erfahrungsschatz hinsichtlich Möglichkeiten und Risiken in der Bevölkerung reduziert sich auf die wenigen Geschichten und Filme, die sich mit diesen auseinandersetzen. Das wissenschaftliche Hintergrundwissen beschränkt sich auf eine abstrakte Vorstellung, von der der Einzelne eine ungefähre Ahnung hat, die aber sein Leben nicht sonderlich tangiert und daher für ihn vage bleiben kann. Um zur gedanklichen Teilhabe zu motivieren, muss der Einzelne die infrage stehenden Prozesse nachvollziehen und eine Relevanz für das eigene Leben erkennen können. Das real Erfahrbare führt zur Reibung mit der abstrakten Gefühlswelt. Als auf den heimischen Ackerflächen transgener Mais angebaut wurde und somit in direkter Nähe des Konsumenten stand, verflüchtigte sich die generelle Gleichgültigkeit und Protest formierte sich schnell. Die Proteste sorgten anschließend dafür, dass bis heute die deutsche Landwirtschaft frei von Gentechnik ist.[22]
Sichtbarkeit, Reibungsflächen und reale Bezüge erschaffen: Diese Faktoren sind notwendig, um allen Teilen der Bevölkerung Partizipation zu ermöglichen und die diffusen Ängste, die einem zukunftsweisenden Umgang mit der Technologie im Weg stehen, aufzulösen. Ebenso steht die Frage nach der verantwortungsbewussten Entwicklung von Anwendungen der Biotechnologie und vor allem der synthetischen Biologie und einem ebensolchen Umgang mit ihren Ergebnissen im Raum, die angesichts der voranschreitenden Forschung eine zentrale Rolle einnehmen wird. Die Schnittstelle zwischen Technologie und dem Menschen findet sich dabei im Design wieder.

Biodesign: Versuch einer Definition

Während sich die Designtheoretiker selbst nicht über eine allgemeine Definition des Designs einig werden können, so verbindet sie mittlerweile dennoch die Annahme, dass Design als adaptiver und universeller Prozess zu interpretieren ist, der sich nicht auf Produkte, Plakate und Gebäude beschränkt, sondern auch Dienstleistungen, Arbeitsprozesse oder Kongresse unter Abwägung verschiedenster Außeneinflüsse formt.[23] »Design ist das planvolle – also absichtliche, vorsätzliche, zielorientierte – Gestalten von physischen und virtuellen Gegenständen, Innen- und Außenräumen, Informationen und sozialen Beziehungen. Dieser erweiterte Designbegriff umfasst also alles, was in disziplinär engeren Kontexten Produkte- Industrie- Grafik- und Kommunikationsdesign etc. genannt wird, […].«[24] In der jüngeren Geschichte des Designs haben sich in den verschiedenen Teildisziplinen unterschiedliche Herange-

22 Forum Bio- und Gentechnologie e.V.: »Deutschlands Felder sind ›gentechnik-frei‹«, Fassung vom 2. November 2016, http://www.transgen.de/anbau/1479.deutschland-felder-gentechnikfrei.html [22. Februar 2018].

23 Brandes, Uta/Erlhoff, Michael/Schemmann, Nadine: *Designtheorie und Designforschung*, Stuttgart: UTB 2009, 20.

24 Borries, Friedrich von: *Weltentwerfen. Eine politische Designtheorie*. 2.Aufl., Berlin: Suhrkamp 2016, 9.

hensweisen und Denkmuster etabliert, die in Kombination mit der Biotechnologie zum einen einen Mehrwert für die Forschung als auch für die Menschen darstellen können, zum anderen die geschilderten gesellschaftlichen Probleme abmildern. Ebenso wie in der Zucht ist das Ziel des Biodesigns die Abwandlung von Organsimen und organischen Prozessen und gleich dem Industriedesign die Nutzbarmachung durch Menschen. Die demselben Ausgangsmaterial und Ablauf folgende Bandbreite an Nutzungen ist fast unbegrenzt und erstreckt sich von der relativ simplen Modifikation von Organismen, wie etwa der Anpassung der Maserung einer Baumart, dem Hinzufügen spezifischer Funktion, leuchtender Pflanzen oder Fische, bis hin zu völligen Neuschöpfungen nie da gewesener Lebewesen. Entscheidend ist, gerade in Bezug auf ethische Fragestellungen und Risikobewertung, wie tief der Eingriff in die Keimbahn und die Biosphäre sowie Ökosystem ist. Die Grundlage der organischen Gestaltung bilden die Manipulation und Neusynthese von DNA. Diese stellen das technologisierte und nicht zufallsbasierte Äquivalent zur klassischen Zucht dar. Daraus resultiert: Biodesign bedeutet das zielorientierte Gestalten minder- sowie hoch komplexer Lebewesen unter Berücksichtigung verschiedenster Außeneinflüsse mittels genmanipulierender Verfahren. Auffällig ist die Nähe zur Definition der Biotechnologie. Die Biotechnologie strebt die Nutzbarmachung von lebenden Organismen zur Produktion von Wissen, Gütern und Dienstleistungen an. Der entscheidende Unterschied ergibt sich aus dem Einbeziehen der Umwelteinflüsse in den Überlegungen zur Gestaltung im Prozess: Ethik, Ökologie, Sinnhaftigkeit und die Frage nach der Art der Nutzung wird erst durch einen übergeordneten Blick zum Thema. »Technologie ist nicht notwendig schlecht, aber notwendig dumm. Sie selbst bewirkt gar nichts, sondern nur die Kultur, die sie benutzt.«[25] Im Folgenden werden zentrale Punkte erläutert, die mittels des Biodesigns aus einer richtungslosen Technologie, eine menschliche, positive Technologie erschaffen und die die im Vorfeld beschriebenen Probleme bezüglich einer Unmündigkeit der Bevölkerung dadurch lösen können.

Symbole und Ikonen: Überlagerung von negativer Symbolik

Über das Produktdesign werden Technologien für den Menschen greifbar. Design zielt auf Nutzbarkeit ab, beruft sich auf das Faktische und stellt Abhängigkeiten dar. Die gestalteten Produkte sind keine Prophezeiung eines nahenden Untergangs, sondern stellen aus dem Realen abgeleitete Möglichkeiten dar. Sie sind nicht phantastischer Traum, sondern beziehen sich auf das Mach- und Realisierbare dieser Welt. Es lässt sich als eine Art Bindeglied interpretieren, welches abstrakten Prozessen wie der Umwandlung von Lichtenergie in Strom, Telekommunikation oder Fotografie einen realen Bezug entgegensetzt. Die inneren technologischen und chemischen Funktionsweisen sind nur bedingt Teil der Kommunikation zum Nutzer, aber sie bilden

25 Welzer: *Futur Zwei*, 33.

etwas Seh-, Hör- und Greifbares ab, was in direkter Abhängigkeit zum Menschen erzeugt wurde. Diese Nähe zum Menschen kann die Biotechnologie über das Design erhalten. Der Philosoph Daniel M. Feige deutet Design als Welterschließung, die der Welt ein spezifisch menschliches Gesicht gibt.[26] Design forme die Welt im Rahmen ihres Gebrauchs, da die durch das Design entstehenden Gegenstände auf die menschliche Praxis bezogen sind und sich aus ihr erst ergibt. Über Design wird der Mensch mit Realität konfrontiert, die der Auseinandersetzung bedarf und Zustimmung sowie Ablehnung erst ermöglicht.

Das Einbeziehen von ebenso begehrenswerten wie zukunftsfähigen Entwicklungsmöglichkeiten schürt das Interesse daran, sich mit diesen möglichen Zukunftsvisionen auseinanderzusetzen und klammert die eigenen Ängste in Teilen aus. Um die negativen Emotionen nicht weiter zu verstärken und zum politischen Teilhabe zu motivieren, müssen alltägliche, nützliche Aspekte beleuchtet werden. Die prinzipielle Ablehnung wird abgemildert und erlaubt einen freieren Umgang. Design besitzt eine auf die Sinne bezogene und vor allem visuelle Komponente. Der Vorwurf, Design würde sich in ästhetischen Ansprüchen verlieren, eine rein oberflächlich-formale Disziplin darstellen, und dadurch letztlich die funktionalen Aspekte einschränken, findet zwar in der aktuellen Verortung des Designs durchaus seine Bestätigung. In der Breite der Bevölkerung und in unternehmerischen Kreisen wird Design noch immer auf ein einfaches Mittel zur Absatzförderung durch Gestaltung von Äußerlichkeiten reduziert.[27] Jedoch darf die Kompetenz zur Erzeugung visueller Qualitäten als Schlüssel zur geschilderten Problemstellung nicht unbeachtet und unterschätzt werden.

Der Mensch ist ein primär visuelles Wesen und entscheidet in kürzester Zeit, ob das gesehene ansprechend ist oder nicht. Die Mittel zur prägnanten visuellen Kommunikation sind Teil der Profession und der Ausbildung. Dies bezieht sich zum einen auf die Gestaltung der physischen Erscheinung von Produkten der synthetischen Biologie oder der Gentechnik – also die reale Ausprägung und körperliche Gestalt von Organismen – und zum anderen auf deren inhaltliche und mediale Kommunikation. Als gelungenes Beispiel ließe sich hierbei erneut die Arbeit von Alexandra Daisy Ginsberg anführen, deren Modellorganismen zum Schutz der Biosphäre formal sowohl ästhetisch sind als auch in ihrer ganzkörperlichen Physiognomie glaubwürdig erscheinen und die ihnen innewohnenden Funktionen nach außen kommunizieren.[28] Obwohl die von ihr vorgestellten Organismen nur hypothetischer Natur sind, zeigt sich, dass ihr designorientierter Ansatz funktioniert und auch heute schon medial treffend kommuniziert werden kann.

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26 Feige, Daniel Martin: *Design. Eine philosophische Analyse*, Berlin: Suhrkamp 2018, 9.

27 Erlhoff, Michael: *Theorie des Designs*, München: Wilhelm Fink 2013, 149.

28 Ginsberg, Alexandra Daisy: *Designing for the Sixth Extinction*, https://www.daisyginsberg.com/work/designing-for-the-sixth-extinction [21. Februar 2018].

Gerade in Zeiten digitaler Medien, sozialer Netzwerke und des Internets ist die visuelle Kommunikation die erste Wahl, um eine breite Öffentlichkeitswirksamkeit zu erzielen. Der Designer Frank Wagner schreibt hierzu, dass

> alles, was heute eine Bedeutung hat und wahrgenommen werden will, [sich] unter größtmöglicher Eigenständigkeit vor allem visuell artikulieren [muss]. Bei der enormen Zahl konkurrierender visueller Eindrücke kann Aufmerksamkeit nur durch visuelle Qualität und die Qualität der wahrzunehmenden Botschaft erreicht werden.[29]

Publikationen in Buchform oder umfangreiche wissenschaftliche Berichte und Artikel können dies in der Regel nicht leisten. Zudem lassen sich komplexe Inhalte nur mit einem jeweils eigenen redaktionellen Aufwand kurz und prägnant kommunizieren. Der Medienwissenschaftler Neil Postman prägte die Aussage, wonach der Inhalt dem Medium gemäß geformt sein muss, um sein Potential voll ausschöpfen zu können.[30] Um demnach eine gesellschaftliche Relevanz entwickeln zu können und größere Teile der Bevölkerung zu erreichen, ist die visuelle Kommunikation der biotechnologischen Entwicklungen über die aktuell dominierenden Medien essenziell. Für eine adäquate Kommunikation ist das Wissen um Symbolik und Semiotik ein wichtiger Aspekt, der bei der Aufbereitung von abstrakten Technologien oder Schaffung von Organismen bedacht werden muss. Der Philosoph Joachim Schummer zeigt auf, wie die Biotechnologie in der Geschichte durch negative Symbolik überlagert wird und dass der Vorwurf des Gotteshandwerk eine relativ neue Argumentation ist.[31] Der Mangel an konträren, also auch positiven, Szenarien ergibt sich durch die Abstraktheit der Forschung, die bisher meist auf molekularer Ebene stattfindet und daher keinen greifbaren Bezugspunkt darstellen kann. Das klonierte Schaf Dolly erreichte auch dadurch eine hohe Popularität, dass es als physischer Beweis für die Forschung medial kommunizierbar war, dabei einen realen Kontext bot und so zu einem Symbol für das Klonen von Lebewesen avancieren konnte. Dem Hinzufügen neuer Symbole und Bezüge in den den mit der Biotechnologie verbundenen Gefühlskanon folgte eine erleichterte Orientierung in der Materie, da reale Beispiele als prägnante Anhaltspunkte fungierten.

Design stellt im Vergleich die kontrollierte Alltagserfahrung dar, mit der sich der Mensch auch nach einer Kinovorführung oder Ausstellung konfrontiert sieht. Es stellt einen realen Gegenentwurf zur Fiktion von Künstlern und Filmschaffenden dar, welcher mit allen Sinnen wahrgenommen werden können. Diese können zwar ein mediales Echo erzeugen, ihre Inhalte basieren jedoch häufig auf Provokation zur Erhöhung der Reichweite und generieren dadurch weitere Ablehnung bei der Bevöl-

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29 Wagner, Frank: *The value of design. Wirkung und Wert von Design im 21. Jahrhundert*, Mainz: Hermann Schmidt Verlag 2015, 49.

30 Postman, Neil: »Das Zeitalter des Showbusiness«, in: Claus Pias/Joseph Vogel/Lorenz Engell et al. (Hrsg.), *Kursbuch Medienkultur. Die maßgeblichen Theorien von Brecht bis Baudrillard*. 6. Aufl. 2008, München: DVA 1999, 227.

31 Schummer, Joachim: *Das Gotteshandwerk. Die künstliche Herstellung von Leben im Labor*. 1.Aufl., Berlin: Suhrkamp 2011.

kerung. In einer konsumorientierten Gesellschaft ist es ist der tägliche Umgang mit den Gegenständen des Designs, der eine unmittelbare Nähe zu den Objekten erzeugt. Diese Gegenstände stellen dann umso stärker ein Symbol für die neuen Möglichkeiten dar und forcieren den Wunsch, daran teilzuhaben. Das Entwerfen des Biodesigns als Profession ist daher dringend notwendig.

Verantwortete Realität: Biodesign ist Verantwortung

Der Designtheoretiker Friedrich von Borries führt in seinem Buch Weltentwerfen politische Verantwortung und Design zusammen. Er unterscheidet darin zwischen entwerfenden und unterwerfenden Anteilen des Designs. »Entwerfen. Unterwerfen. Alles, was gestaltet ist, unterwirft uns unter seine Bedingungen. […] Design schafft Freiheit, Design ermöglicht Handlungen, die zuvor nicht möglich oder nicht denkbar waren. Indem es dies tut, begrenzt es aber auch den Möglichkeitsraum, weil es neue Bedingungen schafft. […] Diese dem Design inhärente Dichotomie ist nicht nur eine gestalterische, sondern eine politische. Sie bedingt Freiheit und Unfreiheit, Macht und Ohnmacht, Unterdrückung und Widerstand.«[32]
Das Erkennen der politischen Dimension und der Verantwortung des Designers ist eine Schlüsselkomponente für ein angemessenes Ausführen der Profession. Die ethische Auseinandersetzung mit Konsequenzen des eigenen Handelns bildet das Fundament für ein verantwortungsvolles Ausführen der Designtätigkeiten. »Jeder Designer ist verantwortlich für das, was er gestaltet. […] Basis dieser Entscheidung ist eine kritische Auseinandersetzung mit der eigenen Praxis. […] Er verändert die Welt, in der wir leben. Nicht immer sind Designer sich der Reichweite des eigenen Handelns und der daraus erwachsenden Verantwortung bewusst, obwohl das Problem des verantwortungslosen Schöpfers schon in der Frühmoderne (z.B. 1818 in der Figur des Viktor Frankenstein) angedacht wurde. Um verantwortungsvoll handeln zu können, muss sich der Designer der gesellschaftlichen Bedeutung (mitsamt der ökonomischen, ökologischen und sozialen Folgen) seines Handelns bewusst sein.«[33]
Harald Welzer und der Sozialwissenschaftler Bernd Sommer streben dabei gleich ein gesellschaftsumfassendes Transformationsdesign an. Sie argumentieren, dass ein Wandel des aktuellen Gesellschafts-, Wirtschafts- und Kulturmodells mit der Forcierung eines unbegrenzten Wachstums in einer ressourcenbegrenzten Welt unausweichlich ist. Unterschieden werden müsse dabei, ob diese Transformation »by design or by desaster« erfolgt:[34] Kann also ein Bewusstseins- und Handlungswandel durch planungsreiche Vorarbeit die großen Probleme dieser Zeit bewältigen, oder muss es erst zur Katastrophe mit unvorhersehbaren Folgen kommen?

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32 Borries: *Weltentwerfen*, 9–15.

33 Ibid., 122f.

34 Sommer, Bernd/Welzer, Harald: *Transformationsdesign. Wege in eine zukunftsfähige Moderne*, München: oekom verlag 2014, S. 10f.

Biodesign erzwingt Verantwortung. Für einen positiven Ausgang der Entwicklung ist ein »by design« einem »by desaster« vorzuziehen. Dies setzt eine noch ausgeprägtere interdisziplinäre Beschäftigung mit Ethik und ökologischen Vorgängen bereits in der Ausbildung essenziell voraus. Die Forschung muss zur Vermeidung des Desasters vor allem in der Anfangsphase evolutionäre Züge annehmen. Sie muss sich schrittweise vortasten, zur Fehlerkorrektur viele Schleifen ziehen und natürliche Umweltfaktoren mit einbeziehen, um reaktionsfähig zu bleiben. Die höchste Spezialisierung in den akademischen Laufbahnen der Biowissenschaften muss in der Umwandlung von Technologie zur Nutzung durch eine ausgeprägte Interdisziplinarität im Biodesign aufgefangen werden, damit ein zukunftsfähiger Gebrauch der Erkenntnisse gewährleistet ist. Diese Funktion übernimmt das Design, indem es Teile weiterer Disziplinen wieder der Sozialwissenschaften, Psychologie oder Ökologie in den Prozess integriert.

Persönliche Haltung: Design ist subjektiv und erfordert einen Standpunkt

Entgegen den weitverbreiteten Bestrebungen, Design als quantifizierbaren und objektiven Prozess zu etablieren, um sich in der zunehmend rationalen, wissenschaftlichen und effizienzgetriebenen Wirtschaft als seriös und professionell zu behaupten[35], zeigt sich, dass mit dem Berufsbild dennoch eine eigene Haltung im Entwurfsprozess einhergeht. Die Anstrengungen, Design in einer auf rationalen Prämissen basierenden Gesellschaft von den freien Künsten zu distanzieren, erscheint durchaus nachvollziehbar. Es wird versucht, für die Disziplin einen hoch wissenschaftlichen Hintergrund zu etablieren, der das gegenwärtige Bild des diffusen Geistesblitzes als Ideengeber im Entwurfsrozess verdrängen soll. So versucht beispielsweise Dieter Rams mit seinen 10 Thesen darüber, was »gutes Design« ausmacht, eine objektive Bewertbarkeit von Design zu etablieren. Dass es sich hierbei nur um eine von vielen Meinungen und Auffassungen von Design handelt, lässt sich an Thesen anderer Gestalter und der gelebten Praxis erkennen.[36] Die Designtheorie ist bis heute durchzogen von verschiedensten Interpretationsansätzen bezüglich einer Deutung des Designbegriffs. Auch wenn Thesen wie die von Rams eine Objektivität propagieren, zeigt sich an Aussagen wie »Gutes Design ist unaufdringlich« oder »Gutes Design ist ästhetisch« wie vage und subjektiv diese Maximen, aber auch deren spätere Deutung und Ausführung sind.[37] Das Interesse von Designern, sich geistig und theoretisch mit Gestaltung auseinanderzusetzen und einen persönlichen Duktus erkennen zu lassen, zeugt jedoch von einer inneren Haltung und gedanklicher Teilhabe.

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35 Schneider, Beat: *Design – Eine Einführung. Entwurf im sozialen, kulturellen und wirtschaftlichen Kontext*, Basel/Boston/Berlin: Birkhäuser 2009, 281–283.

36 Borries, Friedrich von: »Rams und Apple«, in: Ders./Jesko Fezer (Hrsg.), *Weil Design die Welt verändert… Texte zur Gestaltung*, Berlin: Die Gestalten Verlag 2013, 23.

37 Ibid., 23–31.

Die Begriffe Haltung und Design führte bereits der Bauhaus-Lehrer László Moholy-Nagy 1946 zusammen. Die Design- und Kulturwissenschaftlerin Claudia Mareis fasst die Position Moholy-Nagys wie folgt zusammen: »Sowohl der Begriff der ›Idee‹ als auch ›Haltung‹ machen eines deutlich: Design soll in seiner ›Essenz‹ nicht als ›materielle‹, sondern als ›ideelle‹ Tätigkeit verstanden werden. Diese idealistisch und zugleich essentialistisch gefärbte Lesart von Design findet denn auch im deutschen Begriff der ›Gestaltung‹ eine Entsprechung.«[38] Moholy-Nagys Ansatz zur Beschreibung des Berufsbildes prägt das Bild des Designs bis heute und wurdein der geistigen Nachfolge des Bauhaus an der Hochschule für Gestaltung Ulm weiter ausgearbeitet. Auch wenn dabei immer wieder der wirtschaftliche Einfluss auf den Gestalter kontrovers diskutiert wurde, zeugte das problemlösungsorientierte Arbeiten immer wieder von Unabhängigkeit und Eigenverantwortung. Der viel beachtete Essay von Lucius Burckhardt Design ist unsichtbar aus dem Jahre 1980 erhebt das Design zu einer Disziplin des Denkens: »Inzwischen hat man wohl erkannt, daß Dinge mit so hohem Symbolwert und so geringem Anteil von Erfindung wie das Eßbesteck gar nicht Gegenstand des Designs sind, diejenigen Dinge aber, die noch zu erfinden sind, sind wohl, mindestens in ihren technischen Teilen, für den Designer zu schwierig. So muß sich das Design öffnen zu einem Soziodesign: einem Nachdenken über Problemlösungen, die dadurch entstehen, daß sowohl Rollen wie Objekte aufeinander abgestimmten Veränderungen zugeführt werden. Etwa so: eine Küche, die Gäste dazu anregt, dem Gastgeber beim Zerkleinern der Zwiebeln zu helfen...«[39]
Burckhardt hebt das Design damit auf eine übergeordnete Ebene, bei der es nicht nur um die pragmatische Erfüllung von technologischen und zweckdienlichen Eckdaten geht. Eine Bewusstwerdung des kompletten Lebenszyklus‘ eines Produktes sowie dessen Verbindungen und Einflüsse auf das gesamtgesellschaftliche Wirkgeflecht der Umwelt wird zum Ziel der Konzeption. Die Reduktion auf einen durchweg rationalen Prozess ingenieurstechnischer Natur wird damit ausgeschlossen,, da es für eine derartige Komplexität keine perfekte Lösung geben kann. Diese Grundeinstellung braucht es auch im Umgang mit dem Biodesign.
Die Wirkung, mit der ein neuer Organismus das Ökosystem beinträchtigen kann, lässt sich nicht abschließend klären. Dennoch ist ein Erkennen möglichst vieler potenzieller Überschneidungen aus einer übergeordneten Perspektive unabdingbar, um verheerende Folgeerscheinungen zu minimieren. Gleichzeitig wird sichtbar, dass Entwicklungen aus dem Biodesignbereich Zeit benötigen: Ein Essbesteck kann relativ unkompliziert in wenigen Wochen zur Marktreife gebracht werden, während eine neue Modellpflanze zur Bindung von Stickoxiden aus der Luft für den städtischen Raum auf eine Vielzahl von Situationen und Interferenzen mit anderen Organismen angepasst sein muss.

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38 Mareis, Claudia: *Design als Wissenskultur. Interferenzen zwischen Design- und Wissensdiskursen seit 1960*, Bielefeld: transcript 2011, 106.

39 Burckhardt, Lucius/ Höger, Hans (Hrsg.): *Design=Unsichtbar*, Ostfildern: Hatje Cantz 1995, 21.

Durch die Unmöglichkeit einer mathematisch perfekten Lösung für diese Probleme wird deutlich, dass das Ergebnis des Designprozesses immer eine menschliche Komponente besitzt: Das Interpretieren und Abwägen einzelner Faktoren lässt sich nicht über mathematische Berechnungen begründen, sondern ist immer eine persönliche Wahl. Die gleiche Anweisung zur Gestaltung einer Leuchte wird heute in jedem Designbüro zu einem anderen, individuellen Ergebnis führen, da der Gebrauch von Material oder Bestimmung der Form sich durch den eigenen persönlichen und durch Ausbildung, Kultur und innerer Haltung geprägten Stil definiert. Im Umkehrschluss bedeutet dieser Zustand auch, dass die an sich richtungslose objektive Technologie wie die Biowissenschaften durch den subjektiven Gestaltungsprozess eine immer individuelle Richtung erhält.

Prozess und Kreativität: Jedes Konzept setzt eine individuelle Betrachtung voraus

Der Entwurfsprozess zur Entwicklung neuer biotechnischer Produkte findet dabei viele Überschneidungen zu jenen Prozessen, die sich bereits im Produktdesign etabliert haben. Hier wird ein schnelles Adaptieren der produktspezifischen Eigenheiten vorausgesetzt. Die konkreten im Hintergrund ablaufenden technologischen Prozesse werden dabei nur so weit aufgenommen, wie es für die Gestaltung vonnöten ist. Die Grundlage bildet der weitestgehend universelle Entwurfsprozess, der sich kaum von den etablierten Vorgehensweisen im Design unterscheidet:

> Informationsphase: Definition und Verständnis der Aufgabenstellung (Problem erkennen) und Sammeln von Informationen.
>
> Analytische Phase: Analyse der gewonnenen Informationen; Vergleich mit der Aufgabenstellung.
>
> Entwurfsphase: Ideen entwickeln und nach alternativen Lösungskonzepten suchen.
>
> Entscheidungsphase: Beurteilung des Für und Wider der Lösungen; Entscheidung für eine oder mehrere Lösungen.
>
> Phase der Kalkulation und Anpassung des Produkts an die Bedingungen der Produktion.
>
> Verwirklichungsphase: Prototyp herstellen, testen, auswerten, anpassen und implementieren.[40]

Ein Wandel muss allerdings in der Gewichtung und der Auswahl der verschiedenen Inhalte stattfinden. Die in der Fertigungstechnologie und Konstruktion gelehrten Inhalte beziehen sich auf industrielle Verfahren zur Formung der unbelebten Umwelt. Biotechnologierelevante Äquivalente müssen gefunden und vermittelt werden, um den aus dem Produktdesign bewährten Prozess auf das Biodesign anzupassen.
Der Philosoph Donald Schön prägte mit seinem 1983 erschienen Buch The Reflective Practitioner[41] den Begriff der reflektierten Praxis. Die Design- und Kulturwis-

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40 Schneider: *Design – Eine Einführung*, 285.

41 Schön, Donald: *The Reflective Practitioner. How Professionals Think in Action*, New York: Basic Books 1983.

senschaftlerin Claudia Mareis fasst seine Argumentation wie folgt zusammen: Der Wissenszuwachs durch Theorie allein ist nicht ausreichend und kann erst in Verschränkung mit praktischem Handeln zu einem Erkenntnisgewinn führen.[42] Diese Ansicht findet in der aktuellen Designtheorie durchaus Zustimmung und attestiert dem Design eine grundlegende Offenheit im Problemlösungsprozess. Auch Daniel M. Feige erklärt, dass sich das Ergebnis oder die Idee erst durch den Prozess offenbart, und nicht bereits im Vorfeld durch übergeordnete Regeln bestimmbar ist: »Die Gestaltung von Designgegenständen muss vielmehr als eine je singulär geleistete Neuaushandlung auch der Zwecke, wozu die Gegenstände da sind, erläutert werden. […] Anders gesagt: Der Prozess des Entwerfens und Gestaltens lässt sich nicht abkürzen, lässt sich nicht im Sinne einer abstrakten Metaregel in seiner Eigenlogik neutralisieren.«[43]

Demnach können im Design niemals zwei Probleme durch dieselbe Lösung beantwortet werden, da neue Technologien entwickelt werden, sich klimatische Gegebenheiten ändern oder der kontinuierlich ablaufende gesellschaftliche Wandel ein anderes Vorgehen erzwingt. In jedem Prozess sind die Parameter neu zu evaluieren und in die Überlegungen einzubeziehen. Einem verantwortlichen Umgang bei Entwicklungen im Biodesign liegt diese Annahme zugrunde. Die Betrachtung der Probleme muss ganzheitlich geschehen, da sich der Punkt, an dem Risiken zu erwarten sind, im Vergleich zum Produktdesign verschiebt.

Eine weitere Schlüsselqualifikation des Biodesigns zur Problemlösung im Prozess stellt die ihr inhärente Kreativität dar. In ihr bündelt sich das interdisziplinäre Wissen und bedeutet einen Vorteil gegenüber der hoch spezialisierten Ausbildung in den Biowissenschaften. Das Wissen um gegenseitige Abhängigkeiten im Ökosystem und der übergeordnete Blick bilden die Grundlage für kreative Techniken. Einen vollkommenen Biodesigner, der Expertise in allen nur denkbaren Bereichen aufweisen kann, wird es allerdings nicht geben. Daher ist die Interdisziplinarität wichtig, um Relationen zu verstehen, aber dient ebenso als Grundlage für Kommunikation in großen Teams mit Mitgliedern unterschiedlicher Hintergründe. Basierend auf diesem Wissen kann ein gedanklich divergenter Prozess in kreativen Methoden stattfinden, der über das fachübergreifende Verknüpfen von Teilaspekten neue, innovative Lösungen hervorbringen kann. Erst abschließend wird ein konvergentes, also logisches und bewertendes Denken angewandt, um real anwendbare Lösungen auszuwählen. Der ergebnisoffene Prozess stellt somit einen wichtigen Aspekt des Biodesigns dar. Die Erfahrung, die sich in über 100 Jahren industrieller Gestaltung angesammelt hat, bietet sich zur Adaption an. Im Prozess läuft das Abwägen verschiedenster Einflüsse und Parameter zusammen und mündet in einer geeigneten, sich ihrer Umwelt bewussten Lösung.

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42 Mareis: *Design als Wissenskultur*, 167.

43 Feige: *Design. Eine philosophische Analyse*, 145.

Appell: Biodesign als Weg in die Zukunft

Die Umweltkrisen der konsumorientierten Welt – Verschmutzung der Weltmeere, Klimawandel durch Treibhausgase, Lagerung von radioaktivem Abfall, Feinstaubbelastung im städtischen Raum, massenhaftes Bienensterben – sind erst Problem, wenn sie als massenhafte Erscheinung Einfluss auf das irdische Ökosystem ausüben können. Eine einzelne Plastiktüte zerfällt nach 20 Jahren, der CO_2-Ausstoß eines Autos hat keine nennenswerte Auswirkung auf die globale Zusammensetzung der Luft und der Gebrauch von Pflanzenschutzmitteln auf einem Feld rottet keine gesamte Spezies aus. Auf kleine Veränderungen reagiert das Ökosystem verhältnismäßig gut. Erst das großflächige Auftreten und der industrielle Einsatz dieser Stoffe kann die globale Biosphäre beeinträchtigen.. Der Produktdesigner, als Gestalter für Produkte, die in Masse verkauft werden sollen, muss sein Produkt in tausend- oder millionenfacher Ausführung denken, um die Konsequenzen gering zu halten. Gängige Taktiken eines ökologischen Bewusstseins wie das Cradle-To-Cradle-Prinzip wären also die Vermeidung überflüssiger Materialien und Verpackungen, die Nutzung recycelter Stoffe oder die adäquate Rückführung der Materialien in den biologischen Kreislauf.
Mit dem Biodesign und der synthetischen Biologie ändern sich die Vorzeichen. Weiterhin muss das angestrebte Ergebnis als potenziell massenhaft vorkommender Einfluss gesehen werden, nur kann die Tragweite bereits durch einen einzelnen fehlerhaften oder unzulänglich konzipierten Organismus erreicht werden. Gene-Drive, wie am Beispiel des Moskitos ausgeführt, kann geplant sein, oder sich unbewusst als Nebenerscheinung verheerend auf eine gesamte Population auswirken. Pollen eines Produkts verbreiten sich über die Luft und könnten ähnliche Organismen bestäuben und verändern, werden von Bienen verarbeitet oder belegen die menschlichen Schleimhäute, was wiederum zu allergischen Reaktionen führen kann. Eine vorteilhafte neue Eigenschaft zum Schutz eines bedrohten Beutetieres kann die davon abhängigen Raubtierarten empfindlichen stören und dezimieren, was im Anschluss eine explosionsartige Ausbreitung dieser und anderer in Korrelation stehender Arten bedeuten kann. Der Entwurfsprozess muss auf diese Verlagerung des Schwerpunkts reagieren und sich zunehmend auf eine Betrachtung des gesamten Zyklus eines Produktes fokussieren.
Der Verschmelzung von Biotechnologie und Design als Biodesign folgte allerdings auch die Auflösung der zu Anfang beschriebenen Probleme, welche die Biotechnologie hinsichtlich Kommunikation und Akzeptanz aufweist. Das Biodesign setzt den diffusen Ängsten reale Möglichkeiten entgegen. Die Überlagerung der negativen Symbolik ermöglicht eine offenere Kommunikation. Diesen Bestrebungen folgt eine Vielzahl für den Menschen positiver und neuer kreativer Umsetzungen biotechnologischer Erkenntnisse, die zur gesamtgesellschaftlichen Diskussion und demokratische Partizipation durch steigendes Interesse beitragen. Auf diese Weise öffnet sich ein Weg aus einer fremdbestimmten hin zu einer demokratischen und selbstbestimmten Zukunft. Auch die potenziellen Risiken durch die Forschung erhalten so einen kontrollierten Umgang, da ein interdisziplinärer Blick durch die Herangehensweise

des Designs einen höheren Grad an Verantwortung und Umsicht mit sich zieht. Der Grundstock und die künftige Ausrichtung des Biodesigns zeichnen sich durch die Ausbildung, die Professoren und die politischen Entscheidungen aus. Ein frühzeitiges Erkennen dieser Chancen kann sowohl für die Hochschulen, die Industrie als auch für die Gesellschaft von großem Vorteil sein. Zum einen erhöht es die Attraktivität eines Standorts für die Branche und ermöglicht dadurch die Kontrolle über die aktuelle Forschung und zum anderen kann es zu einer Initialzündung der benötigten Entwicklung hinsichtlich einer zukunftsfähigen – also einer sich selbst reflektierenden – und mündigen Gesellschaft beitragen.

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Nicolai Bo Andersen

Beauty Reclaimed – Towards an Ontology of Sustainable Architecture and Design

Fig. 1

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Crisis

The world is in a crisis. According to the UN, climate change presents the single biggest threat to sustainable development everywhere[1], emissions of greenhouse gases continue to increase[2] and the earth's annual resources budget is consumed in just 7 months[3]. Today, the single biggest threat is pollution, emission of greenhouse gases and consumption of resources. According to IPCC, »Global warming is likely to reach 1.5°C between 2030 and 2052 if it continues to increase at the current rate«.[4] Temperature increase, sea level rise and ocean acidification are identified as impacts caused by climate change. The availability of necessities like freshwater, food and energy is heavily threatened. In the 2030 Agenda for Sustainable Development, it is pointed out that »survival of many societies and of the biological support systems of the planet is at risk«.[5] The climate crisis means that the world as we know it may be radically changed in just a few years. Economic growth, technology development and lifestyle including resource-intensive consumption is identified by IPCC as key factors[6]. In the Western world, egoism and short-sighted solutions seem to prevail. The architecture industry only seems interested in instant attention in a constantly accelerated media culture. Spectacular buildings with no consideration to the characteristics of context, material qualities and human scale are built in a constantly increasing speed. According to IPCC, in 2014 the building sector accounted for 31% of total global final energy use, 54% of final electricity demand and 8% of the energy-related CO2 emissions (excluding indirect emissions due to electricity)[7]. Buildings contribute to human alienation as well as massive consumption of energy and resources. IPCC concludes that

> Pathways limiting global warming to 1.5°C with no or limited overshoot would require rapid and far-reaching transitions in energy, land, urban and infrastructure (including transport and buildings), and industrial systems (high confidence).[8]

In other words, architecture is part of the problem. Consumer objects are produced, buildings are built and resources are used and thrown away in a constantly increasing speed. The question is, if architecture is part of the problem, how can it (again) be part of a more sustainable way of living. How can buildings contribute to treating people, material resources and the planet with more care?

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1 UN: Achieving the Sustainable Development Goals through Climate Action [online], <https://unfccc.int/achieving-the-sustainable-development-goals-through-climate-action> [01.03.2019].

2 UN: Climate Change [online], <https://sustainabledevelopment.un.org/topics/climatechange> [01.03.2019].

3 UN: Earth's Annual Resources Budget Consumed in Just 7 Months [online], <https://unfccc.int/news/earth-s-annual-resources-budget-consumed-in-just-7-months> [01.03.2019].

4 IPCC: Special Report. Global Warming of 1.5ºC [pdf], https://www.ipcc.ch/sr15/ [08.08.2018].

5 UN: Climate Change [online], <https://sustainabledevelopment.un.org/topics/climatechange> [01.03.2019].

6 IPCC: Special Report. Global Warming of 1.5ºC [pdf], https://www.ipcc.ch/sr15/ [08.08.2018].

7 Ibid.

8 Ibid.

Resources

The flow-fund model of production, developed by Georgescu-Roegen, describe the earth as a closed system[9]. Energy, not matter, is exchanged with the rest of the universe in a constant process where nothing is created and nothing is destroyed; it is only transformed. Inside the system, natural resources flow through the economy and end up as waste and pollution. In this model, recycling of material resources is possible, but only if energy and additional materials are added. In continuation, resources must be kept in the economic system as long as possible before it becomes waste. In other words, to slow the degradation of natural resources (the entropy law), buildings must be durable. In the context of the circular economy, the nine Rs, as suggested by Jacqueline Cramer, describe a hierarchy of the possible circularity options: (1) Refuse, (2) Reduce, (3) Reuse, (4) Repair, (5) Refurbish, (6) Remanufacture, (7) Repurpose, (8) Recycle and (9) Recover energy[10]. The gradation of the Rs makes it clear that 'refuse' is to prefer, whereas 'recover energy' is the final option in the circular economy. In continuation, longevity as a way to keep material resources in the building system as long as possible may be understood as an essential principle for sustainable building culture. If it is true that pollution, emission of greenhouse gases and consumption of resources are the problem, then maybe keeping resources in the system as long as possible may be part of the solution. If the problem is a short-sighted perspective and careless consumption, then maybe attentiveness is the answer. If the problem is disinterested egotism, then maybe the answer is beauty.

Table

I am sitting at my working table located in my study (fig. 1). My body rests on a chair and my arms lay on top of the table. Light coming from the table lamp illuminates the computer placed on the table. My fingers hit the keyboard and my eyes follow the cursor on the screen. The room is quiet, and the space is filled with concentration. In my everyday use of the chair, table and lamp, I do not pay much attention to them. I enter the room, pull out the chair, sit down, turn on the light and start working at the table without thinking much about the objects themselves. My attention is on the work I am doing; an architectural design, bills to be paid or an essay that has to be written. Will it be ready on time?

I put my hand on the table. The tips of my fingers touch the soft surface of the table and I feel the subtle lines of the wood grain. The silky matte surface gives a calm, yet vivid impression. The direction of the grain follows the length of the table spanning from apron to apron and is supported by four slim legs. The tabletop is just as thick

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9 Georgescu-Roegen, Nicholas: *The Entropy Law and the Economic Process*, Cambridge, Massachusetts: Harvard University Press 1971.

10 As described by Nicole van Buren et al., see: van Buren, Nicole. et al.: Towards a circular economy: the role of Dutch logistics industries and governments, in: *Sustainability* 8 (2016) 7, 647 [online], <http://www.mdpi.com/2071-1050/8/7/647> [12.02.2019], 3.

as the width of my thumb. I notice the side stretchers, joined by a connecting piece and two diagonal braces that give the table the impression of stability. In a gesture of support, the table establishes a horizontal plane able to hold the weight of my arms, the lamp and the computer, suspended from the floor up against the downward pull of gravity. The wooden table establishes an elevated plane allowing me to sit comfortably on my chair and to do my work. In a dynamic balance, the table offers me a meaningful place for working.

Being

To Heidegger, human being (*Dasein*) is always practically engaged in the world[11]. Our relation to the world is characterised by concern (*Sorge*) as we are always doing something, producing something or attending to something. It is defined neither by the subject alone nor the object in itself but rather coherence understood as being-in-the-world. Dasein's being-in-the-world means that we are always inseparably connected to things that can be used. Heidegger calls this relation describing our everyday activity ready-to-hand (*Zuhanden*). In the ready-to-hand activity, we use equipment (*Zeug*) in order to do things. However, we are not focused on the things we use, but rather on the act we are doing. We do not pay much attention to the things themselves, but they are meaningful to us when we understand what the things can be used for. In our everyday concern, we understand the being of the thing. In continuation, architecture may be described as one way in which human beings relate to the world through things. We process materials, make tools and build structures in order to inhabit the Earth. Heidegger would say that building is a way to dwell among things in the world.[12] However, when we focus only on the act in the ready-to-hand daily activity, the things themselves become insignificant. Even more so, in a culture where speed and novelty are highly worshipped, the being of things are forgotten. We overlook being in the everyday forgetfulness of practical activity. If suddenly a thing stops working, we pay attention to the thing again. The famous example of the hammer points out that we are more focused on the act of hammering than the hammer itself. If the hammer breaks, the daily, instrumental handling of the hammer is gone, and we suddenly become aware of the hammer as a hammer. The equipment presents itself as an object and it becomes present-at-hand (*Vorhanden*). In the present-at-hand perspective, we can observe the hammer as an object in a more theoretical and scientific way. However, the rich quality of experience is overlooked and the meaning of the thing, based on what the thing can do and its relation to time, is gone. In the present-at-hand perspective, the Daseins relation to the world is separated into a subject and object relationship. The things as well

11 Heidegger, Martin: *Being and Time*, Oxford: Blackwell Publishers Ltd 2001.

12 Heidegger, Martin: »Building Dwelling Thinking«, in: Martin Heidegger, *Basic Writings*, London: Routledge 2008, 239-256.

as human beings are reduced to mere objects, exposed to a theoretical and scientific gaze. The richness of Daseins being-in-the-world is missed. In continuation, it may be argued that the ready-to-hand everyday forgetfulness of practical activity as well as the present-at-hand cold theoretical gaze and objectification conditions the careless consumption and disinterested egoism guilty in the excessive use of resources and exploitation of the planet.

Presence

In my everyday use of my table, I do not pay much attention to it. I use it without focusing on it and the table is ready-to-hand (*Zuhanden*). If it would break down, or in some way stop working, I would look at it as an object and the table becomes present-at-hand (*Vorhanden*). However, as I touched the grains of the wooden surface, the table became present to me in another way. As pointed out above, Daseins relation to the world is characterised by practical forgetfulness and objectification. However, human existence (*Existenz*) is neither just ready-to-hand nor present-at-hand. Our relation to the world is not just instrumental nor scientific just as Daseins being-in-the-world is not characterised by just subjective judgement or scientific objectivity. Heidegger defines existence not as the synthesis of body and soul but rather as that »kind of Being towards which Dasein can comport itself in one way or another, and always does comport itself somehow, we call ›existence‹ [Existenz]«.[13] To Heidegger, authentic existence means not just to be, but rather that Dasein is aware of its own being. In the ready-to-hand everyday activity, Dasein is filled with the world and in the present-at-hand objectiveness, the world becomes distant. However, Heidegger opens up a third possibility arguing that those »entities which show themselves in this and for it, and which are understood as entities in the most authentic sense […] they are conceived as presence«.[14] In other words, in holding attentiveness to the ready-to-hand, the things return and they are then perceived as presence (*Anwesenheit*). To Heidegger, presence may be triggered by a specific mood (Stimmung) that »comes neither from ›outside‹ nor from ›inside‹ but arises out of Being-in-the-world, as a way of such Being«.[15] When I touched the grains of the wooden table, I was put in a specific mood that opened up an attentiveness to the being of the table. Dasein becomes attentively connected to the being of things through a specific mood. In architecture, a mood may be produced by a textural effect in the surface of a material. It may be triggered by the sensation of bricks forming an arch. Or it may be produced by the play of light and shadow in a relief on a wall. A building may present an invitation to open up to the present moment, to be aware of being right here, right now. The attentive presence that is about seeing things more intense may

13 Heidegger: *Being and Time*, 32.

14 Ibid, 48.

15 Ibid, 197.

allow us to be present to the richness and fullness of the moment as we are invited to be aware of our own existence.

Play

Gadamer describes the work of art as characterised by play, e.g. a piece of music. To Gadamer, the »players are not the subjects of play; instead play merely reaches presentation (*Darstellung*) through the players«.[16] In this perspective, aesthetics is neither an objective property of the thing itself nor is it a purely subjective question. Aesthetics is not objective science nor subjective judgement but rather a transformative process that changes the object as well as the perceiver since »what we experience in a work of art and what invites our attention is how true it is—i.e., to what extent one knows and recognizes something and oneself«.[17] Characteristic to the play is that it is an event that is renewed each time it is played. The presentation is different each time the essence of the play is presented through the participants. The tempo may be slow, dignified, lively, fast or agitated. The volume may be gentle, strong, trembling, forceful or strong. The mood may be happy, bright, mysterious, majestic or furious. Even though the presentation is neither an objective property nor a subjective question, the quality of the instruments as well as the attitude of the participants influence the work as it is being presented. Similarly, the experience of art and architecture is characterised by an event taking place between the building and the perceiver. Material properties, such as form, colour, proportions and material effects,[18] define parameters that constitute the perception just as the attitude of the perceiver influences the perception. A picture (*Bild*) is not just a copy of the everyday things we use without paying much attention to them and it is not just an objective description of the world. Rather, as Gadamer argues, the »specific mode of the work of art's presence is the coming-to-presentation of being«.[19] In this way, art and architecture may be one way to open up an attentive presence as an event taking place that, through material properties, allows us to 'recognise something and oneself'.

Properties

The table is made of ash wood. Wood is formed with the use of tools developed for the specific purpose. A chainsaw has cut down a tree and a circular saw has cut the tree into planks. The cutting of the planks has significantly influenced the properties of the material. Flat grains that make bold curves in the surface characterise the

16 Gadamer, Hans-Georg: *Truth and Method*, London: Continuum 2004, 103.

17 Ibid, 113.

18 In his 1919 lecture, the Danish architect Carl Petersen describes form, colour, proportion and material effects as the four most important elements in forming arts, see: Petersen, Carl: »Stoflige Virkninger«, in: Karen Zahle, Finn Monies and Jørgen Hegner Christensen (ed.), *De gamle mestre*, Copenhagen: Arkitektens Forlag 2000, 120–129.

19 Gadamer: *Truth and Method*, 152.

crown cut timber, whereas vertical grains that make a pattern of straight lines in the surface characterise the quarter cut timber. Because of the cutting technique, quarter cut timer is more stable than crown cut timber. The planks have been glued together to form the plane tabletop and posts have been joined corresponding to the tectonic properties of wood. Heidegger points out that the Greek tikto means »to bring forth or to produce«.[20] The Greek word for technique means neither art nor craft but rather »to make something appear, within what is present, as this or that, in this way or in that way«.[21] Matter is formed according to its material and tectonic properties into equipment, in this case a table that may be used for working or social gathering. The surface of the crown cut wood has a soft character. The tabletop that spans from apron to apron gives a feeling of tension and direction. The legs give a sensation of holding things up against the pull of gravity and the diagonal braces have a horizontal stabilising quality. In a dynamic balance, the suspended plane offers a meaningful place for working or gathering. In this perspective, the table is not just ready-to-hand equipment used in forgetfulness of everyday practical activity nor is it just a thing exposed to the present-at-hand theoretical gaze and objectification. Through matter formed according to its material and tectonic properties, a meaningful gesture of support and social gathering is recognised.

Knowledge

According to Heidegger, art is aesthetic knowledge, but on its own premise, »a becoming and happening of truth«.[22] In continuation, Gadamer points out that »art is knowledge and experiencing an artwork means sharing in that knowledge«.[23] As described above, it is about transcending the categories subject and object in favour of understanding art and architecture as an event taking place in the meeting between the work and the perceiver. Just as Gadamer describes the picture as »[…] an event of being—in it being appears, meaningfully and visibly«,[24] the being of the table is unconcealed through the specific tectonic formation of matter in the gesture of support. As aforementioned, knowledge springs from material properties and the everyday, practical concern. Using a bridge as an example, Heidegger describes how the »bridge swings over the stream with ease and power. It does not just connect the banks that are already there. The banks emerge as banks only as the bridge crosses the stream«.[25] The bridge presents the meaningful synthesis of material properties, the gesture of connecting and the place established by the banks of the river as

20 Heidegger: »Building Dwelling Thinking«, 253.

21 Ibid.

22 Heidegger, Martin: »The Origin of the Work of Art«, in: Heidegger, *Basic Writings*, 127.

23 Gadamer: *Truth and Method*, 84.

24 Ibid, 138.

25 Heidegger: »Building Dwelling Thinking«, 248.

well as the bridge itself in mutual interdependence. To Heidegger, building is really dwelling, pointing out that »The Old High German word for building, buan, means to dwell«.[26] Building is in itself dwelling and living is to dwell on this earth as mortals. Not in the simple understanding of the word as constructing, but rather the »way in which you are and I am, the manner in which we humans are on Earth, is buan, dwelling«.[27] When we dwell, we are among the things in a meaningful way. When I am attentive to the colour and the textural quality of the wooden table, the suggestion of lift and direction, the dynamic balance of the elements, the gesture of support proposed by the table and the spatial character established in the room, I understand something. The table invites me to dwell comfortably in a space allowing me to do my work and through the specific way the table is right here right now, I understand its being. In continuation, architecture may be understood as matter formed according to its material and tectonic properties creating a meaningful gesture of inhabitation and making a place for humans to dwell on Earth.

Beauty

Architecture may be described in many different ways. As an event taking place between the building and the perceiver it may be referred to as overwhelming, poor, impressive or indifferent – and some buildings may even be called beautiful. Describing a van Gogh painting of a pair of peasant shoes, Heidegger argues that the shoes may be seen both as a thing in itself, equipment that may be used for walking as well as a work of art understood as an unconcealment of being.[28] To Heidegger, our relation to the world is neither just instrumental nor scientific, but also aesthetic. In the eyes of the artist, the pair of shoes are not just ordinary and trivial tools for walking just as the picture is not a result of an objectivizing, scientific gaze. Pointing out that the German word for space (*Raum*) has its etymological origin in clearing, Heidegger argues that art is about beauty, but not in the banal understanding of the word, rather as a question of making clear: »That is how self-concealing Being is cleared […] Beauty is one way in which truth essentially occurs as unconcealment«.[29] Aesthetics is thus the philosophy of aesthetic knowledge identified with the experience of beauty. Referring to Plato, Gadamer points out that the »beautiful is of itself truly ›most radiant‹ (to ekphanestaton)«.[30] In continuation, beauty in architecture may be defined as the feeling of clarity we may experience when we understand matter formed to create a meaningful gesture of inhabitation making a place on Earth.

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26 Ibid, 244.

27 Ibid, 245.

28 Heidegger: »The Origin of the Work of Art«, 83–140.

29 Ibid, 116.

30 Gadamer: *Truth and Method*, 476.

Sustainability

As argued in the beginning, a sustainable circular economy is dependent on longevity. However, to Heidegger the characteristic of Daseins being is »the ›thrownness‹ of this entity into its ›there‹; indeed, it is thrown in such a way that, as Being-in-the-world, it is the ›there‹«.[31] Human being is thrown into a world, which means a specific context defined by time. In other words, to Heidegger, being is time. The question is, can aesthetic knowledge characterised by transience have durability? Discussing the question of classical, Gadamer points out that »This is just what the word ›classical‹ means: that the duration of a work's power to speak directly is fundamentally unlimited«.[32] According to Gadamer, Friedrich Schlegel has argued that a »classical work of literature is one that can never be completely understood«.[33] In continuation, the work of architecture may be richer than what may be experienced at first just as the work of architecture may be more ›'intelligent‹ than the architect. The experience as an event taking place is never exhausted when the synthesis of matter, gesture and place is inviting to continuous attentive presence. Heidegger points out that to »save the earth is more than to exploit it or even wear it out. Saving the earth does not master the earth and does not subjugate it, which is merely one step from boundless spoliation«.[34] To Heidegger, philosophy is ultimately an ethics question of cultivating our relation to the world. Similarly, beauty in art and architecture may be an invitation to attentiveness that is neither just ready-to-hand nor present-at-hand but opens up the richness and intensity of the cultural and natural world. Aesthetic sustainable architecture invites an attentive presence that is about seeing things more clearly, more intensely and with duration.

Designs from a world to come

In 1919, Europe had just experienced the end of the first large catastrophe in the 20th century. The question was what should be done. Walter Gropius suggested that »Architects, painters and sculptors must learn a new way of seeing and understanding the composite character of the building, both as a totality and in terms of its parts«.[35] In 2019, the world is confronted with a new crisis. The world may be radically changed in just a few years if we do not act now. The question is, if architecture is part of the problem, may architecture be part of the solution? We inhabit the world consuming products and exploiting resources at a constantly accelerating speed. Architects contribute to human alienation by using bricks only for decoration. Tectonic articulation is blurred as structural elements are veiled under characterless gypsum

31 Heidegger: *Being and Time*, 174.

32 Gadamer: *Truth and Method*, 290.

33 Ibid, 375.

34 Heidegger: »Building Dwelling Thinking«, 247.

35 Gropius, Walter: Manifesto of the Staatliches Bauhaus [online], http://bauhausmanifesto.com/ [01.03.2019].

boards. Buildings have become abstract images with no meaningful connection to a place. The intimate interdependence of matter, gesture and place is broken, and the result is that we no longer understand how to dwell. If it is true that the problem is the disinterested unawareness that characterises our everyday activity and the cold, scientific gaze that reduces humans and environments to objects, perhaps beauty in architecture can be part of the answer. Maybe the invitation to attentive presence that is about seeing things more clearly, more intensely and with duration may help reduce the consumption of resources and exploitation of Earth.
Again we ›must learn a new way of seeing and understanding the composite character of the building‹. To human beings, it is about discovering attentive presence as alternative to careless consumption. To architecture, it is about making invitations to attentiveness. To the architect, it is about creating things characterised by clarity, complexity and integrity. It is about reclaiming beauty in architecture as an invitation to open up to the moment and to take good care of Earth, here, now – and in a world to come.

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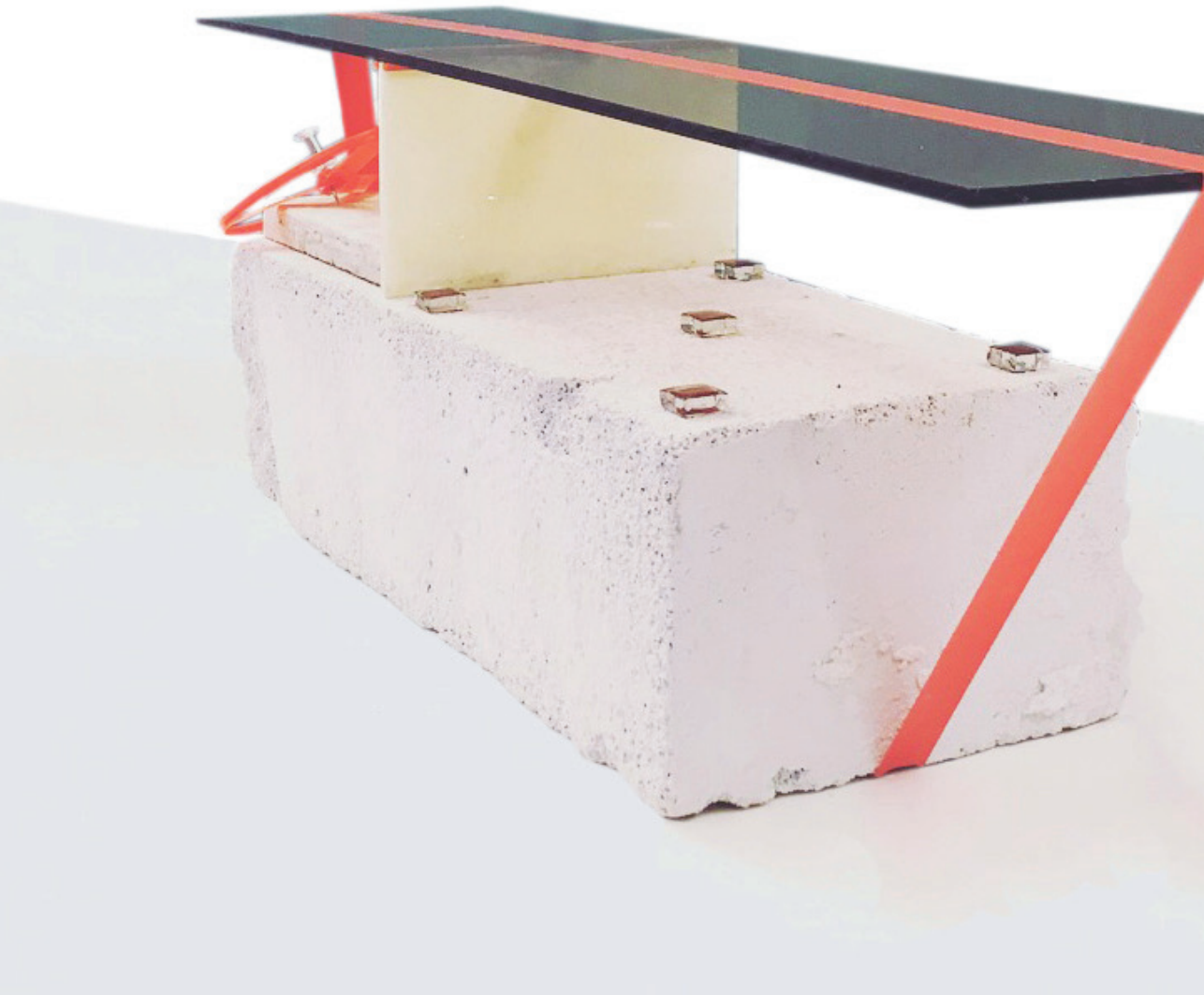

Christian Sinn

Berühren Sie Fotos?
Die bildimmanente Größe in der Fotografie im digitalen Zeitalter

Abb. 1

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Der wohlbekannte Malerwettstreit zwischen Zeuxis und Parrhasios[1] verdeutlicht den jahrhundertealten Wunsch nach der perfekten Illusion und einer bildhaften Wirklichkeit durch Malerei – die Trompe-l'œil-Malerei. Der Wunsch der Berührung des gemalten Vorhangs durch Parrhasios wird durch die perfektionierte Malkunst Zeuxis' evoziert, doch der Schein trügt. Diese ästhetische Illusion ist für die Malerei hinreichend verhandelt worden.
Wie verhält es sich jedoch für das Medium der Fotografie? Das Berühren von Fotografien ist uns vertraut: (früher) in Fotoalben als Prints in kleiner Größe oder (heute) als Datei auf dem Display des Smartphones, indem wir auf der berührungsempfindlichen Oberfläche scrollen. Das Thema des Trompe-l'œil und der dadurch entstehenden Greifbarkeit spiegelt sich in meiner ästhetischen Praxis als Bildender Künstler wider (Abb. 1).

»Zu groß!« – »Zu klein!«

Historische Papierabzüge aus den Anfängen der Fotografie wirken in einer Ausstellungssituation durch die klassische Rahmung mit einem Passepartout oftmals ›verloren‹ und zeitgenössische Fotografien wirken ›aufgebläht‹. Diese Empfindungen in der Rezeption von Fotografien im Ausstellungskontext führten zu einer Auseinandersetzung mit der Frage nach der Größe von Fotografien. Ausgehend von der Genese der Fotografie im 19. Jahrhundert hin zur Smartphone-Fotografie hat sich aufgrund der technischen Innovationen nicht nur die Fotografie an sich verändert, sondern deren Wahrnehmung konditioniert sich aufgrund der Bilderflut fortlaufend neu. Die Entwicklung von der analogen zur digitalen Fotografie und der freiheitliche Umgang mit der Fotografie heute prägen unser visuelles Gedächtnis und unsere Positionierung in der Welt.
Eine Fotografie besteht aus Licht, Papier und dem Prozess (in einem mechanischem Gerät). Diese drei Komponenten einer fotografischen Aufnahme werden wahrnehmbar in dem Abzug auf Papier dessen Größe als evident erachtet wird – so der Konsens in der Rezeption von Fotografien. Die Komponente des Abzuges auf Papier tritt jedoch seit der Einführung des ersten massenkompatiblen *iPhones* im Jahr 2007 und die sich hieraus entwickelte Smartphone-Fotografie immer weiter in den Hintergrund.

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1 König, Eberhard/Schön, Christiane: *Stillleben. Geschichte der klassischen Bildgattungen in Quellentexten und Kommentaren Band 5*, Berlin: Reimer 1996, 108 mit Verweis auf Plinius d. Ä., Naturalis Historia, Lat.-dt., übers. von R. König, Darmstadt 1973ff., Bd. XXXV: Farben, Malerei, Plastik (1978) § 65, S. 55 ff.: *„Seine Zeitgenossen und Nebenbuhler waren Timanthes, Androkydes, Eupompos und Parrhasios. Der zuletzt genannte soll sich mit Zeuxis in einem Wettstreit eingelassen haben; dieser habe so erfolgreich gemalte Trauben ausgestellt, dass die Vögel zum Schauplatz herbeiflogen; Parrhasios aber hatte einen so naturgetreu gemalten, leinenen Vorhang aufgestellt, dass der auf das Urteil stolze Zeuxis verlangte, man solle doch endlich den Vorhang wegnehmen und das Bild zeigen; als er seinen Irrtum einsah, habe er ihm in aufrichtiger Beschämung den Preis zuerkannt, weil er selbst zwar die Vögel, Parrhasios aber ihn als Künstler habe täuschen können."*

Dieser Paradigmenwechsel in der Fotografie kommt im Folgenden in den Blick, indem die Größenfrage in der Fotografie vom 19. Jahrhundert bis heute verhandelt wird. Die bildimmanente Größe in der Fotografie evoziert im Betrachter ein Gefühl der Plastizität und lässt hierdurch die Wahrnehmung der Fotografie als reine Fläche vergessen. Die Distanz zwischen Fotografie und Betrachter und die körperlich passive Rezeption von Kunst wird durch die bildimmanente Größer einer Fotografie ins Gegenteil verkehrt, wodurch der Betrachter die Fotografie berühren möchte.

Die bildimmanente Größe

Wenn wir eine Fotografie in Händen halten und sie als eine Erinnerung an einen vergangenen Moment betrachten, werden nicht nur die Zeitformen einer Fotografie - Gegenwart, Vergangenheit und Zukunft - spürbar, sondern das Taktile einer Fotografie. Wir nehmen sie als haptisches Objekt wahr, das die Erinnerung an einen vergangenen Moment in der Gegenwart materialisiert und für die Zukunft bewahrt. Es ist „ein Gegenstand".[2]

Das Objekt des Prints zeigt die dreidimensionale Welt auf einer zweidimensionalen Ebene. Durch den gewählten Ausschnitt wird die grenzenlose Welt durch den Rand des Prints begrenzt. Der Fotograf schließt Dinge in der Welt aus, indem sie nicht Teil des fotografischen Bildes sind. Diese Grenzen und Flachheit bleiben in der Betrachtung einer Fotografie auf einem Computermonitor oder Smartphone-Display erhalten und dennoch entsteht »die Illusion von Raumtiefe«.[3] Doch was ist unter der bildimmanenten Größe in der Fotografie zu verstehen?

Die Größe des Abzuges einer Fotografie auf Papier unterliegt seit Erfindung des Mediums der Fotografie technischen Möglichkeiten und technisierten Standards, wodurch die Größe eines fotografischen Papierabzugs nicht hinterfragt wird. Für mich jedoch bestimmt jede Fotografie die Größe des Abzuges aus sich heraus - im Austausch mit dem Motiv. Die bildimmanente Größe wird demnach nicht durch technische standardisierte Prozesse vorgegeben, sondern wird durch das Bild geleitet. Das Bild bestimmt die eigene Größe und die damit einhergehende eigene Repräsentation (im Ausstellungskontext). Diese medienspezifische Problematik verdeutlicht sich im künstlerischen Prozess. In der Malerei legt der Künstler die Größe der Leinwand im Vorhinein fest und beginnt mit der ›Produktion‹ des Werks, indem er das Bild konstruiert. Die Größe des Bildes steht somit bereits fest, wohingegen der Findungsprozess in der Fotografie zwei Vorgänge umfasst. Der Fotograf entscheidet zunächst über das Bildmotiv, in dem er es auf einem Negativfilm oder einem Chip speichert. Erst im zweiten Entscheidungsschritt legt der Fotograf die Größe des Papierabzuges der Fotografie fest. Dieser Entscheidungsschritt über die Größe wird anfänglich durch eine maßstabsgetreue Eins-zu-eins-Übersetzung des Bildmotivs im Verhältnis

2 Shore, Stephen: *Das Wesen der Fotografie*, Berlin: Phaidon 2015, 10.

3 Ibid., 40.

zum Papierabzug geleitet. Deutlich wurde hierbei, dass es eine Differenz zwischen Realgröße und Bedeutungsgröße gibt. Dieser Entscheidungsschritt offenbarte, dass eine Eins-zu-eins-Übersetzung nicht die bildimmanente Größe hervorbringt. Ausgehend von dieser Erkenntnis wurde das Bildmotiv in meinem künstlerischen Prozess zunächst in Zentimeter-Schritten, dann in Millimeter-Schritten vergrößert oder verkleinert, um sich der bildimmanenten Größe anzunähern. Aus dem Empfinden einer vagen Größenidee entwickelte sich ein Empfinden für die Anpassung der Größe des Papierabzugs an die Motiveigenschaften hin zur bildimmanenten Größe, die die Fotografie als ›passend‹[4] erscheinen lässt.
Der Abzug auf Papier wird durch die fortschreitende Technisierung und den freiheitlichen Zugang zur Fotografie mit Smartphones zunehmend in Frage gestellt. Das ›Heute‹ definiere ich in meinen weiteren Ausführungen als Zeitspanne von 2007 bis 2018, da im Jahr 2007 das erste massenkompatible iPhone auf den Markt gebracht wurde und sich durch die 2010 veröffentlichte Foto-App *Instagram* ein Paradigmenwechsel in der Fotografie vollzogen hat. Doch kehren wir an die Genese der Fotografie zurück.

Eine kleine Entwicklungsgeschichte der Fotografie(-technik)

Die öffentliche Präsentation der Erfindung der Daguerreotypie am 19. August 1839 am Institut de France gilt als Nullpunkt der Fotografie.[5] Zu diesem Zeitpunkt war das technische Verfahren für einen Abzug auf Papier noch nicht ausgereift, doch die zeitgleich, unabhängig voneinander stattfindenden Forschungen von Louis Jacques Mandé Daguerre, William Henry Fox Talbot und Hippolyte Bayard, sowie des 1833 verstorbenen Nicéphore Niépce, beschäftigten sich bereits mit den Problemen der Aufnahmezeit und dem Material des Bildträgers. Als Nicéphore Niépce 1826 den Blick aus dem Arbeitszimmer seines Hofes bei Chalon sur Saône auf einer chemisch sensibilisierten Metallplatte festhielt, betrug die Aufnahmezeit dieser Heliographie acht Stunden. Die zwei essentiellen Komponenten von Fotografie werden deutlich: (Aufnahme-) Zeit und Trägermedium (als Unikat), sowie das Grundprinzip der Fotografie: das Negativ/Positiv-Verfahren und das latente Bild.[6] Die 1839 der Öffentlichkeit präsentierte Daguerreotypie bot ebenfalls im Gegensatz zur Talbot'schen Methode keine Möglichkeiten der Vervielfältigung, wodurch die Daguerreotypie oftmals als Relat zur Zeichnung rezipiert wurde. Louis Jacques-Mandé Daguerre, malte Dioramen in Paris, London und Berlin, und »Talbot war Mathematiker und ein Kenner der alten Sprachen, er korrespondierte mit der Elite in Kunst, Literatur,

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4 Wittgenstein, Ludwig: *Philosophische Untersuchungen*, Frankfurt am Main: Suhrkamp 2001, 164.

5 Frizot, Michel: *Neue Geschichte der Fotografie*, Köln: Könemann 1998, 23. Die Publikation *Neue Geschichte der Fotografie* von Michel Frizot ist in der Forschungsliteratur das umfassendste Werk zur Historie des Mediums der Fotografie. Die folgenden Ausführungen zur Entwicklungsgeschichte der Fotografie(-technik) basieren hierauf.

6 Ibid., 68.

Naturwissenschaft, Philologie und Archäologie.«[7] Deutlich wird in der Entstehungsgeschichte der Fotografie, wie die Wissenschaften dieser Zeit wechselseitig zur Erfindung der Fotografie beigetragen haben. Die Standardgröße einer Daguerreotypie von 164 x 216 mm gilt als Genese für die Frage nach der bildimmanenten Größe in der Fotografie.
Die technische Entwicklung von Unikaten der Heliographie und Daguerreotypie, sowie der Talbot'schen Kalotypie folgte die Kollodiumtechnik, bei der Scott Archer das Glasnegativ erfand. Erst um 1855 wurde der Begriff der Fotografie, durch den fotografischen Abzug des Glasnegativs geprägt, gefolgt von Bromsilber-Gelatine-Platten im Jahr 1880. Um 1890 wurde die mechanische Apparatur durch die Kodak *Folding* für Hobbyfotografen handhabbar und erschwinglich, bis diese in den 1930er Jahren von der Leica 35-Millimeter-Kamera verdrängt wurde. Die bereits zu Beginn des 20. Jahrhundert erfundene Farbfotografie, ebenfalls durch die Arbeit von mehreren Forschern, kulminierte schließlich in der zeitgleichen Aufnahmen und Entwicklung einer *Polaroid*-Aufnahme im Jahr 1947.
Die Digitalfotografie leitet zu Beginn der 1990er Jahre den zweiten Paradigmenwechsel in der Fotografie ein. Erste technische Versuche des Scans führten zu der Idee, dass sich Fotografien auch auf lichtempfindlichen Sensoren statt auf einem zu entwickelnden Film speichern lassen. Damit einher ging die Einführung digitaler Bildbearbeitungsprogramme, die die nachträgliche Optimierung, sowie die Verfremdung von Fotografien ermöglichten. Durch die Entwicklungen in der Kameratechnik und den Druckverfahren entstanden variablere Größen des fotografischen Abzugs, wobei es sich bis zu den späten 1970er Jahren um standardisierte Formate handelte, die sich erst mit ausgereifteren Druckverfahren erweiterten, wodurch die enge Verknüpfung von technischer Entwicklung und künstlerischem Diskurs verdeutlicht wird.

Fotografie als »High Art«

Bereits im 19. Jahrhundert machten sich Künstler das Medium der Fotografie zu nutze um ihre Ölgemälde fotografisch zu dokumentieren. Der französische Maler Édouard Manet ließ seine Werke von dem Porträtfotografen Jules-Michel Godet ab 1872 für sein Archiv fotografieren.[8] Der Einzug der Fotografie in die Kunst erfolgte in den späten 1950er und frühen 1960er Jahren schrittweise über Positionen des deutschen Ehepaares Bernd und Hilla Becher und die Künstlerbücher des US-amerikanischen Malers Ed Ruscha, die den dokumentarischen Charakter der Fotografie künstlerisch umgesetzt haben. Die erste Becher-Fotografie aus dem Jahr 1956 zeigt eine Bergwerks-Anlage des Siegerlandes und weist bereits alle wesentlichen

7 Ibid., 26f..

8 Pickvance, Ronald: Manet, Martigny: Fondation Pierre Gianadda 1996, 229; McCauley, Elizabeth Anne: *A.A. & Disdéri and the Carte de Visite Portrait Photograph*, New Haven/London: Yale University Press 1985, 193.

Merkmale der künstlerischen Praxis auf.[9] 1963 veröffentlicht der US-Amerikaner Ed Ruscha sein erstes eigenpubliziertes Künstlerbuch *Twentysix Gasoline Stations*, das Aufnahmen »von Tankstellen an der Strecke zwischen Los Angeles, seinem Lebensort, und Oklahoma City, seinem Geburtsort«.[10] Erst Ende der 1970er erlangte die Fotografie ihren Kunststatus, indem Jeff Wall 1979 sein erstes großformatiges Diapositiv im Leuchtkasten in der Nova Gallery in Vancouver ausstellte, wodurch eine enge Verknüpfung von Bildgröße der Fotografie und Kunst entstand. Bezüge zur französischen Malerei des 19. Jahrhunderts und der Bezug zur Lebensgröße gelten für Wall als Referenzpunkte für die Wahl der Größe seiner Fotografie. Fotografen der Becher Schule, respektive Thomas Ruff und Andras Gursky, arbeiteten zunächst in kleineren Größen, bevor sich ihre Arbeitsweise hin zur großformatigen Fotografie entwickelte. Thomas Ruff fängt 1979 mit Interieurs im Format 27,5 x 20,5 cm an, worauf 1981 kleinformatige Portraits in der Größe 24 x 18 cm vor farbigen Hintergrund folgen. Erst 1986 vergrößert er die Portraits auf 210 x 165 cm vor weißem Hintergrund.[11] Ruff und Wall überführten das Medium der Fotografie in die bildende Kunst. Bis zu diesem Zeitpunkt wurde Fotografie im Kontext des Dokumentarischen rezipiert und in standardisierten Größen ausgestellt. Damit einher geht die Entwicklung der Diskurse zum Ausstellen von Fotografie, die mit Charles Baudelaires Essay »Salon de 1859« beginnen und sich bis heute weiter fortschreiben.

Die Autorschaft in der Fotografie

Der Einzug der Fotografie in die bildende Kunst hat die Frage nach der Autorschaft einer Fotografie durch die Möglichkeiten der Manipulation der Bildbearbeitungsprogramme bei digitalen Fotografien neu aufgeworfen. Der bestehende Konsens ist die Gleichstellung einer mechanischen Handlung mit der Autorschaft: Die den Auslöser betätigende Person, ist Autor der Fotografie. Nach Roland Barthes literaturwissenschaftlicher These – »[...] es ist die Sprache die spricht, nicht der Autor«[12] – spricht die Fotografie zu uns, nicht der Autor. Durch die Schaffung eigener künstlerischer Arbeiten in der Fotografie entwickelt sich eine künstlerische Sprache, die mit dem Betrachter einen Dialog eingeht. Sind einem Betrachter nun verschiedene Fotografien eines Künstlers bekannt, wird ein ›Foto-Wortschatz‹ erkennbar, der es ihm ermöglicht, die künstlerische Sprache zu verstehen und die künstlerische Autorschaft einer Fotografie wiederzuerkennen. Dies wendet sich von der Gleichsetzung einer mechanischen Handlung mit der Autorschaft ab, sondern begründet die Schaffung einer eigenen, wiedererkennbaren künstlerischen Sprache, die einen Künstler zum Autor einer Fotografie macht. Ein Fotograf schafft einen ›Foto-Wortschatz‹ anhand dessen

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9 Honnef, Klaus: *Bernd und Hilla Becher: Fotografien 1957 bis 1975*, Bonn; Köln/Bonn: Rheinland Verlag Köln/Rudolf Habelt Verlag 1975, 30f.

10 Dickel, Hans: *Künstlerbücher mit Photographie seit 1960*, Hamburg: Maximilian-Gesellschaft 2008, 3ff.

11 Ruff, Thomas: *Fotografien 1979 - heute, Köln*: Verlag der Buchhandlung Walther König 2003, bes. 180–190.

12 Ruff, Thomas: *Fotografien 1979 - heute*, Köln: Verlag der Buchhandlung Walther König 2003, 187.

Abb. 2

seine Autorschaft ›verifizierbar‹ ist. »[Da] das Auge schneller erfasst, als die Hand zeichnet, so wurde der Prozess bildlicher Reproduktion so ungeheuer beschleunigt, dass er mit dem Sprechen Schritt halten konnte.«[13] Heute ›sprechen‹ wir über Fotografien miteinander, verdeutlicht durch die Verwendung von Fotografien auf Social Media Plattformen und beispielsweise der Foto-App *Instagram*. Es offenbart sich das Wesen der Fotografie, indem die bildimmanenten Signale mit der Wahrnehmung des Rezipienten kommunizieren und somit aus sich selbst heraus ›sprechen‹.

Griff zum Griff bei Instagram

Die bisherigen Ausführungen zur Entwicklungsgeschichte der Fotografie soll nun anhand meiner fotografischen Arbeit *Griff* in Bezug auf den Bildaufbau, der Installation im Ausstellungskontext und der Veränderungen der Fotografie bei *Instagram* diskutiert werden (Abb. 2). *Griff* ist ein Lambda-Print, aufgezogen auf eine Alu-Dibond Platte mit den Maßen 18 x 28 cm. Sie zeigt einen Haltegriff an der Decke eines Autos. Durch die Aufhängung entsteht zwischen der Fotografie und Ausstellungswand eine Distanz von ca. 1,5 Zentimeter. Die Arbeit wird im oberen Viertel der

13 Benjamin, Walter: *Das Kunstwerk im Zeitalter seiner technischen Reproduzierbarkeit*, Frankfurt am Main: Suhrkamp 1969, 12.

Wand im Ausstellungsraum installiert – analog zur Positionierung des Gezeigten im Alltag (Abb. 3). Die Handlung des Greifens nach oben wird durch die Rezeption der Fotografie in unserer Wahrnehmung hervor- und die von uns gespeicherte Alltagshandlung wird in der Ausstellung durch die Betrachtung der Fotografie abgerufen, obwohl sich der Rezipient im Ausstellungsraum statt im Auto befindet. Wie verhält sich nun diese Fotografie in der Foto-App *Instagram* in der wir Fotografien auf einem eigenleuchtenden Display wahrnehmen? Wie passt der Algorithmus die Größe der Fotografie an die Benutzeroberfläche (das User-Interface) an? Konditioniert sich unsere Wahrnehmung neu und wenn ja wie?

Instagram ist eine kostenlose App, die sich als Soziales Netzwerk versteht und sich auf das Teilen von Fotos und Videos fokussiert hat.[14] Die Einfachheit der Benutzeranwendung, sowie die Fotobearbeitung und -optimierung stehen im Vordergrund, wodurch ein simpler Umgang mit der App keinerlei Benutzerhemmschwelle aufbaut. *Instagram* wurde 2010 exklusiv für iOS auf den Markt gebracht und generierte innerhalb von zwei Monaten ca. eine Millionen Nutzer. Nach einem Jahr konnte die App bereits 10 Millionen registrierte Nutzer verzeichnen. Im September 2017 gab *Instagram* die letzten offiziellen Nutzerzahlen bekannt: 800 Millionen monatliche Nutzer, wovon 500 Millionen das Netzwerk täglich nutzen. Selbst wenn es sich um marktorientierte Nutzerzahlen handeln sollte, ist *Instagram* einflussnehmender Faktor auf Rezeption von Fotografie heute.

Die Grund-Benutzeroberfläche besteht aus der Headline, dem Profilnamen, einem runden Logo-Foto, der Anzahl der Gesamtpostings, der Followerzahl und den gefolgten Profilen und dem Follow-Balken, sowie einer Wiederholung des Profilnamens und einer Profilbeschreibung und der Nennung eines weiterführenden Links. Die Gesamtübersicht stellt die Posts im quadratischem Format dar. Bei Veröffentlichung der App war das Quadrat das einzig mögliche Format, in dem Fotografien gepostet werden konnte,[15] wodurch eine sehr klare, kachelartigen Anordnung entsteht. Erst 2015 ermöglichte *Instagram* seinen Nutzern das Posten von Hoch- und Querformaten. Die Wahrnehmung ist an das rechteckige Hoch- und Querformat des fotografischen Abzugs auf Papier gewohnt. *Instagram* als Foto-App auf einem Smartphone hingegen setzt vorrangig das Quadrat ein und unsere Wahrnehmung passt sich hierdurch an. Der Bildausschnitt wird durch einen Algorithmus festgelegt, der sowohl den Bildaufbau als auch die Bildaussage verändert. Das Quadrat, zunächst aus Gründen eines übersichtlichen Interfaces gewählt, wird zum formalen Standardformat. Das Grundelement des Rechtecks wird in der Wahrnehmung jedoch als standardisiertes Fotografieformat wahrgenommen. Das Seitenverhältnis von 4:3 und 2:3 in der Fotografie evoziert in der Horizontalen ein Gefühl von Weite und wird daher für Landschaftsmotive eingesetzt, wohingegen das Hochformat für Portäts

14 Gunkel, Katja: *Der Instagram Effekt*, Bielefeld: transcript 2018, 97ff. Katja Gunkel zeichnet die Historie von *Instagram* ausführlich nach; ihre Ausführungen dienen als Grundlage.

15 Ibid., 99.

Abb. 3

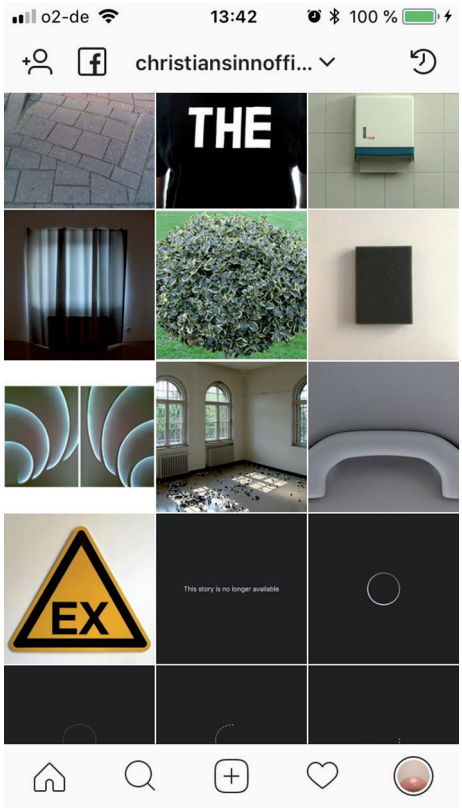

Abb. 4

präferiert wird. Das Quadrat ist neutraler und historisch, beispielsweise durch die Landschaftsmalerei, nicht belegt:

> Auf der quadratischen Fläche herrscht eine Art Gleichgewicht, eine Neutralität oder Objektivität. Da bei diesem Format keine vorherrschende Richtung vorhanden ist, bietet es eine besonders günstige Form, um Themen mit ganzheitlichem Charakter zu gestalten: ein Ausgleich aller Kräftewirkungen, eine Totalität verschiedener [...].[16]

In den Sozialen Medien hat sich darüber hinaus ein Element positioniert, dass das Thema des ›Sprechens‹ durch Bilder neu verhandelt: der *Hashtag*. Durch das Versehen von Bildern mit diesem *Hashtag* verdichtet sich die Bildebene mit einer (unterstützenden) Textebene. Die Wahrnehmung teilt sich auf Bild und Text auf, wodurch in der Rezeption von Fotografie eine Textebene im Bereich der sozialen Medien »erwartet« wird. *Instagram* ermöglicht das Posten von mehreren Fotografien in einem Posting als Serie, wodurch das singuläre Bild in den Hintergrund tritt und den seriellen Charakter von Fotografien aus den dokumentarischen und konzeptuellen Anfängen des Mediums aufgreift. Ein weiterer Rückgriff auf frühe Präsentationsformen von Fotografien ist der Umgang mit einem ›passepartout-artigen‹ weißen Rand

16 Meyer, Guschti: *Sprache der Bilder. Kunst verstehen: Farbe – Form – Komposition*, Leipzig: E.A. Seemann 2011, 18.

Abb. 5

mit dem Nutzer ihre Fotografien vor einer Anpassung an das Quadrat ›schützen‹, womit der Bildaufbau nicht verändert wird. Wie verändert sich nun die Rezeption der Fotografie *Griff* bei einem Posting auf *Instagram* und deren algorithmisierter formalen Anpassung der Seitenverhältnisse?
In der Einzelansicht im Newsfeed wird die Fotografie *Griff* nicht beschnitten und im korrekten Seitenverhältnis und Bildaufbau gezeigt, wodurch sich das Bild und die Bildaussage nicht verändert. In der kachelartigen Gesamtansicht erfolgt eine algorithmisierte Anpassung der Fotografie durch einen Beschnitt an der linken und rechten Seite, sowie einem Beschnitt am oberen Rand. Der Griff wird nicht vollständig sichtbar, wodurch sich die Bildaussage verändert bzw. die Bildaussage verloren geht, da das Motiv beschnitten wurde und als Griff nicht erkennbar ist (Abb. 4, 5). Dieser Beschnitt verstärkt sich in den *Instagram*-Stories. Dieses Tool stellt die Fotografie für fünf Sekunden als Stream dar, anschließend die nächste Fotografie oder eine Rückkehr zum Newsfeed erfolgt. Wird die Fotografie hierfür vorab in einem an das Smartphone angepassten Format als Grundfläche angelegt, nimmt *Instagram*-Stories keinen Beschnitt vor, wohingegen bei einem Posting der Fotografie in der Originaldatei ohne angelegte Grundfläche eine algorithmisierte Veränderung der Fotografie erfolgt, wodurch sie als Bild nicht mehr lesbar ist (Abb. 6, 7). Diese Differenz zwischen einer Fotografie im Ausstellungskontext und der Transformation in den Sozi-

alen Medien bei *Instagram* verdeutlicht, wie sich unsere Wahrnehmung durch die Einführung der Smartphone-Fotografie neu konditioniert. Das Format wendet sich vom tradierten Rechteck zum formal neutralen Quadrat. Die hinterleuchtete ist heute Alltag und bestimmt unsere Rezeption und wird als formaler Standard angesehen. Dieser Umgang wird dazu führen, dass sich der Abzug auf Papier in der Fotografie als Komponente abspalten wird.

Die mobile digitale Bildästhetik

Die Entwicklung von der analogen zur digitalen hin zur Smartphone-Fotografie – das »mobile digitale Bild«[17] – führt zu neuen Gedanken für die Wahrnehmung und Ästhetik. Unsere Wahrnehmung speichert die flüchtigen Augenblicke und reichert unser visuelles Gedächtnis an. Eine Fotografie hält diese visuellen Eindrücke jedoch besser fest als die eigene Wahrnehmung, da wir das Wahrgenommene nicht vollständig in seiner Gesamtheit erfassen können. »Für das Wahrnehmen sind also zwei Wahrnehmungsmechanismen konstitutiv: Gestaltbildung und Konzentration.«[18] Die Gestalt eines dreidimensionalen Objekts werden wir durch dessen Grenzen immer wahrnehmen können, doch fördern die Sozialen Medien die Flüchtigkeit der Fotografie, beispielsweise durch die fünf-sekündige Anzeige bei *Instagram*. Diese zeitliche Vorgabe existiert in einer Ausstellung nicht. Der Betrachter bestimmt selbst die Zeit der Rezeption der Fotografie.

> Der Begriff der ästhetischen Wahrnehmung lässt sich nicht einfach als eine »Wahrnehmung mit Gefühlskomponente« bestimmen. Eine ästhetische Wahrnehmung ist keine direkte Beobachtung, sondern entsteht erst aus einem *Wahrnehmungsvergleich*.[19]

Die Divergenz zwischen Real- und Bedeutungsgröße und der Vergleich von Papierabzügen in unterschiedlichen Größen sind bei der Frage nach der bildimmanenten Größe Ausgangspunkte für die ästhetische Erfahrung. Unsere Wahrnehmung kann einen Vergleich zwischen dem realen und dem fotografierten Objekt herstellen. Die Haptik des Abzugs auf Papier schwindet durch die Standardisierung der Displaygrößen der gängigen Smartphones. Die Materialität der Glasoberfläche schafft eine Distanz zwischen Fotografie und Betrachter, auch wenn wir die Fotografie durch scrollen und liken ›berühren‹. Jedoch wird der Wahrnehmungsvergleich obsolet, da kein Bezug zur Bedeutungsgröße entstehen kann.
Es zeigt sich nicht nur eine Veränderung in der Wahrnehmung, sondern auch im künstlerischen Prozess. Stellten sich Fotografen und Künstler in den 1990er Jahren noch die Frage nach der Umstellung von Analog- zur Digitalfotografie, stellt sich nun die Frage, ob eine Spiegelreflexkamera zum Einsatz kommt oder das Smartphone als Aufnahmemedium den Zeitgeist wiederspiegelt und ausreichend ist. Es ermöglicht eine schnelle und direkte Arbeitsweise, die neue Fragen nach Authentizität und

17 Gunkel: *Instagramm Effek*t, 37.

18 Lehmann, Harry: *Gehaltsästhetik. Eine Kunstphilosophie*, Paderborn: Wilhelm Fink 2016, 34.

19 Ibid., 21.

Abb. 6, 7

Wahrheit in der Fotografie stellt. Mit dem künstlerischen Prozess geht die Frage nach der Repräsentationsform einher: warum die Fotografie nicht direkt auf dem Smartphone als Repräsentationsmedium zeigen?

Fotografie und Berührung

Die Entwicklung der Größe des fotografischen Abzugs, ausgehend vom 19. Jahrhundert bis heute, ist eng verbunden mit den technischen Innovationen der Zeiten. Die technischen Neuerungen führten zu Paradigmenwechseln im Denken über die Fotografie – von einem dokumentarischen Zweck hin zum Einzug in die bildende Kunst bis hin zur Smartphone-Fotografie. Was war die Fotografie im 19. Jahrhundert und was ist sie heute?
Der Prozess des Fotografierens hat sich in den fast zweihundert Jahren des Bestehens nicht verändert: »Es ist eine komplexe, fortgesetzte, spontane Interaktion aus Beobachtung, Verstehen, Imagination und Absicht.«[20] Auch wenn die technischen

20 Shore 2015, Seite 132.

Apparaturen heute wesentlich einfacher handhabbar sind und die Fotografie eins der demokratischsten künstlerischen Medien ist, bleibt der Prozess des Sehens und des Verstehens gleich komplex – vielleicht ist er heute komplexer als je zuvor, da sich durch den massentauglichen Zugang die Bilderflut noch verstärkt hat. Trotz der Entwicklung von analoger zu digitaler zur Smartphone-Fotografie bleibt der Kern der Fotografie doch bestehen: das Negativ-Positiv-Verfahren, das latente Bild, die Ausbelichtung von einer digitalen Datei sowie das eigenleuchtende Smartphone Display. Die Prozesse zur Sichtbarmachung einer Fotografie haben sich deutlich vereinfacht und die Größenfrage wird sich von der Frage »Was ist die bildimmanente Größe in der Fotografie« hin zu »Was war die bildimmanente Größe in der Fotografie?« verändern. Die Größe des Abzugs auf Papier steht hier im Vordergrund der Befragung, auch wenn das Smartphone-Display als Repräsentationsmedium voranschreitet. Was bleibt von den Kriterien der Fotografie: »Flachheit, Ausschnitt, Zeit und Fokus«?[21] Der Ausschnitt wird immer zentraler Bestandteil einer Fotografie sein, weil eine Fotografie immer Grenzen haben wird und der Ausschnitt das Sehen des Fotografen sichtbar werden lässt. Die Zeitformen der Fotografie – Vergangenheit, Gegenwart, Zukunft – bleiben ebenfalls bestehen. Jede Fotografie zeigt in der Betrachtung in der Gegenwart einen vergangenen Moment, den wir für die Zukunft ›konservieren‹, ob als Print oder digitale Datei auf einem Computer oder Smartphone. Der Fokus wird sich durch die optischen Apparaturen nicht als Kriterium verändern, da sie technisch notwendig sind, um die Fotografie entstehen zu lassen. »Das fotografische Bild verwandelt ein Stück Papier in eine verführerische Illusion oder in einen Moment der Wahrheit und Schönheit.«[22] In der Arbeit *Griff* entsteht im Ausstellungskontext die Illusion einen Griffs an der Wand, zu dem wir uns hinstrecken möchten, um ihn anzufassen. Die bildimmanente Größe der Fotografie lässt diese Illusion entstehen – durch die Erinnerung. Die Erinnerung an einen im Alltag wahrgenommen Griff im Auto, nach dem wir automatisch gegriffen haben sobald wir bei der Autofahrt Halt gesucht haben. Obschon wenn wir in dem realen Moment dieser Wahrnehmung und Bewegung keine besondere Aufmerksamkeit haben zu teil werden lassen, bekommt genau diese Alltagshandlung in der Betrachtung der Fotografie eine besondere Bedeutung. Tritt man der Arbeit im Ausstellungsraum gegenüber wird diese Erinnerung abgerufen und unser Muskelgedächtnis wird aktiviert. Wir möchten greifen.
Das Bild-Betrachter-Verhältnis ist Kernthema meiner künstlerischen Arbeit. Die Dichotomie aus Nähe und Distanz verstärkt die Wahrnehmung des Betrachters. Die bildimmanente Größe in der Fotografie lässt uns greifen wollen, aber ein Kunstwerk ›darf‹ nicht berührt werden. Es soll uns innerlich berühren, aber die taktile Ebene bleibt uns durch die eigentlich körperlich passive Rezeption von Kunst verwehrt und ins Gegenteil verkehrt.

21 Ibid., 38.

22 Ibid., 122.

> Wenn Sie sich jetzt auf den Raum zwischen sich selbst und dieser Seite konzentrieren, dann kommt es zu einem Wandel in der eigenen Aufmerksamkeit und Wahrnehmung. Diese Art perzeptiver Veränderung – die Modifizierung des geistigen Bildes – würde bei einem Fotografen zu einer Neuausrichtung der formalen Entscheidungen beim Fotografieren führen.[23]

Was bedeutet dies für die Motivwahl? Walter Benjamin definiert den motivischen Kern der Fotografie über Portraits, Städtebilder und Dinge.[24] *Griff* als Ding fällt in diese Definition und *Social Media,* mit der dort zur Schau gestellten Selbstrepräsentation auf Reisen durch Portraits und Städtebilder, stärken Benjamins motivische Gültigkeit. Das Objekt des Prints zeigt unsere dreidimensionale Welt auf einer zweidimensionalen Ebene. Die bildimmanente Größe in der Fotografie lässt den Print zur Dreidimensionalität zurückkehren. Sie evoziert im Betrachter das Gefühl der Plastizität und in der Rezeption der Fotografie an der Wand möchte er die Fotografie berühren. Dies geschieht durch das Abrufen einer Alltagshandlung unseres Körpers bei einem Ding, das wir ›berühren‹. In der Motivwahl ist also nicht nur das ›Berühren-wollen‹ maßgeblich, sondern auch das bereits ›Berührt-haben‹ des Dings im Alltag von Bedeutung, um in der Betrachtung affiziert zu werden – also dem ›Berührt-werden‹ bei der Rezeption von Kunst.

Die Betrachtung der singulären Fotografie und die Konzentration lassen den seriellen Charakter der Fotografie in den Hintergrund treten, obschon das Denken über Fotografie davon bestimmt ist, dass eine Fotografie allein nicht alles Sichtbare in der Welt festhalten kann. Die Arbeit *Griff* ist ein singuläres Bild, auf das sich der Rezipient konzentriert.

Die Relation von Materiellem und Wirkungshaften tritt durch die Befragung von Bildträgern in den Vordergrund. Die für die Arbeit gewählte Präsentationsform für *Griff* lässt einen Abstand zwischen Wand und Fotografie entstehen, wodurch ein Greifen nach oben deutlich erfolgversprechender scheint. Dem Griff ist immanent, dass man ihn anfasst und berührt. Die Befragung von Materialität und Motiv wird vollständig beantwortet, da die Kongruenz von Form und Inhalt vollendet ist. Eine Fotografie ist durch deren bildimmanente Größe nicht nur ein Fenster der Erinnerung, sondern sie öffnet sich in Richtung des Rezipienten. Dieses ›offene Fenster‹ fördert den aktiven Austausch zwischen Bild und Betrachter und die körperlich passive Rezeption von Kunst wird ins Gegenteil verkehrt – es ist eine Aufforderung zur Handlung und zur Bewegung - wodurch das ›Optimum‹ der Größe erreicht wird. Das Bildmotiv des Alltags, die Präsentation durch materialimmanente Strenge, sowie die vertraute Positionierung und die damit einhergehende Perspektive des Rezipienten verdichten sich. Die Kongruenz von Form und Inhalt lässt eine Kongruenz aus ›berühren-wollen‹ und ›berührt-sein‹ entstehen.

Die Perspektive des Rezipienten und die Wahrnehmung einer Fotografie ändern sich

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23 Ibid., 110.

24 Benjamin, Walter: *Kleine Geschichte der Photographie*, in: Walter Benjamin, *Das Kunstwerk im Zeitalter seiner technischen Reproduzierbarkeit*, Frankfurt am Main: Suhrkamp 2012, 45–64.

mit dem Gebrauch des Smartphones, wodurch ein Paradigmenwechsel in der Fotografie vollzogen wurde. Das Bild-Betrachter-Verhältnis spaltet sich ab, da wir das Smartphone bereits in Händen halten. Die Dichotomie von Nähe und Distanz wird automatisch verkürzt, wenn nicht sogar aufgelöst. Das Smartphone wird zum Repräsentationsmedium, wodurch der Print in den Hintergrund tritt und sich als Komponente von dem was als Fotografie zu verstehen ist abspaltet. Es entsteht für künftigere Generationen ein Gefühl der Fremdartigkeit gegenüber dem Haptischen eines Abzuges aus Papier, gegenüber der Berührung einer Fotografie jedoch nicht, da wir durch das Scrollen, Löschen und Liken die Oberfläche des Smartphones, und somit die Fotografie an sich, tagtäglich berühren. Wir kommunizieren über Fotografien und begleitende *Hashtags*, wodurch das Sprechen über Fotografie auch ein Sprechen durch Fotografie ist. Die Geschwindigkeit der Aufnahme und Rezeption verkürzen sich und die Konzentration für die singuläre Fotografie lässt nach. Durch die fortlaufende Rezeption von Fotografien als inhärent leuchtend keimen bereits tradierte Diskurse zur Opazität und Transparenz wieder auf. Der Betrachter wird bei opaken Fotografien von der Bildfläche aufgehalten, wohingegen transparente Fotografien durch die Bildoberfläche in die Illusion des Bildes hineingezogen werden.
Die Flachheit der Fotografie als Thema dieses Essays bekommt demnach eine neue Bedeutung. Die transparente glänzende Glasoberfläche des Smartphones tritt an die Stelle des opaken matten Prints auf Papier. Es wird keine Hierarchie entstehen, da historische Fotografien in Kleinformaten im Passepartout ebenso fortbestehen werden, wie Farbfotografien in der bildenden Kunst. Der Kanon erweitert sich um die Smartphone-Fotografie mit den Foto-Applikationen wie *Instagram*. Hier kollidieren Fotografie und Algorithmus, indem sich Form und Bildaufbau den standardisierten *App*-Vorgaben unterwerfen müssen. Eingriffe des Algorithmus in das Format der Fotografie bedeuten einen Eingriff in die Bildaussage, hin zur Unlesbarkeit der Fotografie. Die von Menschen programmierten Anpassungsmechanismen greifen nicht nur in die Fotografie ein, sondern auch in die Wahrnehmung. Der tägliche Umgang mit der *App* konditioniert diese neu, wodurch die Frage nach der bildimmanenten Größe in der Fotografie als Print nicht obsolet wird. Sie ist eher in der Fragestellung zu erweitern: Was ist die bildimmanente Größe in der Fotografie auf einem Smartphone Display?
Der stetige Wandel der Technikgeschichte der Fotografie, von der analogen Fotografie zur digitalen Fotografie ab 1991, hin zur hinterleuchteten »*Instagram*-Fotografie« seit 2010, legt offen, wie die Fotografie seit 1839 einer kontinuierlichen Entwicklung unterliegt und heute, mehr als je zu vor, unser visuelles Gedächtnis und unsere Positionierung in der Welt prägt. Die Größe des Papierabzugs einer Fotografie gilt 2018 gar als historisch, da wir Fotografien heute durch standardisierte Display-Größen und App-Vorgaben bei *Instagram* rezipieren. Die Standardisierung des fotografischen Abzuges hat sich nunmehr abgespaltet.

Die zentralen Kriterien von »Flachheit, Ausschnitt, Zeit und Fokus«[25] werden immer Bestandteil im Denken über das Medium der Fotografie bleiben. Für mich ist die ›Flachheit‹ im Hinblick auf meine These zur bildimmanenten Größe kritisch zu hinterfragen. Die Materialität der Glasoberfläche schafft eine Distanz zwischen Fotografie und Betrachter, obwohl die körperliche Distanz zwischen Werk und Betrachter negiert wird. Auch wenn wir die Fotografie durch das Scrollen und Liken ›berühren‹ und die kalte Oberfläche des Glases spüren, können wir von der Fotografie ›berührt sein‹. Das ›Berühren-wollen‹ eine elementare neue Bedeutung. Der künstlerische Prozess entwickelt sich hin zur Smartphone-Fotografie, wodurch der Einsatz von Spiegelreflexkameras obsolet wird.
Die inhärent leuchtenden Displays werden nicht nur von signifikanter Wahrnehmungsbedeutung sein, sondern die Repräsentationsform von Fotografie hinterfragen: warum die Fotografie nicht direkt auf dem Smartphone-Display als Repräsentationsmedium im Ausstellungskontext präsentieren? Es entsteht ein Sinnlicher Realismus, der uns über das Dinghafte und die Präsenz der Dinge anders nachdenken lässt. Der Abzug auf Papier spaltet sich als Komponente ab. Er ist eine Materialisierung der Erinnerung an Vergangenes. Zukünftig wird die digitale Datei an diese Stelle treten. Dieser romantisierende Blick auf das haptische Objekt des Abzugs auf Papier ähnelt dem romantischen Revival der Schallplatte auf Vinyl. Der Akt des Auflegens einer Schallplatte und das Aufsetzen der Tonträgernadel sind gleichzusetzen mit dem Akt des Greifens nach einer Fotografie auf Papier in der bildimmanenten Größe.
Das Gefühl in der Betrachtung von Kunst wird sich durch die Auflösung der Werk-Betrachter-Distanz beim Gebrauch eines Smartphones im Alltag und Ausstellungskontext transformieren. Der Paradigmenwechsel in der Fotografie wird dazu führen, dass die bildimmanente Größe in der Fotografie und das damit einhergehende Gefühl von Plastizität entsteht, wenn die eigenleuchtenden Komponente des Displays von der Apparatur des Smartphones extrahiert wird. Die Produktion von individuellen Display-Größen ermöglicht den Fotografien sich in ihrer bildimmanenten Größe aus sich heraus selbst repräsentieren zu können.

25 Shore 2015, 38.

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Vanessa Ramos-Velasquez

Between the individual tortoise shell and the collective malocas, we are nowhere in particular. A short imagetic essay

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Between the individual tortoise shell and the collective malocas, we are nowhere in particular.

A short imagetic essay by Vanessa Ramos-Velasquez

Right: forest aerial view, courtesy of the Arara Shawãdawa archives

Interview with Txãda Shawãdawa
https://vimeo.com/355309074

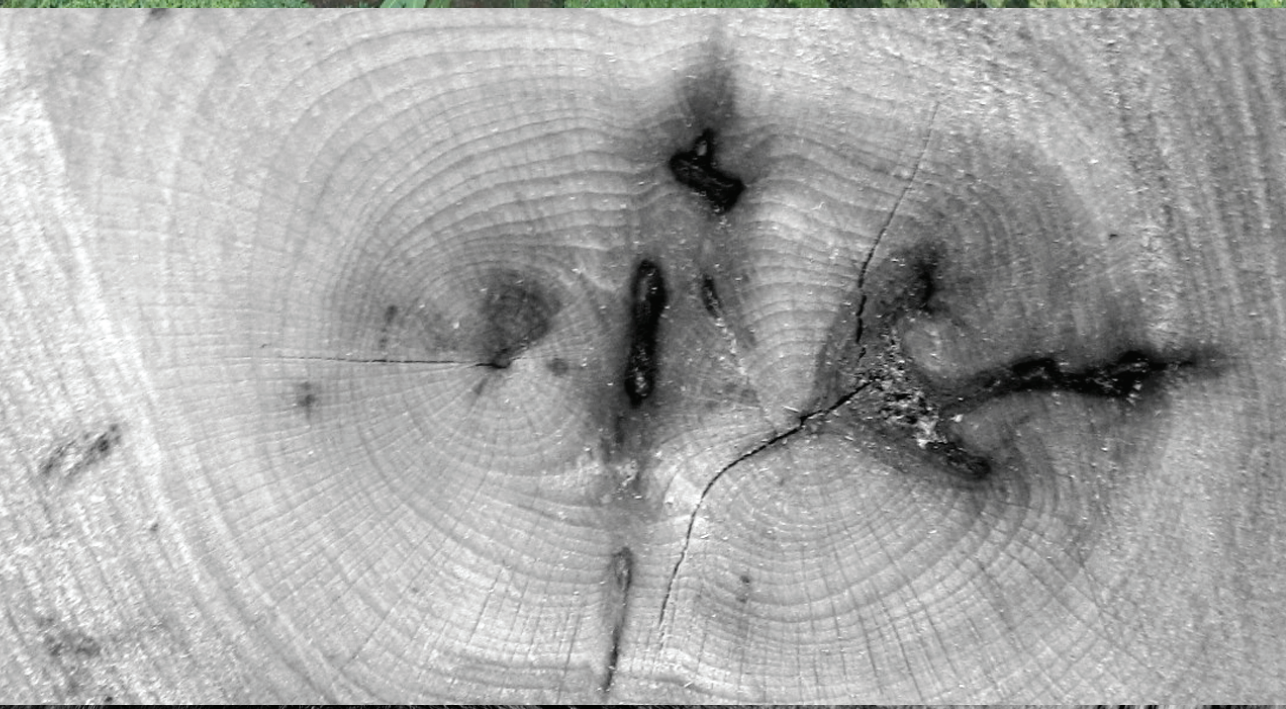
Reflecting on the Bauhaus beginnings in 1919, it becomes clear that one can speak a lot more of a "Bauhaus spirit" than a "Bauhaus style". The architecture, art and design produced at Bauhaus during its inception was populated by various master concepts and expressions. They were diverse and yielded a plural heritage and influence throughout the world. Interestingly, that iconic spirit is felt again now and contains the same interplay: innovation driven by the advent of new and transformative technologies responding to emerging large(r)-scale necessities. The world has indeed drastically changed. In the 1920s, the horizontal planes stood wide open for the upcoming verticality of modernity. 100 years later, the ever-growing spikes of concrete and glass seem to engulf and dominate the large urban centers in the world. It's getting hot in here. Let the air circulate. But has idealism lost ground to development at any cost? It seems now is a good time for more Bauhaus: the spirit to dare, the spirit to experiment, but also the spirit to resist first, in order to (sustainably) grow.

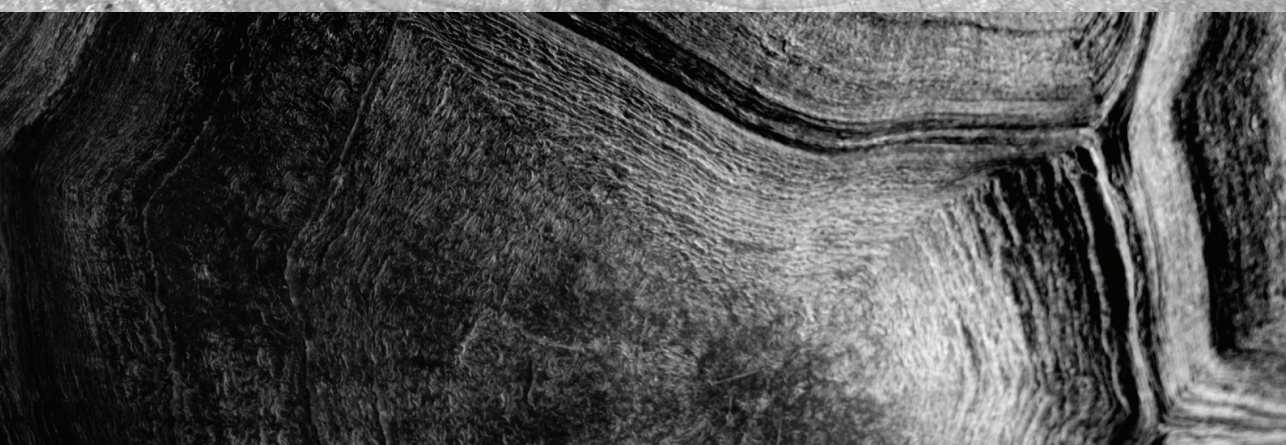
This spirit is strongly needed today to respond to spikes of another order – the proverbial white elephant in the room – global climate change and the ensuing environmental disarray coming at us with an inhuman speed containing various appearances and elusive effect, seemingly abstract at times, hard to grasp, algorithmically predictable but humanly unpreventable, perceived comfortably at length and at a distance via ubiquitous satellite "birds-eye-view" images, although populations and individuals directly affected by the effects can offer a very concrete sense of their occurrence.

As I write this, the deep forest is burning.

Philosophers have for the last fifty years spoken of a sense of groundlessness of a highly technological era. Today, many of us find ourselves nowhere in particular – the fixed point onto which to converge and converse has been blow into the fragments of the digital age. On another spectrum, the strength of collectives, such as rooted in indigenous societies living in ocas, gathering in malocas, where the strong center surrounded by a network of supportive structures form its resilience and endurance, has been withering away. But they are still here, after 500 years of disruption. They know something about building webs of enduring relations. Autochtone societies have been dealing with the shock of the new as an ever-present situation, adapting to whatever remixes of traditional and "modern" artefacts might bring, resisting the effects of encroachment of every (dis) order. Their resilience is expressed outwardly, from a mind that dreams a common house of activities, including art & design practices inseparable from everyday living. The common houses provide for the spirit, mind and body, as a construction to strengthen the individual, as well as the collective, social body. And to the indigenous, the social is political.

Likewise, resisting the speed, while at the same time rolling with its punches, a Tortoise is known for its lifespan, capable of surpassing 200 years, carrying itself in its own shelter. Pondering on its endurance, as well as that of the autochtone collectives to imagine the next 100 years of Bauhaus, the question is: how to make room for the resilience principles in the new era, characterized as a playing field of immense possibilities, but existing in a somewhat suffocating world? How can we reaffirm that spirit of imagination and experimentation to transform the intangible into strategy? Much like the concentric rings formed by time on the carapace of the tortoise shell indicating its age, and tree rings bearing proof of its growth conditions, Bauhaus has its own layers of transformation, having endured turbulent events that left indelible imprints in its own history. And celebrating Bauhaus' own resilience going forward, what structures can serve us as metaphorical and actual spring boards to launch the next 100 years?





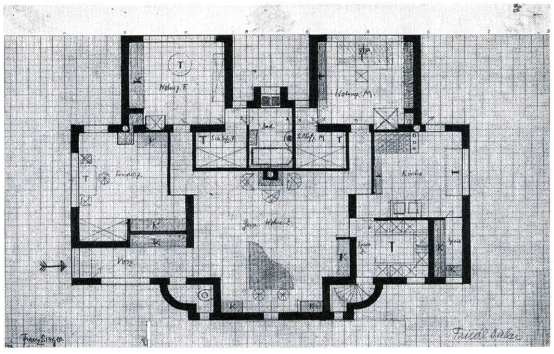


Fig. 1: Image of the Phisical Education teacher of the Bauhaus, Karla Grosch, with the text: Mädchen wollen etwas lernen (»Girls want to learn«)

Fig. 2: Building plan jointly signed by Friedl Dicker and Franz Singer, around 1922

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Preface

Unity in diversity[1], the motto used by the Bauhaus founder. It is not just a title; it is a sequence of time. As the Bauhaus' final goal was architecture: the complete artwork, where all disciplines are involved; the School without female presence would have been born castrated, it would not have been Bauhaus. In an interview, a student was asked why he had applied for the School, to which he answered: »the community life of the people in Bauhaus«.[2]

The different origins and ideas, together with the friendship and fervour showed by both men and women led to a special creative atmosphere, an idea, as Mies van der Rohe described it. For this reason, its expansion and propagation throughout the time keep coming with the same force. On its most intimate of this idea, and indissoluble to it, are the women that participated in the School. Never can Bauhaus be dissociated from the female participation. The warp formed by the mixed youth that worked in the materialization of a better world was and will always be a call to future generations. A youth with different political ideas, religions and origins, and where women, firstly in a timid way and eventually in a more active way, managed to position themselves, and even to become, as in the case of the architects Friedl Dicker, Wera Meyer-Waldeck and Annemarie Wilke.

In this turbulent period – in which diversity represents an antidote against religious and ethnic fanaticisms and misogyny; where feminism claims a rereading of the official history, written by a minority – let us find, in the brave female Bauhaus students, a path that can guide us to achieve a real equality in the distribution of responsabilities, and also benefits. (Fig. 1)

We should not look for the Bauhaus women only in the textile (*weberei*) workshop or in the mural painting (*wandmalerei*) one; they also participated in the carpentry (*ausbau*) and construction (*bau*) sections. The leap from the two-dimensional to the total space was already overcome by these women, and they can help present and future students and professionals reflect on the need to work with their female colleagues. It is women's time. The female Bauhaus architects and engineers remind us of it every day.

We are! We want! And we create!

In 1950, the composer and music critic Hans Heinz Stuckenschmidt recalled the beginnings of the school in Weimar, describing it as a curious mixture of ultramodernism and investigative zeal, also remembering its financial vulnerability. »Almost all, teachers and pupils alike, were very poor. [...] Either expressionists fought

1 Since 2000, the slogan of the European Union has been *United in diversity*, similar to the motto of Walter Gropius.

2 Interview with Lothar Lang, in the school magazine *bauhaus* n° 4, 1928, 18.

constructivists […] or the constructivists themselves were in discord […].«[3] While they debated whether the circle should be red and the square blue, a pair of students formed by Friedl Dicker and Franz Singer drew the house of their dreams, practically symmetrical. On each side of the axis, two identical bedrooms; a large shared work room and a kitchen rounded off each end of the floor; the central space of the dwelling comprised the living room, with a resting place in front of the fireplace and a grand piano with two benches. In order to leave no doubt about the authorship and their future commitment, both authors signed the plan. (Fig. 2)

Such was the school in its beginnings, a deluge of ideas yet without channelling, coming from a group of new students, mixed with the students of the old art schools that merged with the arrival of Walter Gropius. Entering the Bauhaus was not an easy task. Feininger sent a letter to his wife Julia in the summer of 1919 in which he explained to her the distressing assembly they had gone through because of the resentment of the rejected. The latter blamed the director for always standing up »for the ›most extreme art‹«.[4] Their indignation led to a legal complaint to the Ministry accusing the director of introducing foreign students in the Bauhaus in order to rule it by their ideas and, of the former, representing a clique of the selected.

On May 1, 1920, the public administration of the Ministry of Education issued an opinion after months of investigation, concluding:

> As for the students who were promoted to the foreground, the same names are always repeated. The survey revealed that the students in question are particularly gifted persons, possessing great intellectual vivacity and interest in art, science, literature and particularly in philosophy. A girl[5] within this group of students, whose name appears repeatedly among the before mentioned, owns a singularly mature and serious-minded personality, whose generous and altruistic character everyone recognizes wholeheartedly [...]. It cannot be denied that many students of both sexes leave much to be desired regarding their attitude and way of dressing. The main reason for this situation must be seen in the prevailing misery. It is precisely the best and most gifted who are often also the poorest […]. The morale of the young people, as confirmed by the various reports, is excellent. They maintain mutual good relations, they behave in a communitarian sense and they help each other without selfishness. No abuses have been discovered, especially with regard to gender relations. The directorate would tolerate no such thing if it became aware of it [...].[6]

Despite the wide range of resistance, there were also friends in Weimar who supported and admired the development of the Bauhaus. Those friends included Countess Dürkheim who held celebrations, debates and dances at her home and where hot meals were always available, something much needed by the hungry students. The Bauhaus canteen provided the students with a cheap and nutritious meal in times

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3 Stuckenschmidt, Hans Heinz: »Red circle or blue square?«, in: *Die Neue Zeitung*, 12, Berlin 1950, in *50 years bauhaus* (German exhibition). Chicago: Illinois Institute of Technology 1969, 317–318.

4 Wingler, Hans M.: *The Bauhaus, Weimar Dessau, Berlin, Chicago*, Cambridge, Massachusetts: MIT Press 1976, 35.

5 It can be assumed that this student was Friedl Dicker, who was granted a scholarship from the Council of Teachers, due to her academic achievements.

6 Some survey results concerning the Bauhaus in Weimar, in Wingler: *The Bauhaus*, 42.

of severe shortages. It was the social nucleus of the school and created a solidarity network where a community was organized in search of self-sufficiency. The site located am Horn, piece of land ceded by the government (where the experimental house Haus am Horn was built in 1923 and a Bauhaus colony was planned to be built), became a large orchard where fruits and vegetables were grown. The students helped the fruit and vegetable growers and in return received vouchers exchangeable for food in the canteen. Both Gunta Stölzl and Benita Otte, students and friends from the beginning, helped in the canteen to manage these tasks.
The Thuringian State Treasury checked the institution's accounts, upon request from the groups opposed to the Bauhaus ordering an inspection because they blamed Walter Gropius for misuse of funds. In September 1924, the main activities of the Bauhaus and its bookkeeping audit were presented. The civil servants thus described the point concerning the kitchen:

> 14. The Bauhaus kitchen: The Bauhaus kitchen is managed by a commission of five students of the Bauhaus. The chairman of this commission is the student Hoffmann. The kitchen offers the Bauhaus pupils a simple dinner for 0.30 gold marks and a supper for 0.20 gold marks. Since meals were generously served, the prices paid for them is [sic] totally inadequate. Due particularly to the efforts of the women students at the Bauhaus[7], larger amounts of money have been donated by parents or friends, and food has also been contributed. Moreover, the Bauhaus kitchen received 60 gold marks from the federal subsidy for students, and 400 gold marks plus £ 30 from the European Aid for Students. The latter have been distributed in the form of tickets for free meals for 1120 dinners and 1120 suppers to needy Bauhaus students […].[8]

The report does not speak of the female students as cooks, it describes them as efficient managers. No one can deny that some of them were voluntarily in charge of the canteen's administration and kitchen, but it was not something generalized. In any case, it only shows the commendable work they all did. The use of land for horticultural labour can only be understood as an imperative need to relieve hunger in extremely difficult times. It is interesting to point out the existence of European funds to help students. At this time Germany was one of the most needy countries.

Art and Technique, a New Unit

In the summer of 1923, the large exhibition, where the Bauhaus was to show its achievements to the outer world, was held: exhibitions, conferences, meetings, theatre performances, celebrations... All of this was aimed at the large attending audience, encouraged to not only imagine a new way of life with the experimental house Haus am Horn, but also to adopt a new way of understanding architecture, under the roof of the Bauhaus pavilion. External assistance was needed and Gropius was perfectly willing to call Le Corbusier, J. J. P. Oud, G. T. Rietveld, Frank Lloyd Wright and several Russian and Czech architects as well as his fellow countrymen Erich Men-

7 Emphasis added.

8 Thuringian State Treasury. Extract from the report related to the verification of the accounting records of the Bauhaus in Weimar, September 1924, in Wingler: *The Bauhaus*, 89.

delsohn, Mies van der Rohe, Hans Poelzig, Bruno and Max Taut, in order to show the local authorities and general public that the Bauhaus championed, as if it were their own, the language of the new architecture that was being created, not only in Germany.

Officially the women in Weimar were not allowed to meddle in the world of architecture, but who can prevent someone from making a plan? Who can deny the spatial evidence that an axonometric section provides? No one, not even Walter Gropius; in fact, when he publishes a compendium book »Staatliches Bauhaus Weimar 1919–1923« on Weimar, an isometric structure by Benita Otte[9] appears on page 165. Otte draws the interior and exterior of the Haus am Horn with transparent layers of colour. (Fig. 3) This house was created in collaboration with all the workshops, following the motto of its director:

> […] the manner of working together shall not be conceived as it was by the previous generation (van de Velde, Peter Behrens, Bruno Paul). [Rather, it is important] to clear the way for the creative energies of the individual and to establish an objective foundation upon which individuals will be able to collaborate […] this unit cannot be represented by one person but only by the concerted efforts of a number of people in harmony with each other.[10]

Alma Buscher's plans of the children's room and Benita Otte's kitchen design, together with their colleague E. Gebhardt, for the Haus am Horn, represent just one example of the great female willingness to work and cooperate on the occasion of the exhibition during the summer of 1923 and demonstrates how they felt involved in the body that shaped the Bauhaus in Weimar. The distribution of the kitchen deserves special mention: the upper furniture is narrower and the lower has increased storage capacity – and the L-shaped worktop to be used as a working area or a dining table with its stool next to the window. (Fig. 4) It is not the Frankfurt kitchen, outlined and regulated as a perfect machine, created five years later by the architect Margarete Schütte-Lihotzky, but there is no doubt that this premature Weimar kitchen has maintained its relevance until today.

These women and men, of innovative conscience in their experiences with fabrics, metals, ceramics, mural painting, but also through literature, painting, theatre and music, without leaving out mathematics, technical drawing and physics, managed to offer a new integrative approach in which modernity was experienced in all its aspects, including a way of associative and mixed coexistence that led to a new architectural result. It should not be forgotten that they were aware of being the main characters of an experiment. For this reason in particular, a common characteristic was their extraordinary versatility. They knew how to paint, sculpture, design, photograph and, besides, most of the female students, also how to weave. The fact that architecture was being delayed and thus trying to train students in other fields before venturing towards construction, in retrospect this can be interpreted as the right

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9 Otte was technically trained before entering the Bauhaus. From 1911 until 1914 she had received drawing classes and, later, until her entry in the Bauhaus, she had taught them.

10 Notes for the discussion at the Council of Teachers, December 9, 1921, in Wingler: *The Bauhaus,* 51.

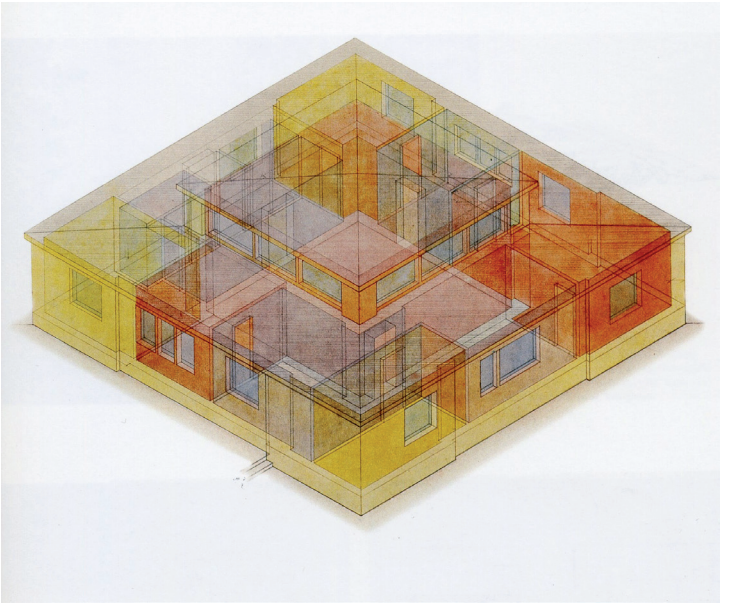

Fig. 3: Benita Otte's plan, from the book *Staatliches Bauhaus Weimar 1919–1923*, p. 165

Fig. 4: Haus am Horn's kitchen, designed by Benita Otte, together with his colleague E. Gebhardt

choice rather than a limitation. As a result, many students were total artists. Some of the male students were in a great hurry to get to the desired architectural workshop, while the female students initially did not even see it as an option (their teachers never encouraged them), but in the end, choosing the less straight path was more intense and rewarding for some, such as Wera Meyer-Waldeck, who obtained her diploma from the Carpentry Guild at first and later her Bauhaus diploma accredited her as an architect. Meyer-Waldeck was able to enjoy that versatility in her professional life. Today we understand the tremendous contradiction that Oskar Schlemmer found in 1921:

> In the Bauhaus architecture is not taught, no student wants to be an architect; in other words, that is why they are not able to. But at the same time, the Bauhaus defends the idea of the hegemony of architecture.[11]

The result of the years lived in Weimar must be interpreted as a laboratory of ideas that crystallized in the new headquarters for the school in Dessau:

> [...] from the ideas that the Bauhaus has collected and generated, a vital movement is emerging that is well known beyond the borders of our country, a movement that carries the structure of our modern life within itself. These results cannot be the work of an individual, but are due to the purity of an idea and the intensity of the joint work of our teachers and students, to whom I would like to thank here with all my heart. [...] This building has been created above all for the youth, for the young people who possess figurative skills, and who will have to shape our new world...[12]

The building, despite multiple criticisms, also had many admirers:

> It no longer finds itself in the position of a student who lives in a rented room. the architectural school has at long last got the right to build a house for itself. [...] when I finally saw the bauhaus, which seems to be cast of one piece like a persistent thought. [...] Kandinsky was telling me that many of the pupils occupied themselves secretly, in their leisure time, with painting. after working on designs for slaughterhouses or garages, after manufacturing chairs of metal, or glass lamps, they devoted themselves to a senseless occupation [...]. they do not complain about the trash of the past. heroically, they manufacture everything, down to the bucket.[13]

This team of women and men, hard-working, dedicated and enthusiastic, not only managed to open new headquarters but also turned out to be the generational change of the teaching staff. Five former students were selected, among them a woman: Gunta Stölzl. Years before, she herself would write in her diary:

> I have been very busy in myself [...] now I have the feeling that I cannot separate my life and my destiny from the Bauhaus and this will be a great source of energy.[14]

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11 Letter sent to his friend Otto Meyer-Amden, June 23, 1921, In Schlemmer, C. Raman: »Biografía de Oskar Schlemmer«, in: *Oskar Schlemmer*, Museo Nacional Centro de Arte Reina Sofía and Fundación la Caixa 1996, 159.

12 »Speech for the opening of the Bauhaus building«, in: *Volksblatt für Anhalt*, 285, December 6, 1926, in in Wingler: *The Bauhaus,* 125.

13 Ehrenburg, Ilya: »About the Dessau Bauhaus«, in: *Frankfurter Zeitung*, May 28, 1927, in *50 years bauhaus*, 318–320.

14 Müller, Ulrike: *Bauhaus-Frauen. Meisterinnen in Kunst, Handwerk und Design*. Munich: Elisabeth Sandmann Verlag, 2009, 46.

Unity in Diversity

The religious mentality inherited from the Middle Ages combined the improvement of living conditions in cities with the previous moral improvement of people. Therefore, natural disasters and epidemics could well be a consequence of the immorality of humans who inhabited these spaces. Since the beginning of the nineteenth century already, most reformers believed that the previous improvement of the place in which we live was essential for human beings to progress physically and spiritually. In the first half of the 20th century some architects believed that the world could become a better place by using architecture as a tool. They were convinced that through functional dwellings, practical furniture and the healthiest possible way of life, they would be capable of transforming the bourgeois parameters, until then set in stone. The belief in the redemption of the world through art and, in this case, by means of architecture, was an ideal shared by Hesse and Gropius. For this reason, Hesse, the mayor of Dessau, found his best allies in the Bauhaus and in the architect Walter Gropius. The students also joined this project wholeheartedly:

> The very next day [of the opening of the new headquarters in Dessau] the Vorkurs[15] began. We were altogether twenty-five boys and girls from different towns and countries (not a single one from Dessau), with varied backgrounds and concepts about our future. Some intended to continue in the fine arts ateliers of the masters, Klee, Kandinsky and Feininger, or in the theatre workshop of Schlemmer; others were attracted by interior and industrial design in the workshops; only a few wanted to be architects. These different backgrounds, ideas and attitudes, together with the comradeship, the intimacy, the spirit and fervour (from the very first, we used the personal »Du« [informal you] instead of the usual »Sie« [formal you]) resulted in there being a creative atmosphere on the course from its very start. Gropius used to call it »unity in diversity«.[16]

Unity in diversity was a fact and Gropius left the leadership of the Bauhaus because his discourse had reached its zenith. The »technical« way to achieve a better world for the youth had already been exhausted. Once the architecture department had been set up, another step forward had to be taken, other commitments had to be made, and those commitments he did not want to make himself. He knew Hannes Meyer's approach to rational and functional architecture and his involvement in social issues: »Meyer's fame as an architect of strong social interests attracted me«[17], he acknowledged to Tomás Maldonado in 1963. He handed over fully aware of the work to be carried out by his successor, although he would later regret it: »He led the school to a committed position and, in the end, he drove himself to downfall«.[18] But Gropius had left the school convinced of the direction it would take: finally a construction

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15 Introductory course.

16 Sharon, Arieh: *Kibbutz+Bauhaus, an architect's way in a new land*, Stuttgart: Karl Krämer Verlag. 1976, 28.

17 Letter from Walter Gropius to Tomás Maldonado, November 24, 1963, in Maldonado, Tomás: »Otra vez la Bauhaus, textos, cartas, respuestas, comentarios« [»The Bauhaus again, texts, letters, answers, comments«], in: *Comunicación12-Bauhaus*: Editorial Alberto Corazón 1971, 189.

18 Ibid.

department existed and it was taught by a teacher who stood up for a »New World«.[19] In order to demonstrate their good initial relationship, inside the first book edited by Bauhaus, a double page was dedicated to the Geneva building designed by Hannes Meyer and Hans together with Gropius' school in Dessau.

Gropius had already begun to implement the rationalist principles of industrialisation in construction and the commitment to technology with the construction of the Dessau Törten colony and the metal housing prototype in collaboration with the company Junkers. The next step was to link the architectural avant-garde with the political and social forefront and he preferred not facing up to it. The construction in Dessau continued to be carried out by his architectural studio, the reason why he chose to opt out of teaching, although he never completely separated himself from the Bauhaus. The very same Gropius who had decided the course of the centre before his departure, when he saw that his interests no longer coincided with those of the new director, replaced Hannes Meyer with Mies van der Rohe, to counteract the effect. As Gropius himself clarified:

> I think it is a mistake to argue that Meyer brought »social content« to the Bauhaus, from the moment he compromised his own social thinking, allowing party politics to dismember the school. Under my direction, the Bauhaus was looking for a »new way of life«. That was its social content.[20]

Years later, Mies recognized that Hannes Meyer was not the main culprit of the situation: »The Bauhaus became a political instrument, not so much because Hannes Meyer used it as such, but because the young people did«.[21] Since its beginnings education had much changed, there was no longer an educational foundation based on craftsmanship. Walter Gropius left a functioning college, a »Hochschule für Gestaltung«, and his students were preparing themselves to find work as collaborators in the industry or construction, they would be the engineers and architects of a new age.

With Meyer the study of architecture in the school took a new direction and some women became interested in it. Bau, this concise but powerful word, vigorously indicated »construction«; some of them dared.[22] Meyer never looked for a selection of isolated talents, but instead helped to achieve this unity in diversity with work teams comprising students of different ages and levels of education.

In issue number 2/3 of the 1928 *bauhaus* magazine, an advertisement in seven langu-

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19 Meyer, Hannes: »Die Neue Welt« [»The New World«], in: *Das Werk* 7, Zürich, July, 1926. In a playful and optimistic tone, he tries to find a new way with modern means in the new world.

20 Letter from Walter Gropius to Tomás Maldonado, October 22, 1963, in Maldonado: »Otra vez la Bauhaus«, 183–184.

21 »Conversations with Mies«, in: John Peter, *The Oral History of Modern Architecture: Interviews with the Greatest Architects of the Twentieth Century*, New York: Harry N. Abrams, 1994, in »Conversaciones con Mies van der Rohe«, 62. Barcelona: Gustavo Gili (ed.). Translation: Moisés Puente.

22 The course listings from 1928–29 show Lotte Beese and Lotte Gerson. In 1930, Hilde Reiss, Gerda Marx, Annemarie Wilke, Wera Meyer-Waldeck and María Muller are included.

imdu babauhaus!
venez étudier à bauhaus!
studiato nel bauhaus!
come and study at the bauhaus!
tanuljatok a bauhausnál!
studjnjcie w bauhausie!
studujete v bauhausu!
studiert am bauhaus!

Fig. 5: Advertisement in seven different languages encouraging readers to study at the Bauhaus

Fig. 6: Paul Klee: *Ein Blatt aus dem Städtebuch*, 1928

ages invited to study at the Bauhaus. (Fig. 5) Furthermore, in his school advertising brochures Meyer emphasized his interest in women enrolling. In 1929, the brochure »Komm ans bauhaus« literally said: Are you looking for true equality as a female student?[23] In it, he also highlighted the different nationalities of the students, their different ages and economic capabilities and, in addition, stressed that out of 170 students 119 were men and 51 were women. Once again, when director Meyer outlined the structure of the Bauhaus in 1930, he began by stating that out of 190 students 46 were foreign and 54 were women. It was his way of clarifying the diversity the school was looking for.

Although many theoreticians have insisted on separating the different phases of the Bauhaus, depending on its directors, in a categorical and emphatic way, there has always been a certain continuity in the essential ideas. In this sense, just as Gropius led Meyer to create an architecture department, Mies, albeit minimally, did not forget the social aspect that Meyer had imbued the school with, and in his 1930 programme he made explicit reference to conferences on psychology, economic doctrine and sociology.[24] Standardized furniture, an idea initiated in the times of Gropius, developed and promoted with new energies by Meyer, was not abolished under Mies. Alfred Arndt, in charge of the Ausbau seminar, prepared his students for the competition of the Deutscher Werkbund where several designs of standardized furniture for dwellings were awarded prizes. Although bearing no resemblance to Meyer's inexpensive, multipurpose furniture, it neither looked like the director's luxurious Barcelona chair. There has been much speculation about Meyer's and Mies' lack of tolerance for the bohemian and expressionist sentiment that the freestyle painting classes could stand for within the program, but neither of the two directors removed that section. Both Klee and Kandinsky not only participated in the preliminary course but ended up creating their own section in the Bauhaus, attended by students who chose this option as a specialty.

We should also not forget that Mies van der Rohe was the only director of the school who signed the diplomas in order to enable some female students to pursue their professional careers as architects. To the names of the architects Wera Meyer-Waldeck, María Müller, Hilde Reiss and Annemarie Wilke, together with Annemarie Wimmer in interior design, five students should be added who, for different reasons, did not graduate but contributed in the field of architecture as much or more to the school than the school offered them: Friedl Dicker, Benita Otte, Alma Buscher, Lotte Beese and Lotte Gerson. The latter two students entered Bau, but Beese left the school

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23 Author unknown, under Hannes Meyer's direction. Page from the brochure *bauhaus*, 1929: »suchst du als studierende wahre gleichberechtigung?«, in Oswalt, Philipp: »The Bauhaus at home in Dessau«, in: *Bauhaus art as Life*, London: Barbicn Art Centre 2012, 144–145.

24 Bax, Marty: *Bauhaus Lecture Notes 1930–1933*, Amsterdam: Arquitectura & Natura Press 1991, 63. The lecture notes of the student Jan van der Linden reflect some conferences on psychology held by Count Karlfried von Dürckheim, a lecturer who had been invited by Hannes Meyer some years before, as the latter recalled in an article published in the Mexican magazine *Edificación* in 1940.

prematurely and to Gerson, having completed her studies, the diploma was denied, alleging that »despite her acknowledged diligent and neat work, we do not see in her a sufficiently creative capacity«.[25]

Intersections

The Bauhaus, throughout its entire development, sought to go beyond immediate needs, while no one should feel neglected; this search had nothing in common with the concept of luxury. Through its teachers and directors, it was able to create the conditions for the students to feel involved in the construction of a future, to endow them with the possibility of imagining a fairer world.
From its beginning the Bauhaus school was multidisciplinary. Only in the light of this complexity sociology can be related to aesthetics and statics. It always sensed the collective aspirations of its time. Thanks to the manifold points of view and the different perspectives in the different workshops offered by the students themselves, it was possible to achieve an infinite map of intersections that led to unimaginable relations.
That is why we should not be surprised to find paintings by Paul Klee, as if they were embroidered cloths and, at the same time, to find Klee's chromatic configuration in the textile designs of Gertrud Arndt. (Fig. 6) In spite of the separation between science and art that Hannes Meyer stated in his writings, where he assigned art characteristics of heart and intuition, and science characteristics of brain and intellect, students always found a mechanism of decompression in the power of art. Their emotional intelligence that linked both areas – art and science – granted them transversality to operate in several specialties.
For this reason, a painting by Max Beckmann and an article entitled »die malerei ist tot« (painting is dead)[26] simultaneously appeared in issue number 4 of the bauhaus magazine, analysing with surprise that after the Russian revolution no change had taken place and people continued to queue up in front of the paintings of the Moscow museums. The text ended by saying that in order to see images, nothing better than the cinema or magazines. Max Beckmann was the painter chosen by Mies van der Rohe's close friends to commemorate his fiftieth anniversary with his painting »Alfi mit Maske« as a gift. They never suspected that a year later, in 1937, Beckmann would join the illustrious list of painters that made up the exhibition of »Entartete Kunst« (degenerate art); among Beckmann, some 600 works by colleagues such as Klee and Kandinsky. As in the case of the Russian museums, the visitors were countless, triplicating the flow of people of the official exhibition of painters promoted by the Nazi regime, which had been programmed simultaneously. Beckmann was never able to see this exhibition, as that very summer he left his native country to

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25 Bauer, Corinna Isabel: *Architekturstudentinnen in der Weimarer Republik. Bauhaus- und Tessenow-Schülerinnen*. Dissertation presented at the University of Kassel in July, 2003, 351.

26 School magazine *bauhaus* n° 4, 1928, 23.

take refuge in Amsterdam and Paris, ending his days in the USA, where a welcoming committee came to the harbour to receive him, among them Mies van der Rohe who in 1939 had already found him a teaching position in Chicago which he could not take up as he did not obtain the corresponding visa.

During the same summer of 1937, another painter, the Spaniard Picasso, depicted the bombings of Guernica, carried out by the German Condor legion (with Junkers aircrafts from Dessau) and the Italian aviation. The Spanish government commissioned the painting for the Pavilion of the Republic at the Paris International Exhibition where architect Luis Lacasa's[27] building provided the whole of modernity (fig. 7), completely lacking in the German pavilion of Speer.[28] Not only was there a transfer of modern spirit, but also a transfusion of young German blood in the form of International Brigades, among them some components of the Bauhaus. From this international aid, Friedl Dicker herself has bequeathed a painting to us: »Fuchs learns Spanish«. When »Guernica« arrived in Chicago in 1939, Mies van der Rohe must have been so impressed by its vision that he used its image as a wall, a single wall side, serving as background as well as figure, preceded only by a crouching woman covering her face (the sculpture »La Nuit de Maillol«) and, as a final touch to perspective, the blurred marble wall so typical for Mies, with another sculpture in the background. This is how he imagined his Museum for a Small City project. (Fig. 8)

Another wall also represented the key element that linked Mies' building to that of Lilly Reich in the exhibition Berliner Bauausstellung of 1931; the wall as metaphor and authentic intersection. Each of them had their own studio, their own house; they were two independent people, but that wall, common to both, supporting his house and hers, was a great sign of their commitment to share the space, both interior and exterior.

Space and time shared until entire dispersion was arranged by the last students of the Bauhaus in Berlin after the school was sealed. Architect Annemarie Wilke, whose relationship with Mies, Reich and Hilberseimer was magnificent, remembered it in 1967 accordingly:

> I belonged to the Bauhaus from autumn 1929 until May 1933, thus until the end. The circle of those of us who were still free stayed together for a few weeks. […] For example, we could be seen sitting there on the already sprawling grass of a part of the Berlin-Lankwitz site, location of the building hosting the headquarters of the Dessau school. Its doors had been sealed. If our meetings were being watched, I never knew. In any case, to us it was unapparent. We were still unsuspecting of the approaching system practices. While we still had a glimmer of hope that the school would reopen, our teachers had none at all. However, we could not imagine any new common ground to share. We found ourselves in a state of perplexity and daze. Professor Mies van der Rohe, Professor Ludwig Hilberseimer and Mrs Lilly Reich were on our side. At that time their personal contact towards us was greatly strengthened. From June and July 1933 onwards we students began to disperse. Some students tried to restore their situation, as soon

27 The architect José Luis Sert was also involved in this project.

28 In the German pavilion, Lilly Reich provided the few touches of modernity in the fabric section. Architect Annemarie Wilke participated with some showcases, whose final versions had apparently been modified.

there would be enough work. We slowly lost track of one another. I myself worked for two more years in Professor Hilberseimer's studio. Later on with Lilly Reich, with whom I had a friendly relationship. She died in Berlin in 1947.[29]

Her collaboration in the studies of Professor Hilberseimer and teacher Reich proves Wilke's worth and places her in the category of the few students chosen by their teachers to collaborate in their private offices.

But undoubtedly, the teaching intersection of the three principals of the school joined in a single figure can be found exemplarily in the architect Wera Meyer-Waldeck. She participated in the interior design of the Employment Office (*Arbeitsamt*) designed by Gropius in Dessau. (Fig. 9)

Hannes Meyer employed her in his Berlin studio as a draftswoman for the execution of project plans for the furniture of the Trade Union School in Bernau (she also designed the desks for the bedrooms) and finally, Mies van der Rohe was in charge of signing her accreditation as an architect.

When Wera finished her studies in architecture, unemployment in Germany had reached alarming rates, so she tried her luck in Switzerland. Due to bureaucratic problems, she had to return in 1933 when her country was undergoing a difficult situation. Her professional career rises gradually, from being unemployed to occupying increasingly responsible positions, first at Junkers as a draughtswoman[30] for the Reich Highways and Railways, until finally, once the war started, holding the position of architect in the construction and planning management of the Karwin mining facilities in Upper Silesia. Her trip to the United States in 1953 became conclusive, as she met her former directors Walter Gropius and Mies van der Rohe again. In America she also discovered colleagues with new ideas in the construction of sustainable housing with renewable energies: the American house, built by architect Eleanor Raymond in collaboration with solar energy scientific expert Maria Telkes, inspired her future house for Dr Bockemühl, designed in 1954/55.[31] (Fig. 10) No less important was her contact with Berkeley through William Wurster, Catherine Bauer and Vernon de Mars, with whom she shared a joint students' class.[32] In Meyer-Waldeck's opinion, the University of California at Berkeley had surprised Europe, not only because the architects there had found their own style, but also because it had become the meeting point between European and Asian culture.[33]

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29 Letter sent to the editor Bruno Adler (first husband of the student Margit Tery) in 1967. He turned to people related to Annemarie because he needed to gather data for the publication of a book on the Bauhaus. Bauhaus-Archiv Berlin, nº 1997/26.187–188.

30 Information on Wera Meyer-Waldeck is taken from Hervás y Heras, Josenia: *El camino hacia la arquitectura: las mujeres de la bauhaus*. Ph.D thesis, Universidad Politécnica de Madrid, 2014.

31 Meyer Waldeck, Wera: »Das Solarhaus braucht keine Öfen«, in: *Die vier Wände* 238, October 11, 1953, 17.

32 Hervás y Heras, Josenia: »Eine Bauhaus-Architektin in der BRD: Wera Meyer-Waldeck«, in: Mary Pepchinsky et al. (eds.), *Frau Architekt – Seit mehr als 100 Jahren: Frauen im Architekturberuf*, Frankfurt am Main/Tübingen: Deutsches Architekturmuseum/Ernst Wasmuth Verlag 2018, 167–171.

33 Hervás y Heras, Josenia: »Wera Meyer-Waldeck«, in: Elizabeth Otto/Patrick Rössler, *Bauhaus women. A global perspective*, London: Palazzo 2019, p.115.

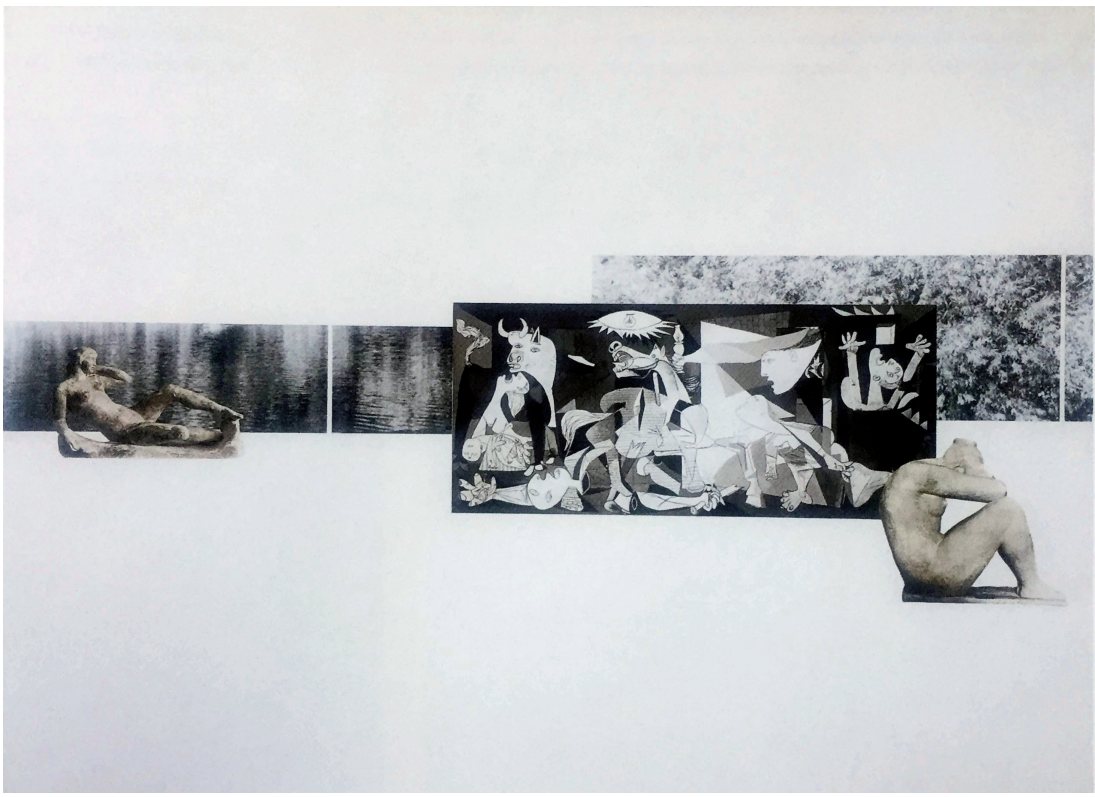
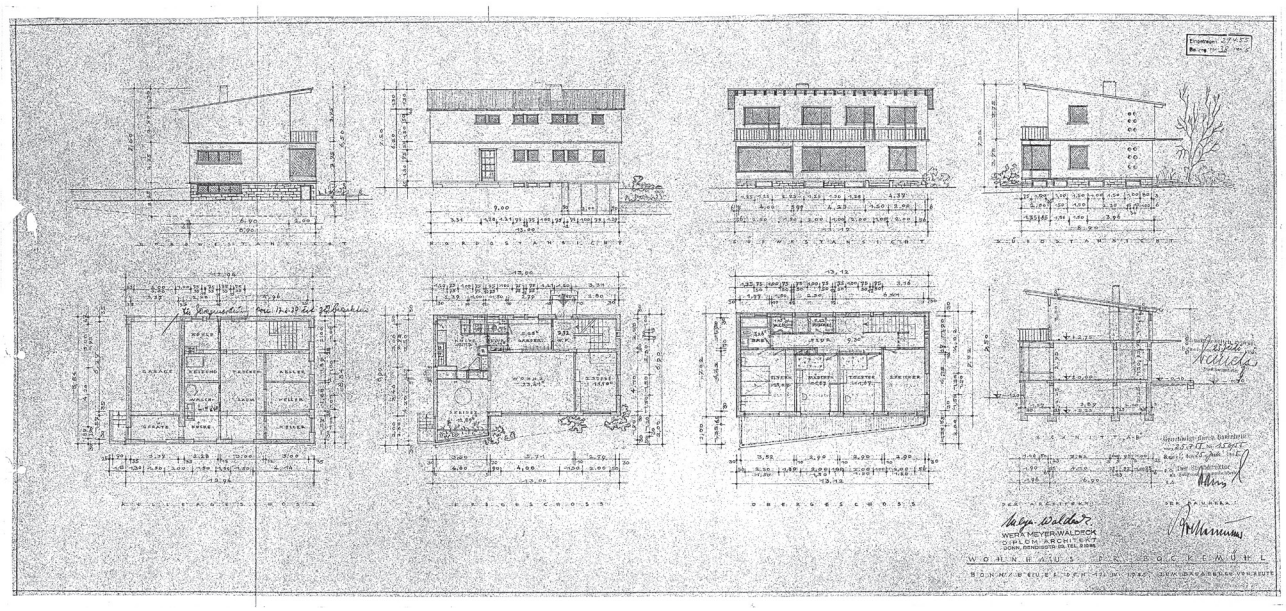


Fig. 7: Views of Picasso's Guernica and Calder's fountain inside the Spanish Pavilion in the Paris International Exhibition of 1937

Fig. 8: Museum: Mies van der Rohe, Architect, Chicago, Ill.

Fig. 9: Employment office in Dessau, by Walter Gropius, collaborating with Wera Meyer-Waldeck in the interiors

Fig. 10: Wera Meyer-Waldeck, Haus Dr. Bockemühl, Beuel-Limperich, 1955



Meyer-Waldeck saw the birth of a new generation of artists in all of the American universities she visited, though she admitted that the European teaching was particularly relevant in Harvard and Chicago, through Gropius and Mies. According to her, it was Berkeley, with a large number of Chinese, Philippine and Malayan students, the one the made the difference. For her, the faculty of Architecture and Urban Planning had become a world class leader, not only for the quality of the students and professors, but also for the works made. Meyer-Waldeck used as an example the new construction methods, prefabricated, used by architect Michael Goodman in his sanitary buildings.[34]

Catherine Bauer and Wera Meyer-Waldeck who were about the same age and shared the same passion for their profession, were true modern architects by their own decision. It is therefore not surprising that Wera reflected their encounter in a press article.[35] On it, she explained the lively talk they had about the social effects of living in isolated houses, in high buildings or rows of houses. Bauer, who introduced the United States to the mentality of solidarity of European architects between the wars, had actively fought for a vigorous policy in the construction of social housing on behalf of the American government in the 1930s. She also encouraged residential promotion by trade unions to compensate the private sector's lack of interest in implementing low-income housing.[36]

Bauer assured that architecture is a social art, as it is the expression of those forces that keep people together. Her efforts were recognized, and consequently, she helped formulate the legislation that led to the revolutionary *U.S. Housing Act* of 1937. Following her study tour in 1930, Bauer would later confess: »What I saw in Europe was so exciting it transformed me from an aesthete to a housing reformer«.[37] She visited the Siedlung Siemensstadt in Berlin, among many other colonies, and claimed that the Bauhaus was a »primary source of ›modernism‹«.[38] It is not unreasonable to think that a young Meyer-Waldeck, a 24-year-old Bauhaus student, restless, single and childless like Bauer, who by then was 25, could have coincided with the American architect, without knowing each other, on one of their architectural visits. They would never have suspected that after a war confronting their two countries they would meet again in America, thanks to a common passion: architecture.

In April 1945, when Soviet and American troops met for the first time at the River Elbe to continue fighting Hitler, when the last great battle, the battle of Berlin, was being fought, urban planner Catherine Bauer gave a lecture called »Housing« at the

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34 Meyer Waldeck, Wera: »Kleine Visite in Harvard und Berkley [sic]«, in: *Werk und Zeit*, 6, vol. 3 (1954), 6.

35 Ibid.

36 Stephens, Suzanne: »Voices of Consequence: four Architectural Critics«, in: Susana Torre (ed.), *Women in American Architecture: A Historic and Contemporary Perspective*, New York: Whitney Library of Design, 1977, 136.

37 Ibid., 137.

38 Bauer, Catherine: *Modern Housing*, London: George Allen & Unwin 1935, plates, 27.

Fig. 11: Anni Albers' signature in textile work *With Verticals*, 1946

Black Mountain College in North Carolina.[39] At this American educational centre, where Josef and Anni Albers, together with other artists fleeing from Germany, had ended up after the closure of the Bauhaus in 1933, and where Anni, from her position as a teacher of a committed and dedicated new generation, was able to listen to Bauer.

In 1949, after leaving teaching, Anni Albers became the first person to exhibit a textile monograph at the MOMA in New York. In its press release, the museum acknowledged that »Her background has given her a clear understanding of the principles of modern architecture and has thus enabled her to produce textiles that are an integrated part of modern living space«.[40] The recognition of her research in the field of textiles allowed her to spread her legacy more widely. If we carefully observe her signature alone, duplicating the first letter of the Latin alphabet, which corresponds

39 See http://www.blackmountaincollegeproject.org/ARCHITECTURE/CHRONOLOGY/CHRONOLOGY.htm [9 May 2019].

40 See https://www.moma.org/calendar/exhibitions/2736 [9 May 2019].

to her two initials, and transforming them in turn into three triangles, the complete »Gestalt« Theory is summarized. (Fig. 11)

It is a verifiable fact that the American emigration of talents such as Anni Albers was not an isolated event. The dispersion of former students and teachers throughout more than 30 different countries contributed to turn the Bauhaus mindset into a global way of thinking and its main characters, far from losing contact, joined and helped each other as a fraternally connected chain over the years. One of the many examples is the architect Wera Meyer-Waldeck, interceding with Walter Gropius in order to endorse Fritz Hüffner to be able to travel to Yale in 1959. Due to his Russian past in the brigade, led by the architect Ernst Mayin which the students Gerda Marx and Lotte Beese, enrolled in the construction course (*Bau*), also participated, he was barred from obtaining a visa to travel to the USA. Meyer-Waldeck managed to get Gropius to send a letter to the American consul in Mehlen with the purpose of unblocking this situation.[41] The severe economic crisis, the war and the German division into two opposing countries ended many hopes, but none of this could prevent two distinguished elderly ladies from remaining connected. From Switzerland, fabric teacher Gunta Stölzl congratulated designer Marianne Brandt on her 85th birthday in Kinschberg (Saxony, former GDR) in a letter ending with these words:

> Man, house, garden and above all my loom enhance my days. I trust that you are in good health, surrounded by your beloved ones. As a reminder of our beginnings, our ideals and shared experiences in Weimar, I congratulate you from the bottom of my heart.[42]

We must not take for granted that the only possible tale is the one that the same people have told us over and over again. Art critic Hans Hildebrand stated in 1928 that the work carried out by Lilly Reich was performed under a certain degree of anonymity, insomuch as »Who ask themselves in an exhibition who should be thanked for the pleasure of enjoying a good expository arrangement?«[43]

Today no one asks that kind of question anymore. Life today is not easy, nor was it easy in 1919 in Weimar where it all began. Today life is certainly more comfortable, maybe lacking illusion, orientation, but whenever we think that another better world is possible, we have to think about carrying it out. This is what the Bauhaus did a hundred years ago and this is what all of us should do, always including women.[44]

As Hannah Höch told her sister at the end of the Great War: »We have PEACE and a fresh start in a fallen Europe. And now, onward!!«[45]

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41 Letters exchanged between Meyer-Waldeck and Gropius, Open Archive Walter Gropius. Bauhaus-Archiv Berlin.

42 Letter from Gunta Stölzl to Marianne Brandt, October 1, 1978. Bauhaus-Archiv Berlin.

43 Hildebrandt, Hans: *Die Frau als Künstlerin*, Berlin: Rudolf Mosse Buchverlag 1928, 151–152.

44 On the 50th anniversary of the Bauhaus, in the first catalogue of the exhibition (German edition), out of 99 exposed biographies of people worthy to be remembered, only 11 were women (11 %, less than the female ratio of the school, of around 30 %). In these biographies, there is no mention of any of the certified female architects or of any of the female students from the construction workshop.

45 Hille, Karoline: »…This never-ending evolution. Reflected in her Art – Hannah Höch in the 20th Century«,

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Fig. 11: Picture taken by the autor, 2017

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in: *Hannah Höch*, Madrid: Museo Nacional Centro de Arte Reina Sofía 2004, 325. Höch wrote this sentence on a postcard to her sister on November 14, 1918. In the book it is commented (p. 18) that under the direction of Mies the school invited Hannah Höch to hold an exhibition in 1932 at the Bauhaus, although unfortunately the show was finally canceled by the Nazi authorities.

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Rafaela Wahl Herrera

Women, an unnecessary experiment. Bauhaus was never modern

»Wo Wolle ist/ ist auch ein Weib/ das webt/ und sei es nur zum Zeitvertreib«. Als Bauhausdirektor Walter Gropius erkannte, dass sich eine große Zahl von Frauen für das Bauhaus beworben hatte, empfahl er, »keine unnötigen Experimente mehr« zu unternehmen, die den Ruf der Schule schädigen könnten. Darüber hinaus forderte er eine »scharfe sofortige Ablehnung« von Bewerberinnen. Vor dem Hintergrund des unausgeschöpften Potentials der Frauen des Bauhauses möchte ich mit meinem Beitrag die Diskussion über das Scheitern der Moderne neu eröffnen. Damit knüpfe ich an die spätere Bauhaus-Forschung an, der es auf erfrischende Weise immer wieder gelungen ist, fundierte Kommentare zur mangelnden Chancengleichheit der Bauhäuslerinnen zu formulieren. Und das alles trotz Gropius‘ aggressivem Manifest, in dem er insbesondere versprach, am Bauhaus dürfe es keine geschlechtsspezifische Ausgrenzung geben. Ist es fair, eine Schule, die die Hälfte ihrer Schüler systematisch entmutigt hat, »modern« zu nennen? Trotz alledem: Auch ohne Titel, angemessene Bezahlung oder Status reüssierten Frauen am Bauhaus. Darüber hinaus waren ihre Ideen, anders als die ihnen zugewiesenen künstlerisch-handwerklichen Metiers, alles andere als traditionell. Entgegen aller Erwartungen führten ihre Beiträge zu einem Innovationsschub für die Entwicklung des Industriedesigns und zu einer künstlerischen Neubewertung der Textilkunst. Nicht so bei den bekannten Malern, die Gropius als Professoren für die Schule gewinnen konnte. Protagonisten wie Kandinsky und Klee schafften es nicht, mit ihren Namen zur Entwicklung der Schule Wesentliches beizutragen. Ihr Einfluss lag eher auf der Ebene der Praktiken und Techniken. Unter diesem Gesichtspunkt diskutiere ich Ideen wie die »Dissoziation des Künstlers von seiner Kunst« und untersuche Wege und Möglichkeiten, wie im Ansatz gute Programme auch praktische Relevanz entfalten können.

Rafaela Wahl Herrera studied Linguistics, cognitive science, computer science, neuroscience and gender studies in Chile, Osnabrück and Berlin. Rafaela Wahl Herrera is an independent researcher and cyberactivist . As a member of various LGBTQI collectives, Rafaela has been interested on the debate surrounding the future of work (so called work 4.0) automatization and technical determinism which promises more time to enjoy, which in praxis means the boundaries between work and private life have been blured deepening gender inequality qualitatively. Rafaela’s research focuses on culture and digitalization, architectural history and feminism.

Ines Rödl

Wesenserforschung und prospektive Schau: Johannes Itten und die Alten Meister

In 2017 László F. Földényi remarked that »[...] the oldest events in history and the most recent ones are happening simultaneously [...], and that, after all, the present just happens to be the infinite reflection of the past.« He thus represents a perspective on the past that is quite similar to that of the avant-gardist view of contemporary history at the beginning of the 20th century. While the reactionary traditionalists resisted renewal, especially in the field of artist education, the supposedly para-

doxical expressionist modernism found its own view of things and the world of the interwar period in the pictorial cosmos of the past stylistic epochs. For the ideas of the Bauhaus and its ideal of the Gesamtkunstwerk, the points of reference can be found in the Middle Ages–especially in the notion of a Gothic style that continued in an uninterrupted line of tradition as an epoch into modernity, if not to the present day (Worringer). It was regarded as the last and still enduring appearance of a style, which, in the form of a ›disguised‹ or a ›secret‹ Gothic, had still been in use. For his theory and theses, Wilhelm Worringer did not take the viewpoint of a modernist in order to interpret the Gothic in retrospect, but rather went back to the era of the Gothic Middle Ages in order to deduce settling points for the subsequent and above all contemporary currents. In keeping with the phenomenon of time, this tradition of cultural historiography was continued by the philosopher of history Oswald Spengler in his Zukunftsschau, which predicted the downfall of the Occident. Then as now, the fear of cultural decay in particular prompted the instrumentalisation of this polemical formula and therefore lends it a new, old effect even in the present time. The recourse to the past through analyses of works by the Old Masters and the resulting derivation of universally valid artistic laws as well as meta-physical signposts are the guiding principles of Johannes Itten‘s pedagogical and artistic concept, which he carried to the Bauhaus in 1919. He created for himself and for his students a theoretical foundation for the philosophical legitimization of a confrontation with the Old Masters as a starting point for artistic creation or as a starting point for any artistic intention (Riegl). In his analysis course at the Bauhaus, Itten primarily sought a contact with Old German art, above all with Matthias Grünewald, in order to shape the artists and architects of tomorrow through empathy with the past (Lipps). Itten‘s goal and that of the avant-garde was thus, in the sense of a socio-economic and cultural duty, to seek the new ›ideas‹ without undermining the foundations of the past. Even today, this approach can be a groundbreaking imperative in a society still marked by political and socio-cultural imponderables.

Dr. Ines Rödl (*1988) studied Art History, Latin Philology and Classical Archaeology at Universität Regensburg and LMU Munich. 2019 dissertation on *Johannes Itten und die Alten Meister*. From 2017 to 2019 she worked as a trainee at Germanisches Nationalmuseum Nuremberg in the Arts and Craft Collection, 19th–21st century. Her main research interests include Johannes Itten, early Bauhaus, cultural policies and art school reform around 1900, 19th century photography.

Olivier Gaudin

Towards an environment-based Pedagogy of Creativity: Learning from the Bauhaus and Dewey’s pragmatism

Lehrende und Lernende der Designdisziplinen können von den pädagogischen Experimenten des Bauhauses nach wie vor viel für die eigene Praxis lernen. Die Schule versuchte, disziplinäre Grenzen zu überwinden, indem sie gemeinsame Kurse über Materialien, Klassen für Techniken wie Zeichnen, Weben und Schnitzen usw. sowie praktische Übungen zu Komposition und Form einführte. Die Pädagogik stellte auf

Handarbeit, gemeinsame Aufgaben und Kreativität ab. Dennoch wurde sie im Laufe der Schulgeschichte unterschiedlich interpretiert, konzentrierte sich etwa auf kooperative, soziale und reformistische Anliegen und intensivierte die Beziehungen zur Industrie. Ende der zwanziger Jahre wurden neue Formen der pädagogischen Zusammenarbeit zwischen Kunst, Handwerk und Wissenschaft entwickelt. Aus Sicht der heutigen Welt, die von technischen Objekten, Infrastrukturen und komplexen Prozessen durchdrungen ist, können wir uns von Hannes Meyers Bauhaus inspirieren lassen, um insbesondere die pädagogischen Ansätze der Designdisziplinen zu erneuern: Wie steht es um kollektive Kreativität und interdisziplinäre Ansätze? Wie kann man diese Kreativität durch Unterricht und Übungen fördern, um den Herausforderungen der Zukunft zu begegnen? Eine Möglichkeit besteht darin, die notwendige Verbesserung der Umweltbedingungen als bestimmenden Kontext jeder individuellen oder kollektiven Erfahrung – einschließlich der Pädagogik selbst – hervorzuheben. In diesem Zusammenhang diskutiere ich die Parallelen zwischen den Lehrkonzepten am Bauhaus Dessau und pragmatischen Bildungsvorstellungen im ersten Drittel des 20. Jahrhunderts, wie sie etwa von John Dewey vertreten wurden. Dewey entwickelte eine erfahrungsbasierte Konzeption von Bildung, im weitesten sozialen Sinne des Begriffs, in genau den gleichen Jahren der Bauhaus-Experimente. Wie Gropius und Meyer plädierte der amerikanische Philosoph für eine genaue Betrachtung des Kontexts (genauer: der ›Umweltbedingungen‹) als Konstante menschlicher Erfahrung. Konkret bedeutete dies, dass man sich intensiv mit dem Raum der Schulen und Klassenzimmer selbst beschäftigte. Im größeren Zusammenhang der Bauhaus-Pädagogik wiederum ging es um den Kontext von Industrialisierung, Urbanisierung und den Arbeitsbedingungen im Zeitalter des Unternehmenrkapitalismus. Die in Dessau eingeschlagene Richtung einer integrierten Seherziehung (Moholy-Nagy) unter Berücksichtigung sozialer Belange, Umweltgestaltung und Landschaft (Meyer) deuten auf eine mögliche Konvergenz von Ansichten mit pragmatischen Perspektiven hin. Sie können unsere eigenen Lehrpläne für die Ausbildung von Designern, Architekten und Landschaftsarchitekten inspirieren. Mit Blick auf diese Konvergenz gilt es, die Frage der Kreativität in der Pädagogik unter Berücksichtigung der Umweltbedingungen und der gestalteten Umwelt als vielschichtigem Erfahrungsraum zu überdenken.

Olivier Gaudin, PhD in philosophy of social sciences (School for Advanced Studies in Social Sciences, Paris), is an Associate Professor at the School for Nature and Landscape in Blois, France (INSA Centre Val de Loire). He also teaches at the School of Architecture in Marne-la-Vallée and is co-editor in chief of the online journal Métropolitiques. His research focuses on Mead and Dewey's pragmatism, human ecology in social sciences, and the cultural history of landscape. Latest publications: »Sensorial Perception in Urban Studies: Pragmatist Views on Urban Experience«, in: *Pragmatism Today,* 9, 2018; »L'anthropologie historique d'un point de vue pragmatiste: les postulats naturalistes de l''enquête historique' chez John Dewey«, in: Jérôme Lamy/Romain Roy (eds.), *Pour une anthropologie historique de la nature*, Rennes: PUR 2019; »The Public Life of Images: Towards a Social Ecology of the Urban Gaze«, in: *Articulo*, 19, 2019.

Alexandra Matz

Looking Ahead by Looking Back: The Role of Research in Design for Creativity, Inspiration and Innovation – A Case Study

Alle Bereiche kreativer Praxis sind heute von Technologie umgeben und verwenden Software und Endgeräte, um mit und für *Content* visuelle Kommunikation, Innenarchitektur oder Architektur zu gestalten. In der täglichen Designarbeit ist die Content-Forschung dabei oft gleichbedeutend mit oder beschränkt sich auf die Sammlung von Inspirationen durch digitale Formate wie bildbasierte Social Media, kreative Netzwerke oder visuelle Vorschläge von digitalen Suchmaschinen, die auf Lernalgorithmen und künstlicher Intelligenz basieren. Auch wenn man auf diese Weise vielleicht schönes Design schaffen kann, ist es fraglich, ob diese Ansätze adäquat auf die Bedürfnisse und Herausforderungen unsere Gesellschaft heute oder in Zukunft reagieren. Walter Gropius soll gehofft haben, dass der »künstlerisch ausgebildete Designer dem toten Produkt der Maschine eine Seele einhauchen könnte«. Die Tatsache, dass Designaktivitäten nur auf (technologiegetriebener) visueller Inspiration beruhen, sagt wenig darüber aus, was diese Seele sein könnte: Die vielen Kontexte nämlich, die die Designforschung offenlegen kann und die verstanden werden müssen, um innovative Designs zu schaffen. Mein Kapitel stellt eine Fallstudie vor, die den Prozess der Reaktion auf einen Design Brief veranschaulicht, in dem ich Design-Recherchen über Otti Berger, Bauhaus-Studentin und Lehrerin in der Weberei, Erfinderin und Früh-Unternehmerin, durchgeführt habe. Die Studie untersucht die Bedeutung von detaillierter Sekundärforschung sowie primärer und lokaler Designforschung bei der Realisierung des Designprojekts, indem sie die Auswirkungen der Forschungsergebnisse auf das Design nachzeichnet. Der Einfluss von László Moholy-Nagys Fokus auf Taktilität lässt sich in Bergers Werk und Theorien des Webens sowie ihrer innovativen Verwendung moderner Garne als sehr einflussreich nachweisen. Die Vor-Ort-Recherche am Geburtsort von Berger förderte in ihren Vorkursarbeiten einen bisher nicht dokumentierten transferkulturellen Bezug zutage. Die Studie zeigte auch, in welcher Weise die gestaltenden Disziplinen von tiefergehender Designforschung und den daraus gewonnenen Erkenntnissen und Inspirationen profitieren können, um langfristige Veränderungen durch Design einzuleiten.

Alexandra Matz is a User Experience Design Research Expert and Senior Design Thinking Coach at SAP SE in Germany. Building on her work as an interaction designer, she currently leads the design research activities of diverse teams, consisting of software developers, product managers, designers and other stakeholders. Alexandra helps the teams to increase empathy with their end users, understand their needs, and foster the generation of ideas, leading to innovative and usable interface designs. Parallel to her full-time job, she is studying graphic design part-time, and is in her final year of undergraduate studies at the Interactive Design Institute | University of Hertfordshire, United Kingdom. Her research interests include design history and the impact of the Bauhaus school, with a focus on the life and work of its lesser-known students, and on the architecture and design of Southeast Europe. Alexandra is the vice president of German-based NGO »Helfer ohne Grenzen e.V.« for which she co-conducts design thinking and human values workshops with children and students of the Western Balkan region.

Aysar Ghassan

A Cyclic Narrative: Will we See a Return to Rationalistic Design Thinking in the 21st Century?

Der Designtheoretiker Richard Buchanan vertritt die These, dass der ursprüngliche Ansatz des Design Thinking aus der ersten Hälfte des 20. Jahrhunderts durch das Bauhaus begründet wurde. Gemäß diesem Ansatz werden Designer als rational denkende Gestalter vorausgesetzt. Tatsächlich argumentierte Bauhaus-Gründer Walter Gropius, dass Prozesse der Rationalisierung Designern helfen würde, gesellschaftliche Probleme zu lösen. Ihren Höhepunkt erreichte dieser Ansatz des Design Thinking in der Zeit nach dem Zweiten Weltkrieg, als Designtheoretiker argumentierten, dass die Aufgabe des Wiederaufbaus so groß sei, dass sie die Fähigkeit menschlicher Entscheidungen übersteige. Dementsprechend wurde das Design insbesondere seit den 1960er Jahren als angewandte Wissenschaft verstanden. Als numerische Formeln beschrieben, sollte der Entwurfsprozess computergängig werden. Die 1970er Jahre bedeuteten jedoch eine tiefgreifende Wende der Design Thinking-Konzeption. Nicht alle Probleme, so der Tenor, ließen sich in numerischen Formeln ausdrücken und auf diese Weise lösen, sondern nur in Aushandlungsprozessen zwischen Interessengruppen. Im zunächst durch das Bauhaus beförderten Rationalismus erkannte man den Urpsrung von Designprinzipien, die die Bedürfnisse der Nutzer ignorierten. In der Kritik dessen entstand die zeitgenössische Design Thinking-Theorie, wonach sich die Denkweisen von Gestaltern und Nutzern von Natur aus von der von Mathematikern und Wissenschaftlern unterscheidet. Das Konzept des zeitgenössischen Design Thinking war äußerst einflussreich und wurde von vielen Institutionen und Unternehmen übernommen, um große komplexe Probleme zu lösen, an denen viele menschliche Interessengruppen beteiligt sind. Die Geschichte des Design Thinking nimmt derzeit eine weitere interessante Wendung. Dieses Kapitel geht der Frage nach, ob die aktuellen gesellschaftspolitische Entwicklungen eine Abkehr von den von relativer Offenheit und Partizpation gekennzeichneten zeitgenössischen Design Thinking-Ansätzen erkennen lassen und stattdessen das vor einem Jahrhundert am Bauhaus geprägte rationalistischen Design Thinking eine Renaissance erfährt.

Aysar Ghassan is the course director of the MA in Automotive & Transport Design at Coventry University, UK. He has recently completed his PhD in which he investigated the discourse of Design Thinking using corpus-led methods. Aysar's published research includes discussions on the history and philosophy of design and technology as well as reflections on a range of pedagogical innovations.

Adham Selim

The Taxonomic Turn: Organizing Architecture as Critique

Die späten Jahrzehnte des 20. Jahrhunderts signalisierten eine unwiderrufliche Erosion der Fähigkeit der Architektur, soziale Veränderungen zu mobilisieren. Diese Erosion markierte nicht nur eine disziplinäre Abkehr von einem bestimmten Modus Operandi, sondern fiel auch mit einer entscheidenden Wende zu einem epistemischen Phasenraum zusammen, in dem mehrere avantgardistische Konzepte des 20. Jahr-

hunderts gediehen. Dieses Kapitel argumentiert, dass diese Wendung zu einer radikalen Neuausrichtung der architektonischen Disziplin hin zur taktischen Reorganisation von Räumlichkeit entlang der Grenzen der taxonomischen Klassifikationen wie ›Typen‹ (Venturi – Ente und dekorierter Schuppen), ›Größen‹ (OMA's, m, l und xl), ›Umschläge‹ (Alejandro Zaera Polos x=y>z, x=y=z, z>x=y und x=z>y) und ›Gesten‹ (Herzog und de Meurons Haus, Stapel, Struktur und Steinbruch) geführt hat. Und zwar ungeachtet der Tatsache, dass etwa Durands Précis des leçons d'architecture mit einer der frühesten Konzeptionen von Komposition und Typologie immer noch eine wesentlich andere Vorlage für eine kritische Praxis der Architektur darstellen als das moderne Projekt. Diese taxonomischen Klassifizierungen gelten über die Zeit als ontologisch ziemlich stabil, und obwohl sie auf einer Vielzahl von selektiven Praktiken basieren, haben sie allmählich eine Art universelle Relevanz erlangt. Sie stellen konzeptionelle Verbindungen her (zwischen verschiedenen Menschen, Objekten, Skalen, Kulturen, Orten usw.), die nicht nur zufällig charakteristisch für ihre jeweiligen kritischen Projekte sind, sondern auch für die wiederkehrende Essenz des von ihnen vertretenen Diskurses. Sie entstanden in erster Linie als postmoderne Stellvertreter für die großen Einheitsvisionen der Moderne, blieben aber im Gegensatz zu letzterer weitgehend partielle, lokale und fast subjektive Versuche der Disziplinierung und Wissensproduktion statt radikaler soziokultureller Programmierung. Neuere Taxonomien gehen einen Schritt weiter, indem sie operative und diagrammatische Modelle der Totalität konstruieren. Der amerikanische Designtheoretiker Benjamin Bratton zum Beispiel bildet die urbanen und politischen Geografien der heutigen Welt sowie die Technologien, die ihre Architekturen ermöglichen, in einem planetarischen Modell ab, das er den Stack nennt. Ähnlich wie andere Taxonomien wird Brattons »Stapel« jedoch in sechs »Plattformen« (Benutzer, Schnittstelle, Adresse, Stadt, Cloud und Erde) taxonomisiert, wobei jede als ein eigenständiges systemisches Konglomerat verstanden wird. In komplexen Gesellschaften, wie wir sie heute kennen, sind die Rahmenbedingungen eher Systeme, Infrastrukturen und Netzwerke als einzelne kulturelle Akteure. Die taxonomische Wende in der Architektur lässt sich als taktische Drehung der architektonischen Agency von der katalysierenden soziokulturellen Veränderung hin zur Produktion epistemischer Systeme erklären. Und doch erscheint es zu einfach, diese neue Agency durch das bloße Kopieren unternehmerisch-systemischer Praktiken der Organisation und Wissensproduktion zu unterfüttern angesichts der Tatsache, dass die Autorschaft über die urbane Form mehr denn je von den Architekturschaffenden in die Hände globaler Konzerne wie IBM, Cisco, PwC und McKinsey übergeht – also unternehmerischen Souveränen im Besitz der Gestaltungsmittel für komplexe Systeme. Dieses Kapitel wirft einen kritischen Blick auf die neue Agency und untersucht die taxonomischen Ambitionen einiger entscheidender Architekturprojekte der letzten Zeit.

Adham Selim is an architect and researcher working on the aesthetics and politics of digital simulation in arts and architecture. Selim is currently based in Beirut, where he co-founded *The Archilogue*, a crowd-sourced electronic shelf for translating and publishing architectural literature. *The Archilogue* is also a space to reflect on the

architectural profession in its many intersections with language and politics. Moreover, Selim serves as a curatorial adviser for a number of design enterprises whose practices vary from digital manufacturing such as Beirut Makers to traditional artisanship such as L'artisan du Liban. He recently curated Objects of Change, Sursock Museum (Beirut, 2017), co-curated Command: Commandline, Station Beirut (Beirut, 2017), and he was the exhibition designer behind Cairo Now! City Incomplete (Dubai, 2016). Selim's writings are featured on *Jadaliyya*, *Brownbook*, *Madamasr*, *Cairobserver* and *Failed Architecture*. Selim studied architecture in the Staedelschule in Frankfurt/Main.

Arthur Crucq

Sustainable Architecture: Meditations on New Repertoires of Forms

In diesem Kapitel beschäftige ich mich mit Möglichkeiten und Grenzen unterschiedlicher Strategien, mit denen Architekten und Stadtplaner neue Technologien und Materialien einsetzen und alternative Formen der Kooperation nutzen, um ein Repertoire an Formen für eines tieferes Verständnis der Beziehungen von gebauter und natürlicher Umwelt zu entwickeln. Die Überlegungen speisen sich aus der seit der vielzitierten Krise der Moderne geäußerten Skepsis gegenüber großmaßstäblichen Visionen zu Architektur und Städtebau. Zudem stellt sich angesichts der globalen Phänomene von Überkonsum und Klimawandel gegenwärtig die Frage, wie die gebaute Umwelt in einer nachhaltigeren und weniger ressourcenintensiven Weise gestaltet und organisiert werden sollte. Bisher wird Nachhaltigkeit vor allem im Hinblick auf Kosten und Nutzen diskutiert und droht ausschließlich instrumentalistisch verstanden zu werden. Als Kunst- und Architekturhistoriker denke ich, dass das Konzept der Nachhaltigkeit um einen formbezogenen Kontext erweitert werden könnte. Insbesondere möchte ich darauf eingehen, inwieweit die Entwicklung eines zukünftigen Formenrepertoires neue übergreifende (Autoritäts-)Visionen zur Architektur, Stadtplanung und ästhetischer Form erfordert oder gar rechtfertigt, oder ob Architekten und Stadtplaner sich mit gesellschaftlichen Akteursgruppen verbinden sollten.

Arthur Crucq is an art historian and holds a position as university lecturer at the Leiden University Centre for Arts in Society where he teaches at the department of art history. In 2018 Crucq defended his PhD thesis 'Abstract patterns: the re-cognition of geometric ornament' at Leiden University. During the winter semester of 2017/2018 he was a fellow at the Lab for Cognitive Research in Art history at the University of Vienna. Crucq's research concerns the relationship between ornamental patterns and cognition and the role this plays within theories on architecture and the decorative arts.

Arvid Krüger

The double Legacy of Weimar. Urban Design and Public Housing 1919–2019 and its Consequences for Teaching Urban Planning

Wenn auch erst richtig in Dessau zum Tragen gekommen, so gehört der Siedlungsbau der Moderne ebenso zum Vermächtnis des Bauhauses wie er am Hochschulstandort Weimar Tradition geworden ist, wo bis heute in den Bereichen Urbanistik bzw. Gebietsplanung und Städtebau gelehrt und geforscht wird. Zum Weimarer Vermächtnis des Siedlungsbaus gehört aber auch die von der Weimarer Republik

begonnene (und von der westdeutschen Bundesrepublik noch 1989 beendete) Gemeinnützigkeit des Wohnens. Der politische Anspruch, Wohnen für breite Schichten zu bauen und die ganz praktische Realisierung der Siedlungsmoderne bedingen einander. Zugleich gibt es in Bezug auf die drei Jahrzehnte nach 1989 jedoch wenig intellektuelle Verknüpfungen zwischen den nicht nur architektonischen, sondern auch funktionalen, politischen und sozioökonomischen Traditionen des Wohnungs- und Siedlungsbaus einerseits und der jüngeren Planungsgeschichte der Stadterneuerung andererseits, die von der behutsamen Stadterneuerung der 1980er über den Stadtumbau Ost nach der Jahrtausendwende bis hin zur europäischen Leipzig-Charta 2007 reicht. Stadterneuerung findet gleichwertig in den Siedlungen der Spätmoderne wie der Gründerzeit statt. Die Siedlungen der Moderne sind das Ergebnis einer massiven funktionalen wie ästhetischen Erneuerung der letzten 30 Jahre – und in ihrem urbanistischen Charakter eine normal gewordene Ausprägung der ›Europäischen Stadt‹. In meinem Kapitel gehe ich der Frage nach den Potentialen einer integrierten Betrachtung der Traditionen des Bauhauses, der Wohnungsbaupolitik der Weimarer Republik, der Gebietsplanungslehre und -forschung der DDR und Ansätzen der Europäischen Urbanistik der gegenwärtigen Bauhaus-Universität. Dies nicht nur, um die letzten Jahrzehnte europäischer Planungsgeschichte zu verstehen, sondern auch um Impulse für die anstehende Beschäftigung mit den seriellen Siedlungen des globalen Ostens und Südens geben zu können; Siedlungen, die nun just in das Alter kommen, in dem sie in den 1980ern in Deutschland zu Gegenständen der Stadterneuerung wurden.

Arvid Krüger PhD (Dr.-Ing.), born 1979, studied urban and spatial planning at the TU Berlin and the KTH Stockholm. He finished his PhD at the Bauhaus University Weimar (employment 2012–2018) and currently works as a research assistant at the University of Kassel. As a freelancer he was Neighborhood Manager for the Berlin Housing Company Howoge (2009–2013); and as a guest lecturer he worked at UC San Diego in 2017. Among other honorary duties he is Speaker of the SRL working group Urban Renewal and Preventive Urban Development (SRL = German Association of Planners). He is an external member of the Bauhaus Institute for Theory and History of Architecture and Planning in Weimar.

Leander Thiel

Vom Gestalter zum Schöpfer – Appell zur Positionierung der synthetischen Biologie als neue Disziplin des Designs

Synthetic biology, genetic engineering, micro- and molecular biology: The term biotechnology combines a large number of sub-disciplines that merge into one another and drive the utilization and research of organic matter. Over the last 100 years, supposedly new milestones have been announced at almost regular intervals and every step has been celebrated as a paradigm shift. Such achievements are hardly visible or noticeable in the everyday life of the individual, although the latest breakthroughs in gene editing, together with digitalization, point the way out from the infancy stage towards a fundamental, all-encompassing technology of the 21st century that will shape our environment. As the most modern form of life sciences, synthetic biology stands for scientific progress and fantasies of omnipotence at the same time, as

it pursues the creation of unprecedented artificial organisms as its goal. The significance of the possible consequences - both positive and negative – are in direct contradiction to the largely absent but necessary debate on the scale of society as a whole. Public opinion is superimposed by a conglomerate of the most diverse fears and negative symbolism and a broad discourse is accordingly restricted. Leaving the power of decision to the economy in such an explosive issue points the way to a possible future in which people are left alone with their fears and needs. In order to enable people to have a desirable and self-responsible future, they must be involved in the process with their own dreams and fears. Especially when science itself cannot provide answers to the urgent ethical questions and when politics in a globalized and hypercapitalistic world sees itself as a promoter rather than a regulator of technology. This is followed by the question of a positive use of technology, because research not only harbours risks in the form of bioweapons, biopiracy or the disruption of the sensitive biosphere, but also has the potential to mitigate global problems such as the acidification of the oceans, climate change or other side effects of consumer society. In order to achieve this positive use, a more human, inquiring, interdisciplinary component must be added to the highly specialized technology, and biodesign is predestined for this task. Through design, technologies become tangible for people. The designed products are not prophecies of imminent doom, but represent possibilities derived from reality. The inclusion of development possibilities that are as desirable as they are viable for the future fuels interest in dealing with these possible visions of the future and can in part ignore the fears of the public and thus ensure an increasing interest in the topic. Looking back, it can be seen that an interdisciplinary approach – as already established by the Bauhaus – is necessary in order to get hold of a globally dominant but currently directionless technology and to steer its influence in the right direction now.

Leander Thiel is a designer based in Hannover where he graduated recently from Hochschule Hannover's programme »Design and Media«. In his Master thesis, Leander discussed the relationship of design and bio technology. His conceptual design approach focusses on the mutual influence of future technologies, society and the individual.

Nicolai Bo Andersen

Beauty Reclaimed – Towards an Ontology of Sustainable Architecture and Design

Umweltverschmutzung, Treibhausgase und exzessiver Ressourcenverbrauch stellen heute die größte Gefahr für die Zukunft des Planeten Erde dar. Temperaturanstieg, Meeresspiegelanstieg und Versauerung des Ozeans werden als Auswirkungen des Klimawandels identifiziert. Die Verfügbarkeit von Gütern wie Süßwasser, Nahrung und Energie ist stark gefährdet. Diese Liste ließe sich beliebig fortsetzen; klar ist jedoch, dass die Klimakrise die Welt, wie wir sie kennen, in wenigen Jahren grundlegend verändern kann. Als Antwort darauf können und müssen sich vor allem menschliche Handlungsmuster verändern. Jedoch setzen sich Egoismus und kurz-

sichtige Lösungen nach wie vor durch. Die Architekturindustrie ist überwiegend nur an der kurzfristigen Aufmerksamkeit in einer sich ständig weiter beschleunigenden Medienkultur interessiert. Spektakuläre Gebäude ohne Rücksicht auf den räumlichen Kontext, Materialeigenschaften und den menschlichen Maßstab werden in immer schnellerer Folge gebaut. Gebäude tragen zur menschlichen Entfremdung sowie zum massiven Verbrauch von Energie und Ressourcen bei. Wenn Architektur Teil des Problems ist, muss die Frage lauten, wie sie (wieder) Teil einer nachhaltigeren Lebensweise sein kann. Wie können Gebäude dazu beitragen, Menschen, materielle Ressourcen und den Planeten mit mehr Sorgfalt zu behandeln? In Weiterentwicklung des Konzepts der Kreislaufwirtschaft kann Langlebigkeit als Möglichkeit, materielle Ressourcen im Bausystem so lange wie möglich zu halten, als wesentliches Prinzip für eine nachhaltige Baukultur verstanden werden. Wenn das Problem eine kurzsichtige Perspektive und unvorsichtiger Konsum ist, dann ist vielleicht Aufmerksamkeit die Antwort. Wenn das Problem desinteressierter Egoismus ist, dann ist die Antwort vielleicht Schönheit. Dieses Kapitel argumentiert, dass Schönheit in der Architektur definiert werden kann als das Gefühl der Klarheit, das wir erleben können, wenn wir die Materie verstehen, die eine sinnvolle Geste des Bewohnenes bildet, um sich an einem einen Ort auf der Erde einzurichten. Schönheit in Kunst und Architektur kann eine Einladung zur Aufmerksamkeit sein, die nicht einfach zur Hand ist, sondern den Reichtum und die Intensität der kulturellen und natürlichen Welt erschließt. Vielleicht kann die Einladung zur aufmerksamen Präsenz, bei der es darum geht, die Dinge klarer, intensiver und dauerhafter zu sehen, dazu beitragen, den Verbrauch von Ressourcen und die Ausbeutung der Erde zu reduzieren. Es geht darum, Schönheit als Einladung zur Öffnung für den Moment zurückzugewinnen und sich gut um die Erde zu kümmern, hier, jetzt – und in einer zukünftigen Welt.

Nicolai Bo Andersen is a Copenhagen-based architect working in the field between research, education and practice. The main subject is the transformation of listed landscapes, cities and buildings. A central question is how the historical, technical and aesthetic characteristics of building culture may be transformed into contemporary attention. Nicolai Bo Andersen studied at The Cooper Union, New York and graduated at The Royal Danish Academy of Fine Arts, School of Architecture in 1998. He started teaching in 2000 and established his own practice in 2001. He has been Head of the Master's Program in Architectural Heritage, Transformation and Conservation since 2016. Nicolai Bo Andersen has been awarded in numerous competitions. He has published several articles on architecture, and he has participated in several exhibitions, e.g. the Venice Biennale 2016. His work is supported by the Danish Arts Foundation and featured in the official residence of the Danish Prime Minister. Nicolai Bo Andersen is appointed member of the Historic Buildings Council by the Danish Minister for Culture. In the academic year 2019/20 he is visiting professor at the TU München.

Christian Sinn

Wie oft berühren Sie Fotos?
Die Formatfrage in der Fotografie im digitalen Zeitalter

The technical history of photography, from analogue in the 19th century to digital since 1991, and backlit »*Instagram-photography*« since 2010, discloses how photography is driven by continuous development and that today, more than ever, it defines our visual memory and our position in this world. The size of a photographic print is almost archaic in 2020, because we now perceive photography on standardised displays and on presets apps like *Instagram*. The standardization of the photographic print has dissociated it and therefore our perception has been newly conditioned. This change in paradigms in photography is researched in my PhD-project *The Plasticity of Photography* in which I focus on the question of format in photography from the 19th century up to now. I discuss my thesis that the image-intrisic size exists and evokes a feeling of plasticity, and the perception of a flat surface transforms into a haptic impression of the photograph. The distance between photography and spectator and the bodily passive reception of fine art changes to the opposite – the spectator wants to move and touch the photography. How does the smartphone change the format of photography? How does the backlit display influence our perception of photography? Is our perception newly conditioned? Is the backlit display the new way of presenting photography in an exhibition setting? How does the relationship between the work of art and the spectator change?
A »historic« photograph consists of light, paper and the mechanical developing process. The standardization of the photographic print has been dissolved, so from now on our perception is newly conditioned. The print is a materialization of our memory of the past – and will be replaced by a digital file in the future. Future generations are going to feel a strangeness to a photographic print on paper not felt toward touching a photograph because we already touch the photograph itself by scrolling, deleting and liking on the display surface of a smartphone. The transparent shiny glass surface of a smartphone thus supersedes the matt opaque print on paper. There won't be a hierarchy, because small historic photographic prints in passepartouts will always exist, as do color photographs in the visuals arts. This canon is extended by smartphone photography with photo applications like *Instagram*. The relationship between the work of art and the spectator is going to change, because we already hold the smartphone – the new medium for representing photography in the context of the visual arts – in our hands, by which the dichotomy between closeness and distance will be renegotiated. There is a certain Sensual Realism, which lets us reflect differently on the material of objects and the presence of photography. This change in paradigms of photography will lead to a sense of plasticity in perceiving the photograph in its image intrinsic size.

Christian Sinn, M.A. (*1974) works as visual artist, art historian and curator in Berlin. In November 2015 he finished his Master of Arts in Art History in a Global Context with Concentration: Europe and America at Free University in Berlin with his master thesis *Constancy and variability in Jeff Wall's exhibition series »Tableaux*

Pictures Photographs 1996-2013«, which is currently being prepared for publication in 2020. Since 2017 he works on his PhD project *The Plasticity of Photography* at Bauhaus University in Weimar, in which he focusses on the question of format in photography from the 19th century to the present – especially in the context of the visual arts. In January 2020 he opened MANTIK.BERLIN – a non-profit, artist-run exhibition space in a private flat in Berlin Charlottenburg. In monthly solo exhibitions one artwork is shown by one contemporary artist, for one viewer at a time by private appointment. In his research he focusses on the history, theory and phenomenology of photography, the art history of contemporary art and Sensual Realism. In his interdisciplinary artistic practice he focusses on the relationship between the work of art and the spectator and this leads the per- ception to the space between the work of art and the spectator. The existing dichotomy between distance and closeness is therefore more extensively experienced, dissolving the bodily passive reception of art.

Vanessa Ramos-Velasquez

Between the individual tortoise shell and the collective malocas, we are nowhere in particular. A short imagetic essay

Betrachtet man die Anfänge des Bauhauses im Jahr 1919, so wird deutlich, dass man viel mehr von einem »Bauhausgeist« als von einem »Bauhausstil« sprechen kann. Die Architektur, Kunst und Gestaltung, die das Bauhaus in seiner Frühphase hervorgebracht hat, war von verschiedenen Leitbildern und Ausdrucksformen geprägt. Diese waren vielfältig und hinterließen ein vielfältiges Erbe und Einfluss in der ganzen Welt. Interessanterweise ist dieser ikonische Geist jetzt wieder spürbar, geprägt vom gleichen Zusammenspiel von Innovation, die durch die Entwicklung neuer und transformativer Technologien angetrieben wird. Dennoch hat sich die Welt mittlerweile drastisch verändert. In den 1920er Jahren standen die horizontalen Ebenen weit offen für die kommende Vertikalität der Moderne. 100 Jahre später scheinen die ständig wachsenden Stachel aus Beton und Glas die großen urbanen Zentren der Welt zu verschlingen und zu dominieren. Es wird heiß hier drin. Lassen Sie die Luft zirkulieren! Aber hat der Idealismus gegenüber der Entwicklung um jeden Preis an Boden verloren? Es scheint jetzt eine gute Zeit für mehr Bauhaus zu sein: für den Geist zu wagen, den Geist zu experimentieren, aber auch den Geist, sich zuerst zu widersetzen, um (nachhaltig) zu wachsen. Eine Schildkröte widersteht der Geschwindigkeit, während sie gleichzeitig mit ihren Trippelschritten rollt. Sie trägt ihren eigenen Schutzraum mit sich herum und ist bekannt für ihr hohes Lebensalter, das 200 Jahre überschreiten kann. Die Frage ist, wie man den Resilienzprinzipien der neuen Ära Platz macht – einer Ära, die als Spielfeld der immensen Möglichkeiten bezeichnet wird, aber in einer ziemlich erstickenden Welt existiert?

Vanessa Ramos-Velasquez is a media artist and interdisciplinary researcher, Ph.D. candidate, Media Arts at Bauhaus-University Weimar, Stipendiatin of the Bauhaus Promotionsstipendium. Her project traverses the themes of Anthropophagy, Environment & Society, and the cultural heritage and Buen Vivir practices of native peoples of South America and beyond. Vanessa received her Master of Arts/New Media from the University of the Arts Berlin in collaboration with Humboldt University's Department of Cultural History and Theory and its interdisciplinary laboratory: Cluster of Excellence Image–Knowledge–Gestaltung. She also holds a Bachelor of Fine Arts/Expanded Media, earned as Fulbright scholar from Brazil at the University of Kansas, USA. Her work is known for an unconventional use of artistic practices to create a hybrid space between the academic and the artistic languages in order to explore forms of decolonising knowledge. Although rooted in performance, she employs a variety of media, delving into meta-narratives, intersecting structuralist image-making processes into interactive performative installations, where the public is invited to participate in order to co-create an experience. At transmediale.11 she received the Vilém Flusser Theory Award Distinction.

Josenia Hervás

100 Bauhaus: Unity in Diversity. Before. Now. Always

»Einheit in Vielfalt«, lautet das Motto des Bauhaus-Gründers. Es ist nicht nur ein Titel, es ist eine Abfolge von Zeiten. Das Endziel des Bauhauses war die Architektur: das Gesamtkunstwerk, an dem alle Disziplinen beteiligt sind. Ohne weibliche Präsenz wäre das Bauhaus kastriert geboren worden, es wäre kein Bauhaus gewesen. In einem Interview wurde ein Schüler gefragt, warum er sich für die Schule beworben hatte, worauf er antwortete: »das Gemeinschaftsleben der Menschen im Bauhaus«. Die unterschiedlichen Ursprünge und Ideen führten, zusammen mit der Freundschaft und Leidenschaft von Männern und Frauen, zu einer besonderen kreativen Atmosphäre und Idee. Die intimste Seite der Bauhaus-Idee ist unauflöslich mit den Frauen verbunden, die Teil der Schule waren. Niemals kann das Bauhaus ohne die Geschichte der weiblichen Beteiligung verstanden werden. Der Anfang, den die jungen Leuten gemacht haben, um an der Verwirklichung einer besseren Welt zu arbeiten, war und wird immer ein Aufruf an zukünftige Generationen sein. Eine Jugend mit unterschiedlichen politischen Vorstellungen, Religionen und Ursprüngen, bei dem es Frauen zunächst zaghaft und schließlich aktiver gelang, sich zu positionieren und sogar, wie in den Fällen von Wera Meyer-Waldeck und Annemarie Wilke, zu Architektinnen zu werden. In unserer turbulenten Gegenwart – in der die Vielfalt ein Gegenmittel gegen religiösen und ethnischen Fanatismus und Misogynie darstellt, in der der Feminismus eine Neubetrachtung der offiziellen Geschichte beansprucht, die von einer Minderheit geschrieben wurde – finden wir in den mutigen Bauhaus-Studentinnen einen Weg zu einer wirklich gerechten Verteilung von Rechten und Verantwortlichkeiten. Wir werden nicht nur in der weberei oder in der wandmalerei nach Bauhausfrauen suchen, sondern auch im ausbau (Zimmerei) und im bau. Der Sprung vom zweidimensionalen zum Gesamtraum wurde von diesen Frauen bereits vollzogen. Ihr Beispiel steht heutigen und zukünftigen Generationen für die Zusammenarbeit der Geschlechter: Jetzt ist die Zeit der Frauen. Die Bauhausarchitektinnen und Ingenieurinnen erinnern uns jeden Tag daran.

Josenia Hervás y Heras is a PhD Architect, graduated in ETSA in Madrid with a double specialty in edification and urbanism. She co-founded her own studio with partner Esteban Herrero, born in Göttingen, named EL TRIANGULO H ARQUITECTOS. She currently works in the studio as well as Professor at Universidad de Alcalá de Henares (UAH) in Madrid, specialized in Urban Planning. Her doctoral thesis about the female architects graduated in the Bauhaus, graded A+, was published as *Las mujeres de la Bauhaus: de lo bidimensional al espacio total* (Bauhaus women: from two-dimensional to total space). She has contributed to the catalogue *Over 100 years of Women in Architecture* for an exhibition about Wera Meyer Waldeck, a Bauhaus student, at DAM Museum in Frankfurt/Main. She has also participated in the joint publication *Global Bauhaus Women*, invited by professors Elizabeth Otto and Patrick Rössler for the centenary of the Bauhaus in 2019.

Alessa Brossmer
windmills (Artwork)

Alessa Brossmer, born 1988 in Germany, has focused on medial versatile works at the intersection of architecture and research. She is researching in the field of greenhouse architecture in polar regions and Space Architecture. In art, photographies function as her notes for three-dimensional works as casts, 3-D prints, models or sound. Alessa Brossmer holds a Diploma in Sculpting (metal) from Burg Giebichenstein University of Art and Design Halle (Germany) and a MA in Applied Culture and Media Studies from Merseburg University of Applied Sciences (Germany). She presented her artistic work among others in exhibitions at Bauhaus Dessau, Palais Thurn and Taxis Bregenz (Austria), or at Herðubreið, Seyðisfjörður (Iceland).

Johannes Warda (Editor)
Luxury and Legacy. Moving Design Theory beyond Bauhaus

Die immer wieder neue Beschäftigung mit den avantgardistischen Bewegungen des 20. Jahrhunderts gehört fest zum Theoriediskurs von Architektur, Kunst und Design. Die Autorinnen und Autoren dieses Bandes nehmen den 100. Geburtstag des Bauhauses zum Anlass für eine kritische Revision von dessen pädagogischen Konzepten, Genderpolitik und designtheoretischen Implikationen. Schließlich eröffnen die Beiträge neue Perspektiven auf die sich zunehmend hybridisierenden Felder der gestaltenden Disziplinen zwischen virtuellen Umgebungen, der Ästhetik nachhaltigen Entwerfens, Biotechnologie und der Frage nach einer postkolonialen Ethik. Im Rückblick auf die einhundertjährige Bauhausgeschichte wird deutlich: Heute sind wir in der luxuriösen Lage, entweder tief und faktenreich in die Ereignisgeschichte des historischen Bauhauses eintauchen zu können, uns von den Objekten, Bildern und Ideen inspirieren zu lassen oder diese allzu bekannten Referenzen einfach hinter uns zu lassen und nach vorn zu blicken. Diese Wahl zu haben ist nicht zuletzt auch eine Errungenschaft der Bauhaus-Bewegung.

Johannes Warda currently holds a guest professorship at the Department of Architecture and Urban Planning, Erfurt University of Applied Sciences. As architectural scholar he has taught at the Bauhaus-Universität Weimar, the Akademie der Bildenden Künste Vienna and at TU Dresden. In 2014, as a grantee of the German National Academic Foundation, he received a PhD in architecture and historic preservation from Bauhaus-Universität Weimar where he is an affiliate of the Bauhaus Institute for the History and Theory of Architecture and Planning. In 2017/18, he was Dresden Junior Fellow at TU Dresden and research fellow at the Leibniz-Institut für Geschichte und Kultur des östlichen Europa (GWZO) Leipzig. As a member of design collectives, he has been working on art and architecture projects, most recently on the Buchenwald Memorial (with pink tank). Johannes's research focuses on sustainability, preservation, architectural history of ideas and design theory. Recent publications include »Old houses become single-family homes: Bausparkassen, Denkmalpflege and conversion architecture, 1977–2002«, in: Christiane Cantauw/Anne Caplan/Elisabeth Timm (eds.), *Housing the family. Locating the single-family home in Germany*, Berlin: Jovis 2019, 128–143; »Keeping West Berlin ›As Found‹. Alison Smithson, Hardt-Waltherr Hämer and 1970s Proto-Preservation Urban Renewal«, in: Ákos Moravánszky/Torsten Lange (eds.), *Re-framing Identities. Architecture's Turn to History 1970–1990*, Basel: Birkhäuser 2017, 275–288; *Veto des Materials. Denkmalpflege, Wiederaneignung von Architektur und modernes Umweltbewusstsein*, Bosau: Wohnungswirtschaft heute 2016.