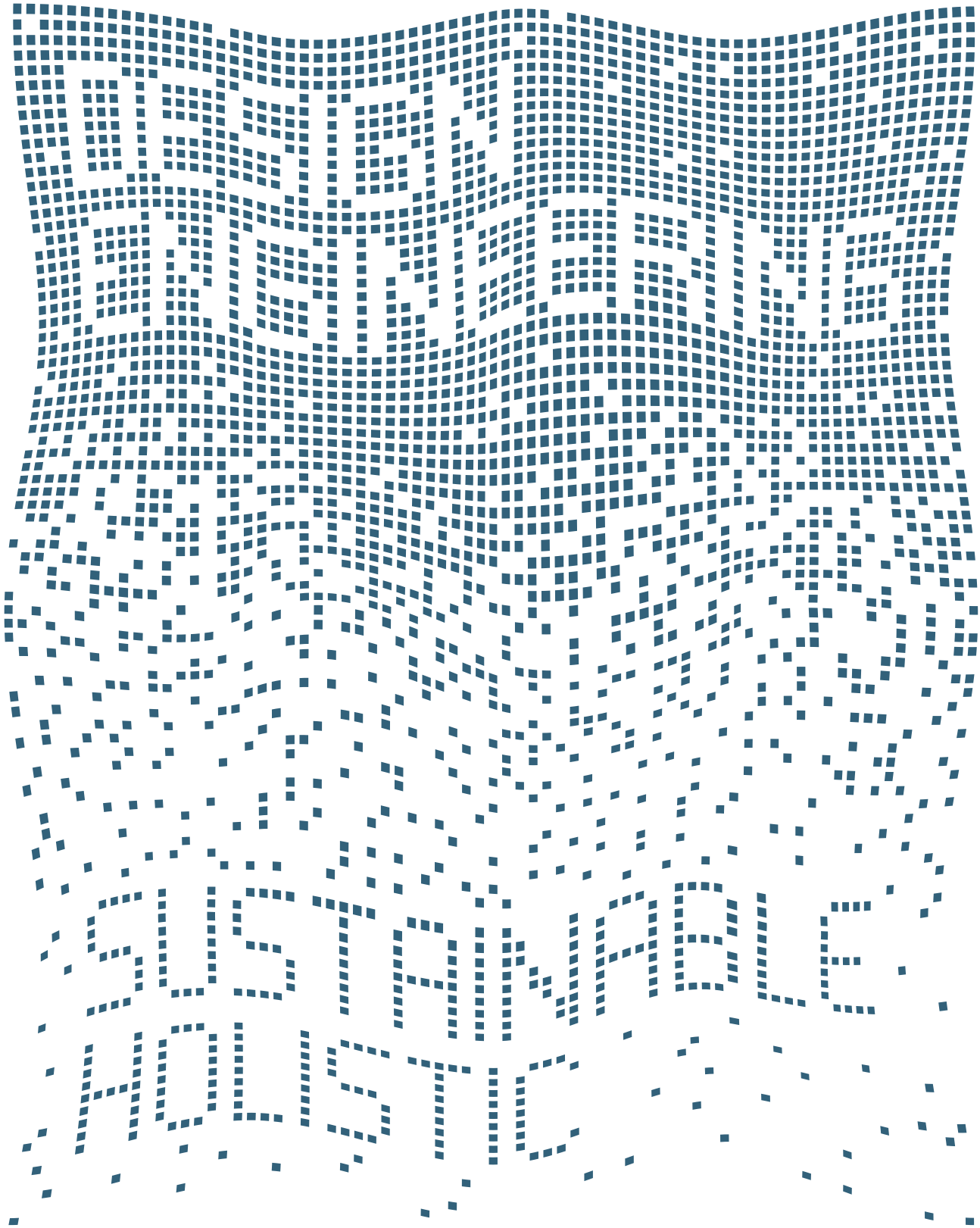


avedition

Marina-Elena Wachs

1.2 Five ways to read this book

The idea of so-called 'skin in the game'[16], is a phrase coined by the entrepreneur Affentranger, who claims that designers need to fully invest: their knowledge, creativity, time AND their own capital. On the one hand, this can be interpreted from an economic perspective, in other words taking responsibility by investing private capital for all entrepreneurial affairs. On the other hand, this now also applies on the meta level and could thus be interpreted as a further development of the 'lean in' strategy by Sheryl Sandberg (2013), which refers to the metaphorical interpretation of taking responsibility for your actions, and your inventions. Having 'skin in the game' is more in demand and is more valuable than ever before. **Being motivated to act, and show dedication for enabling change in a *corporeal* way is what is needed today.**

This phenomenon is expanded upon in chapter 7, but based on this premise, you can benefit from this book, by reading it in a variety of ways. You can take these five paths to focus your aim on this postdoctoral thesis about 'Design theory and interdisciplinary practise in design engineering and education in history, the present and the future':

— You may first answer the interview questions (see the following list of questions from 'December talks 2019' by Wachs). Consider your thoughts as presented from your own personal point of view as well as a business perspective, to formulate the needs of design engineering processes in the future.
— You can use these questions to generate sustainable solutions in design concepts and for design education.
— You can discover how the structure's common thread provides understanding: it guides you through a cultural – sometimes more anthropological – holistic, interdisciplinary view, yet remains based on industrial design and design engineering.
— You can follow the story of design education history as it relates to the development of design methods, and you can generally dig deeper into innovative advanced methods for your business – whether you are an (industrial) design nerd, driver of innovation, or an expert from another branch.
— You can enjoy the idea of a life that is designed better, or you can go to pre-school to play designing with our future generation of designers: This is always a gift and gives you quality time for sharing experiences and ideas with the best naïve minds we could wish for.

16
Affentranger, Anton, 2019, Baustellen, Innensichten eines Unternehmens, Münster-Verlag; please note: the term 'skin in the game' by Nassim N. Taleb in 2017.

1.3 Questioning the system: education, creative and economic systems

The following questions relate to the relationships between the elements and the pre-requisites of **Design – Art – Design Engineering – Creative Industries**, in terms of creating sustainable solutions. With the help of the questions, you may get a first impression, or develop some key thoughts for yourself. These questions were part of the 'December Talks 2019' by Marina-Elena Wachs, that were held in Germany and Great Britain.

1. **How great of an impact do art and design have on economic structures and economic benefit in Europe, and how are design and art influencing the circular economy?**

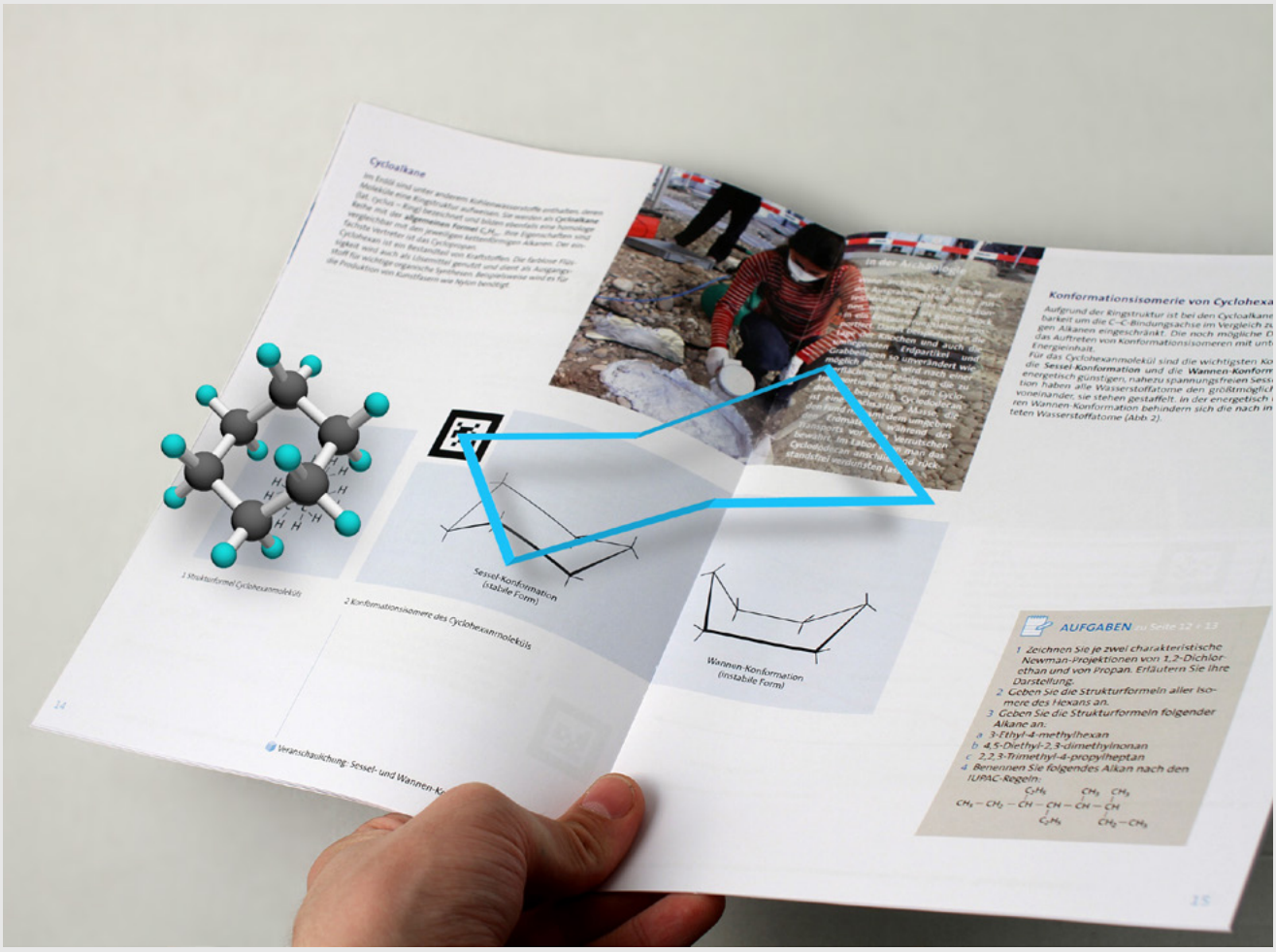
2. What **lessons can we learn from art and applied art in history?** How would you describe particular benefits?

3. During an interview with Inga Griese, for the magazine 'Welt am Sonntag – ICON' in October 2019[17], the director of the V & A Museum, London, Dr. Tristram Hunt was quoted as saying the following about the impact on design history: **The founder of the museum, Prince Albert, would pay more attention to 'design education' at school today.** What do you think about this as an **educational strategy**?

4. What do you think about the **currently increasing acceptance of design**? 100 years after the Bauhaus, what are the driving factors leading to more and more respect for design as objects and design as a discipline, in spite of the fact that it has been the 'little brother' of sciences of art for a long time?

5. In my opinion, **particular people and museums have been especially innovative in this field of thought**; e.g. Paola Antonelli and the Cooper Hewitt Museum in earlier times, and today's curator at the MOMA in NY; the director of Cologne Fair Fine Arts, Daniel Claude Hug, for the 'Cologne Fine Art & Design' fair. Other important innovative drivers that are focal points include, for example, art and design at 'Salone del Mobile – Milano', the Victoria & Albert Museum in London, the Venice Biennale, the MOMA in New York, and the MOCCA in Cape Town. In this field of cultural involvement, another point of view is presented by individuals initiating museums for society, like the Frida Burda Museum or the Zentrum für Kunst und Medien (ZKM) Karlsruhe. Also, the Kunstmuseum Wolfsburg, whose primary aim is to draw in the regional population from the 'working city' of Wolfsburg, here, the foxus lies on the impact of cultural education.

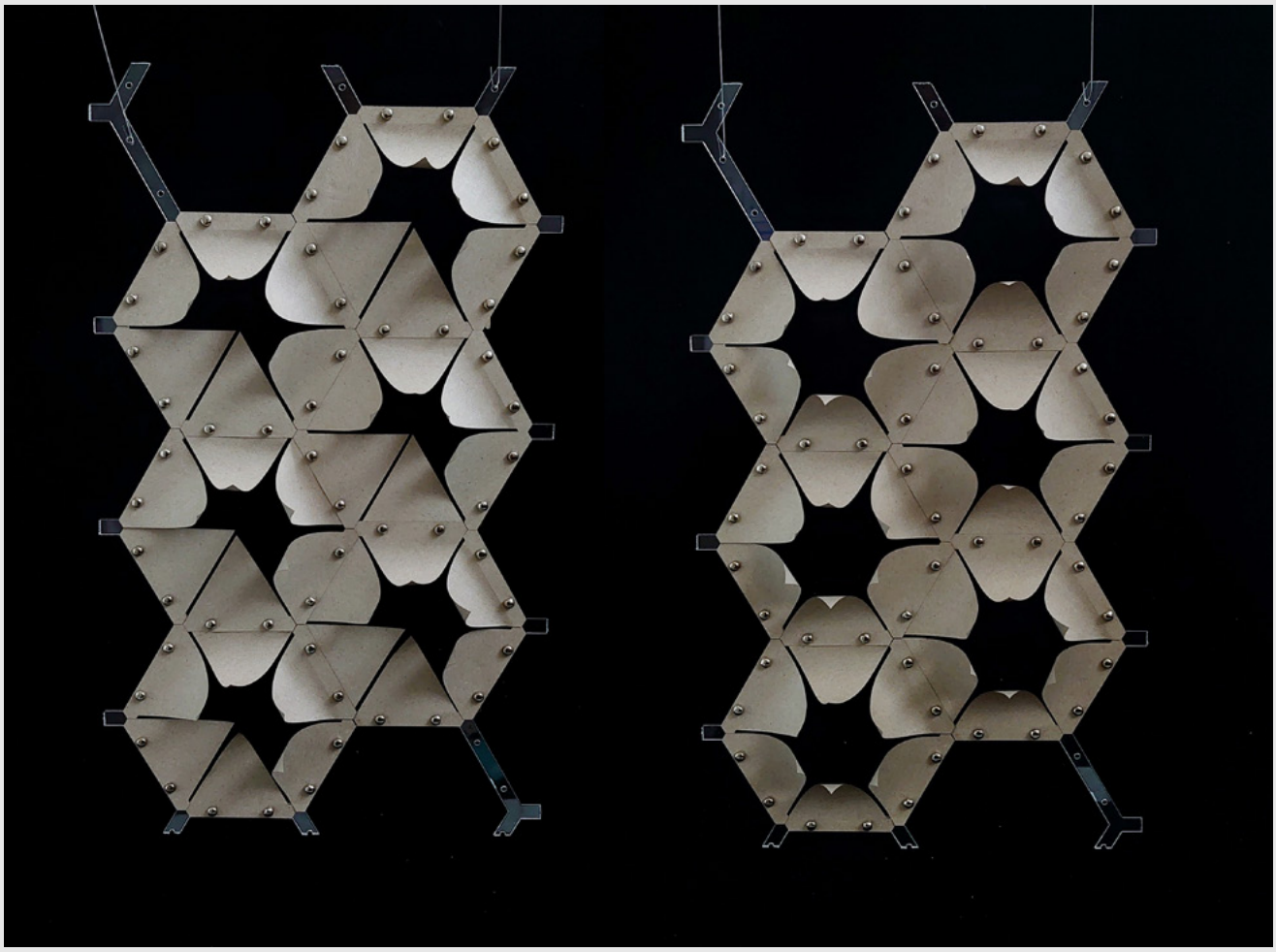
17
See Hunt, Tristram, 2019, in: ICON October I 2019, supplement 'Welt am Sonntag', Issue, p. 78 f.



D

D
Chemistry textbook with augmented reality extensions for the Cornelsen publishing house.

E / F
Models for a shape-changing interface in the research project 'Smart Material Interface'. Photo: Linda Elsner/ Joanna Dauner



E

New interfaces will communicate directly through the material. Smart materials are the first step towards these ‘material user interfaces’. The design of materials in terms of sustainability, interactivity and communication will be a new field for designers in the future.

F

C

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C
Karma SC2 interior sketch published by the show car launch, 2019.

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Karma SC2, 2019.

Picture rights: (A – D)
Andre Franco Luis and in cooperation to each enterprise he worked for.

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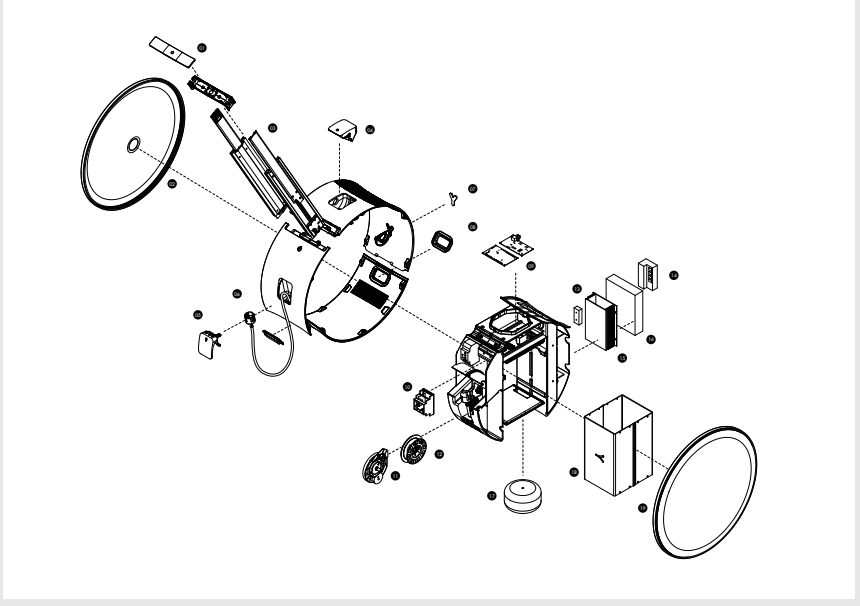

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Cooperation: Werner Aisslinger & Nicole Losos, Berlin, Yill Produktfotos – CREDIT YOUNICOS.
Picture rights: Werner Aisslinger, Nicole Losos, product picture, credit YOUNICOS

E
Exploration sketch Nicole Losos.

F

3.2 Driver of sustainable (industrial) design culture – the 'design shift'

3.2.1 What does high-quality product design mean?

Keywords
industrial design as a driver of sustainability, cultural behaviour – cultural changes and changes in design methods – design turnaround, the need for cross-scenario thinking in sustainable design education, sustainable thinking for complex and advanced industrial solutions; correlation between how people identify with objects, regions, changes in working conditions – reverse design: design shift.

The high-quality design of products is a consequence of sustainable design, and the investigation of origins, demands and additive design qualities – while simultaneously maintaining a focus on responsible cultural behaviour and material conduct. It is necessary to think, manufacture and invest in a sustainable manner, in order to produce responsibly and develop circular concept models for economic cycles. In addition, cultural education is the greatest investment in sustainable economies. All these factors are once again founded on our industrial heritage, and, of course, on the broad individuals produce over the course of their lifetime, as well as people showing great passion for design, it is expressing a commitment to saving the environment (see Wachs, M.-E., 2008)[41]. In terms of the digital revolution of the 21st century, we have to consider a 'design shift' (Wachs, M.-E., 2018, Conference Textile and Place, Manchester School of Art), comparable to the cultural 'turns' (see Bachmann-Medick, D., 2007)[42] of the 20th century, on the one hand. While, on the other hand, we have to take a look at the changing working conditions in industrial design engineering cycles – and the resulting **consequences for design and production processes, as well as education, of course. The following chapter discusses the impact of inter-scenario design**, related to the creative process and the impact of individual design power.

The term 'industrial design' – as described by the German industrial designer Dieter Rams –, first designates the functional needs from the consumer's perspective; human beings and how they deal WITH products. This is viewed in relation to product design, as identified by the anthropologist Michael B. Schiffer: *'The concept of life history is known in a variety of fields including engineering […] in which product design models are broken down into the major steps, such as procurement, manufacture, and use, to identify performance requirements for a technology's various activities.'* (Skibo, J.M. and Schiffer, M.B., 2009)[43]

Secondly, the industrial design process is compared to the conventional design methods of sketching, and the phenomena of so-called 'design driven by technology' or 'design driven by material'. Form and material in relation to product usage, are in line with production possibilities.

41
Wachs, Marina-Elena, 2008, Material Mind, Dr. Kovaç.

42
Bachmann-Medick, Doris, 2007, Cultural Turns, Rowohlt.

43
Skibo, James M., Schiffer, Michael Brain, 2009, People and Things – A Behavioral Approach to Material Culture, Springer, p. 9.

For example, the Braun razor, designed by Dieter Rams in the 1950s, is the result of a linear economy: Sketching a razor created the parameters for production, while the marketing strategy and retail possibilities were not considered until after having the industrial tools and the moulding dies made of metal.[44] Industrialisation created the basis for design management and a linear, sequential planning process. After the sustainability revolution at the end of the 1990s, when awareness grew regarding the lack of materials and that natural resources, such as mineral oil, were finite, the pressure to develop the circular economy – that is described below – became evident. Within all three pillars of the defined subject of 'sustainability', reaching beyond just materials, is not an invention of the 21st century, rather than the Brundtland report (1987) and the triple bottom line by John Elkington came to mind since the 1970s movements with the help of environmental engagement by the Club of Rome (found in 1968) for example. However, with regard to the economy and the interest of brand managers – as well as stakeholders, of course – it is proving hard to integrate into all business levels.

We have to regard the early design trigger points of the industrial design culture – rooted in the so-called linear economy – as a long-lasting standard, which has changed as a result of 'design drivers' for sustainable industrial design that are currently promoting the more favourable circular economy. As the digital revolution is now pushing us to new paradigms – forcing new process parameters and interlinked production teams – we have to think about redefining the field of 'industry', and respectively a new field of industrial design engineering and modified design methods, of course. As a result, the following question arises: How can we create a new term or expression for the word 'industry' that represents current phenomena and changes – indicating sustainability and a 'decentralised economy' at the same time (– as sign of the paradigm shift)?

We have to ask ourselves what is driving design for the next era of digital design generations, particularly when changing production conditions will be accompanied by new design drivers that do not follow any hierarchical structure. Ultimately, the potential impact will be discussed within the framework of a 'design shift' with regard to design and 'production' processes – and of course design engineering education. The following parameters are important considerations in this design process, for the industry and universities.

— changes in technological processes in relation to life patterns and their effects on identification
— media and cultural behaviour concerning objects as the driving factors for developments in design and societal innovations
— comparable design studies within the scope of historical, sociological and anthropological evaluation
— the correlation between design and engineering in the future
— sustainable education and working conditions as factors that influence changes in (and loss of) manual skills, and the need for analogue AND digitally-based fields of educational study.

44
See exhibition 'BRAUN 100' at Bröhan Museum Berlin, 04/2021 to 08/2021 https://www.broehan-museum.de/ausstellung/braun-100/)

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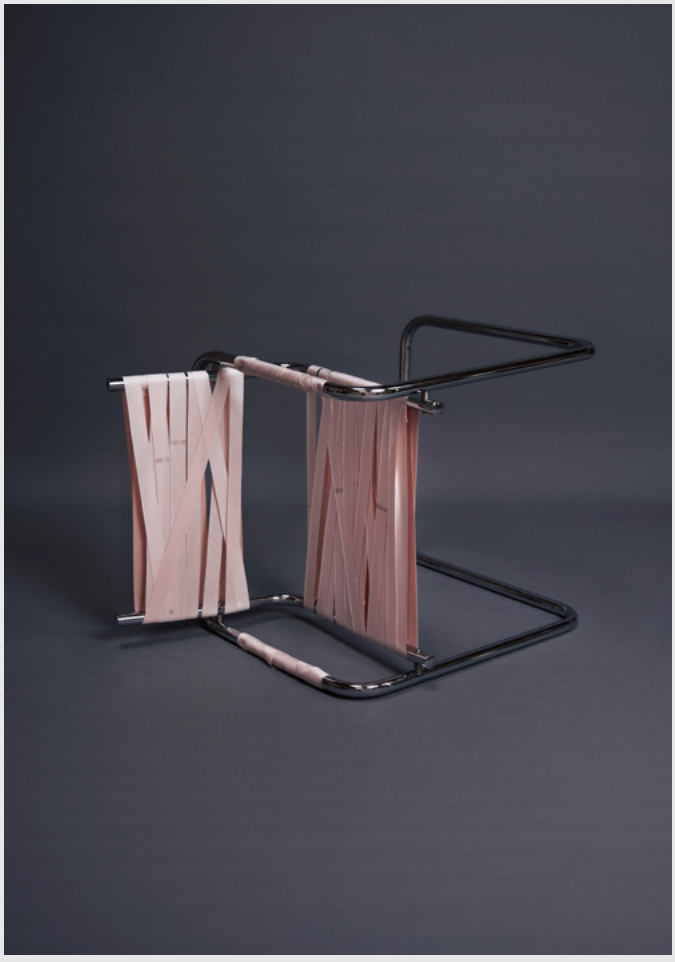

E

B
Cargo pants made
of airbag fabric with
waterproof pockets.

C
Transportable raincape
made of waterproof airbag
fabric.

D
Waterproof rain vests
made of airbag fabric.
Once in colored version.

E
Re-interpretation of
'Marcel Breuer Chair' with
seat made of airbag fabric.

A few years ago, we started noticing that our Innovation Design Engineering postgraduate students were becoming increasingly risk-averse. The pressure of increasing fees and having to maintain good average grades for scholarships alongside disciplinary norms to avoid risk and keep to tried and tested formulae was having an impact. To address this, we decided to run a failure project where students would be graded in terms of their ability to fail, the better the failure the better the grade (Hall et al, 2016). At the heart of this was an effort to train failure resilience and to make failure a natural and desired part of the innovation process. Something that indicates work that is finding the cutting edge rather than avoiding getting it wrong. In education we should always reward brave failures rather than modest successes as that is what is at heart of great design led innovations. Edison said 'I have never failed, I found 10.000 ways that didn't work' and this captures the central place of finding edges in successful design, whether the edge is technology performance, public acceptance, economic or sustainable.

A large proportion of the global population live it cities with millions of people and hundreds of millions of products. Many of these products are directly related to our own safety and wellbeing yet we have few if any education programme dedicated to designing for safety. Why is this? We know that engineering considers safety factors and has effective practices for safety yet design is also a safety critical activity and cannot solely rely on engineering for safety. This is especially true as we move into more experiential types of design and start to design with increasingly complex systems including AI that go beyond human comprehension. We need to begin thinking about new ethical and safer relationships with this technology.

At the heart of this is designing resilience, the capability of flexing to cope with expected and unexpected future changes. A big part of this involves designing safer failure spaces and understanding more about how we educate designers to develop better methods for sophisticated ecosystem-smart solutions to wicked problems.

Across design education we need more than ever to rebalance the society-technology gap through a better understanding of the relationship between designing safety and failure to build resilience against an increasing set of survival challenges for ourselves and our ecosystem. On our design products MA programme, we are looking at a new educational ethos to support designing for dematerialisation, subtraction, circularity, decolonisation, delimiting products and multi-species design to start asking the serious questions that will drive future design practice over the next decades and support the education of this new generation of designers. We know what we need to do to improve the future of design education, it's a new model for design.

Prof. Ashley Hall
Prof. Ashley Hall PhD, RCA London, UK
Ashley is Professor of Design Innovation in the School of Design at the Royal College of Art in London. With a MA from the RCA and PhD from the University of Technology in Sydney he has a background in design practice, teaching and research. Hall leads post-graduate research for the School of Design and the MRes in Healthcare Design. Ashley researches in innovation methods, design thinking, design for safety, experimental design, design pedagogy, globalisation design and cultural transfer.

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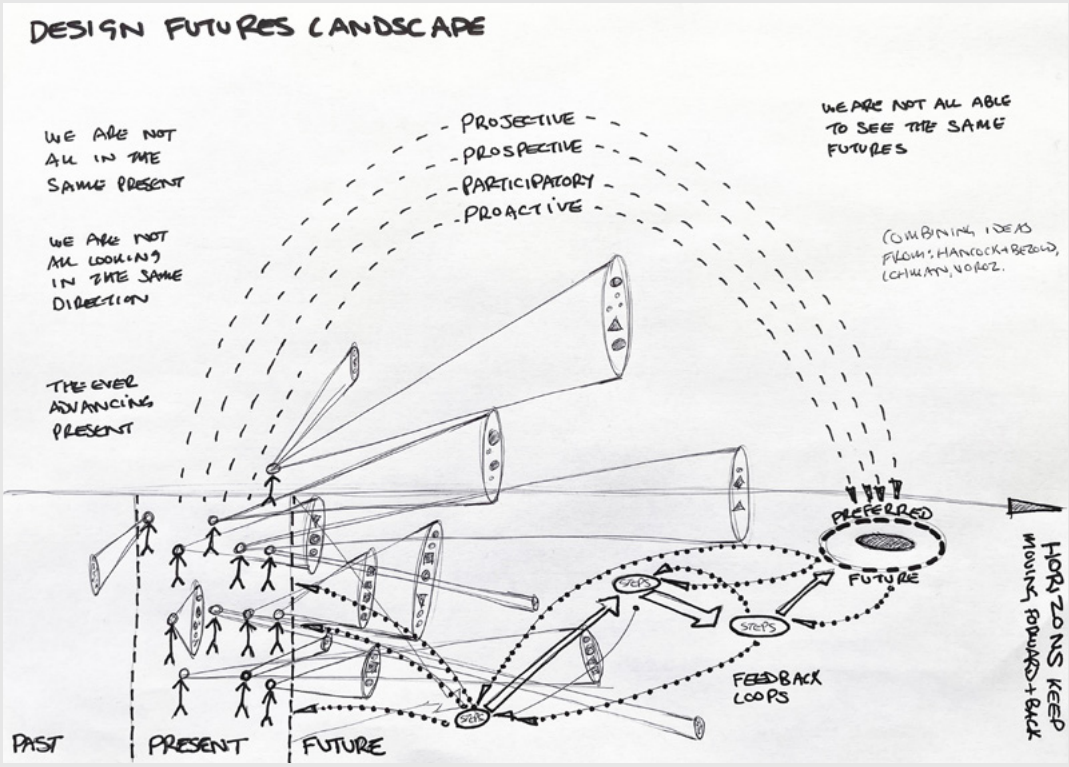
A
Design Futures Landscape, Ashley Hall, 2021.

B
Graphic Design Futures Methods Landscape, Ashley Hall, 2021.



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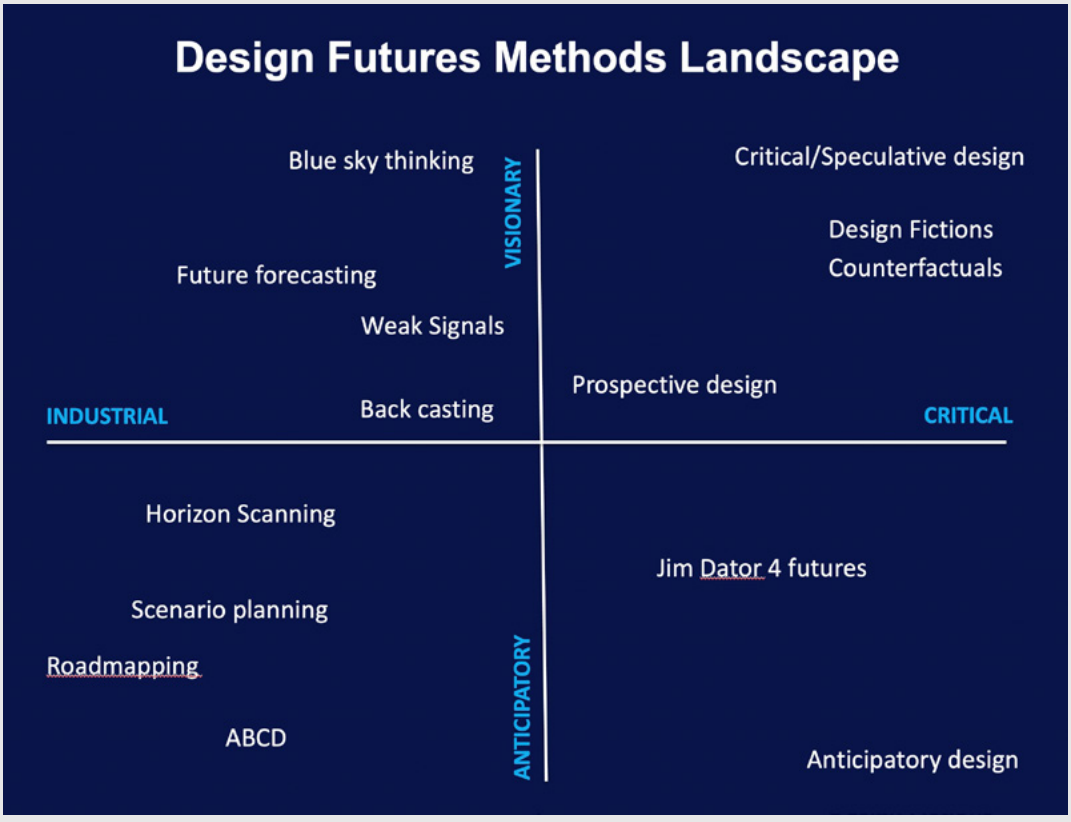

B

Theresa Scholl

A

‘as a designer you don’t define yourself with the tools you use, you rather define yourself through your own thoughts, ideas and visions. The future in design is not the amount of digital services, advanced technologies or innovative materials, the future in design is the vision YOU have in mind and share with others of how the world would look like tomorrow’

Studying design engineering at a German University means being in a very forward-thinking space. University is heaven for a designer. Everyone is open-minded for innovation and thinking out of the box. Students have the opportunity and are even encouraged to work interdisciplinary. One can explore new materials, try various production methods and always has access to the newest software. Working close to research means being in touch with future scenarios and creating products, services and interfaces which aim to solve tomorrow's problems and needs.

Leaving university and this bubble where production cost, sales figures and legal requirements didn't really count that much and starting the first job in industry, the world suddenly looked quite different. Working in a modern start-up culture, for established brands or mega-companies, one doesn't have the excess to all technologies or the possibilities one had at university. But no need to worry – as a designer you don't define yourself with the tools you use, you rather define yourself through your own thoughts, ideas and visions. And while maybe having lost some tools, modern methods or technologies, the learning from university last for a lifetime. These learning combined with keeping the fearless student's mind of not knowing but trying everything will help you to be successful in your job.

Thus, while entering the industry as a young design talent, you still want to keep up the willingness to learn new things. It is worth and important to respect the corporate culture and understand well-established techniques but at the same time always challenge the traditional thinking. Companies will win by complementing existing and established knowledge with fresh perspectives of young design talents. Especially in the field of product development, it is key to combine the deep understanding of experienced (but sometimes entrenched) colleagues with the fresh (and maybe naïve) view of the newbies to create visionary products.

The future in design is not the amount of digital services, advanced technologies or innovative materials, the future in design is the vision YOU have in mind and share with others of how the world would look like tomorrow.

A
Three generations of industrial designer and design engineers, collaborating and designing with textile and light for a sensible usage with ressources; from left to right: Ulrike Brandi, Theresa Scholl, Marina-Elena Wachs, pic: M.-E. Wachs, 2018.

Theresa Scholl
Color & Trim Designer Volkswagen Nutzfahrzeuge, Theresa Scholl is a bespoken tailor and textile designer with a Masters degree from Hochschule Niederrhein. During her studies she created new textile materials such as smart textiles, textiles for lighting design and paper textiles. Additionally, she focused on the design theoretical investigation of textiles in architecture. After having had some touch points with the fashion industry, interior design and lighting design, she is currently working as a Colour & Trim designer in the automotive sector.

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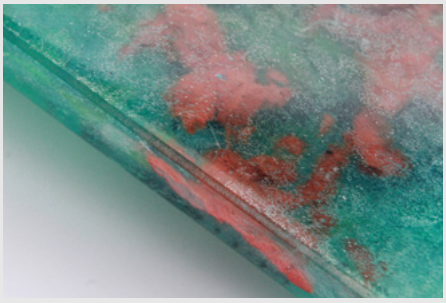
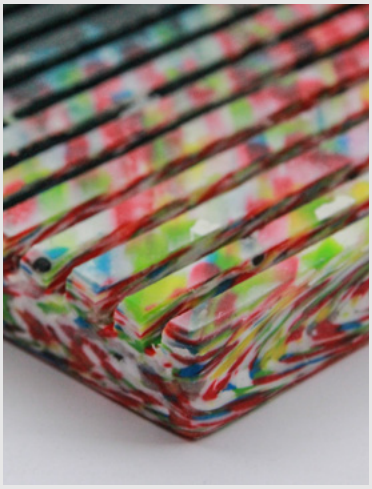
Louis Reigniez

A

‘... our eco-systems are infected with micro-plastics! – we need to act.’





We live in a world where today's decisions will have an important impact on a fruitful and clean future. The world's environments are changing fast and in unpredictable ways, the chances of us having a stable climate are slim if the right decisions are not made in the foreseeable future. Our eco-systems are suffering from the pollution of our daily consumption. Today, we dump more than 15 tonnes of plastic waste into the oceans every minute. In 2030, that number will go up ten fold. Most plastics don't float and what we see on beaches is just the tip of the iceberg, our eco-systems are infected with micro-plastics. We have no idea yet what the impacts of these plastics are on our ecosystems. We must find a way to turn off the plastic waste tap, a short term solution to a long term problem. Our solution is definitely not the best one for the future but it's one that will have an impact on the problem today and tomorrow this type of solution will develop into something more harmonious with nature's needs. The ideal solution is not to throw away plastics and develop a circular economy, but the problem of plastics is happening today and we need to act.

We manufacture a material made up of plastics that are not well recycled and are often buried, incinerated or exported to third world countries. These plastics have incredible and distinctive mechanical properties that can be useful in many sectors, these should not have just one lifecycle. Our transformation process is fairly straight forward, we identify, we clean and heat plastic into different sheet sizes to then be used for all sorts of purposes, such as furniture design, interior design, product design etc. These sheets can be mass produced and can have a real impact on the plastic waste problem.

We have to make a material that is not only easy to use, but also attractive. We want to make sustainable products look sexy, otherwise people won't be inclined to use this type of material.

Here are some of the colors that we are testing made from plastic packaging found in restaurants. This plastic has amazing properties because it is very easy to work with, does not break when subjected to extreme torsion and has a marble like texture.

Louis Reigniez

I'm Louis Reigniez, the founder of Ocean One. I'm 28 years old and I live in the South West of France in a coastal town near Bordeaux. I have studied and worked in the Banking industry for 7 years in the U.K. and I couldn't just watch the oceans being rekt. So I decided to make my way to the center of the environmental stage, I want to be part of the people who fight for our future.

Reference

Louis Reigniez, No 82, page 36 ff:
http://www.ville-lege-capferret.fr/wp-content/uploads/2021/07/LCF-Presquile-82_WEB.pdf
http://www.ville-lege-capferret.fr/actualites-et-agenda/publications/

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A
Rawmaterial of recycled ocean plastic for new products for the bathroom (soap dish) and plate as cape lifter, design and construction by Louis Reigniez.
Pic: M.-E. Wachs, 2021

The book 'Design Engineering – sustainable and holistic' describes the potential of both, design objects and concepts, and design as a process – with a particularly strong focus on the process of design engineering. To that extent it also draws attention to several terms that need to be re-evaluated: from design, design engineering, design shift, material-design, design methods (e.g., Materializing immateriality), all the way to terms like 'industry' for the post-digital era, which will be questioned and discussed in depth.

Hereby, the book claims its position by referring to historic and current design parameters in industry in relation to certain training methods. It compares these within Europe, explicitly the perspective taken by Germany, Great Britain and Scandinavia – and highlights best-practice examples. The range of design disciplines, especially an in-depth look at classic product and textile design, leads to new 'blueprint' possibilities and interactive design methods in the future. Today, textile engineering is as important to automobile design, as it is to medically relevant design. The holistic view (and education) will last important for designing the future.

The needs of the future will be identified by taking an interdisciplinary cross-cultural perspective: Precise examples of this are the design engineering requirements in the post-digitalization era, which focus on a range of topics: from sustainability, and material design, up to female empowerment and non-hierarchical learning landscapes for everyone, to sustainable architecture and to synaesthetic creating with music for example. International experts, in addition, showcasing the future with strong statements, underlined by images and tables.

The book's target audience manifests itself from this vantage point: whether it be talents, experts, or design 'drivers', who have a background in design management, architecture, or business ownership, or teaching at a university, college, high school through pre-school. Even representatives from scientific or political institutions may gain meaningful insides. The book asks its readers to recognise and utilise our human capital and cultural education, for the benefit of Europe's economy and society. In addition, it illustrates how cultural knowledge is one of society's most valuable assets for completely re-inventing knowledge management, and the use of enhanced knowledge banks and archives.

'Design engineering – sustainable and holistic' appears in English and – featuring full-colour images and graphics and high-quality printing – it shows the potential of society, cross-cultural knowledge and experiences, in ethics and engineering. This applies to European countries, as well as those beyond European borders, e.g. by adding extraordinary statements by experts, creators of the future. It aims to strengthen the European consciousness and understanding of design and design engineering processes – as well about 'textile engineering' – that will contribute to a sustainable and motivating economy. Let's stay curious! in designing, sketching future together: sustainable and holistic.

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