



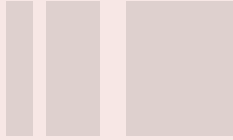
# DESIGN GUIDEBOOK

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**SAHT9143 Design History and Theory 1**



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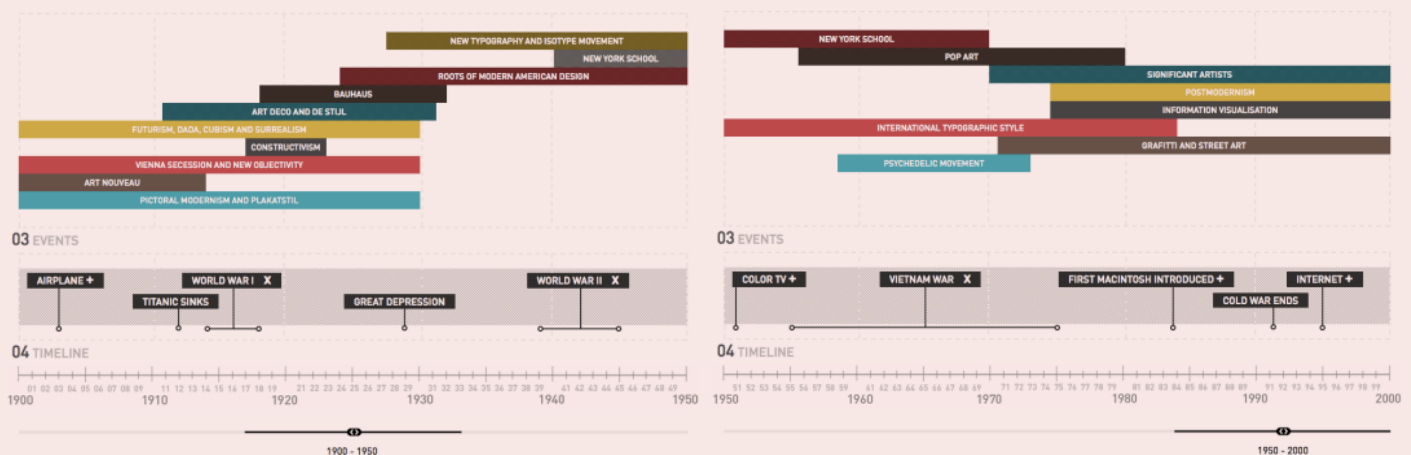


# INTRODUCTION: DESIGN GUIDEBOOK

**'Design' is a  
framework  
to define problems  
and to provide  
solutions  
iteratively.**

History of design interacts with scientific developments, human psychology and sociology. This guidebook will look at different aspects of 'design', beyond its common definition as a 'process'.

My approach is to understand the evolution of 'design' as a living thing, which can provide sustainable solutions to 'future' problems. The 'framework' definition of design also evolves with the increasing amount of interactions of humans with artifacts. This increase of artifacts, and our interactions with them, puts 'design' at the heart of solving social and physical problems, providing more 'inclusive' and 'accessible' solutions.



**Image 1** Graphic Design Timeline, Jan Rosicky, © <http://gdh.2rsolutions.cz>, 2011

# 1. MATERIALS

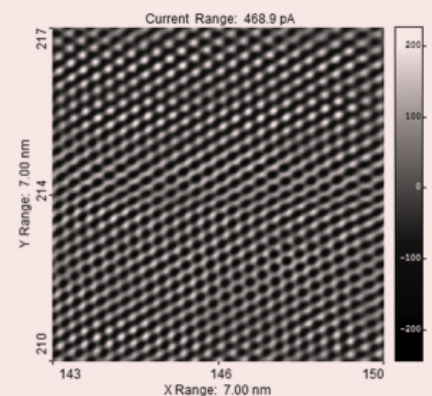
Social changes and technological discoveries have been forcing designers to use the most ‘meaningful’ qualities of materials for their products. Before the industrial revolution, the approach has been ‘understanding the properties and limitations of a material’ as found in nature, and eventually tailoring its properties.

The ‘materials science’ era took its initial steps with the discovery of ceramics. With the industrial revolution, manufacturing techniques started to define the requirements of the materials. The age of polymers started after the WWII, where materials themselves started to become the designed-products for larger scales of applications.

In the nano-age, qualities of materials are re-defined with new assembly techniques at nano-scale (e.g. conductivity of copper nano-wire). Graphene is an exciting form of carbon, arranged as a sheet of combs (high in strength, energy absorbance, transparency, elasticity and thermal conductivity).

**“For a successful technology, reality must take precedence over public relations, for nature cannot be fooled.”**

**R. Feynman**



**Image 2** Atomic resolution image of graphene, © National Physical Laboratory (UK), 2018

**Image 3** Vollebak’s jacket made using graphene as raw-material is a different raioncoat. It acts as a radiator, storing heat coming from outside, allows air-flow for evaporating sweat and water-resistant and repels bacteria. © Vollebak, 2018





## 2. ARTS & CRAFTS: DESIGNER MAKER PRACTICE

The industrial revolution changed the social-perception, material-qualities and life-cycle of products. The quality and 'value' of an industrial product lacked the qualities of a hand-made artifact. Arts & crafts movement has emerged as a reaction to these differences, considering the effects of the industry on the worker. Paul Ruskin's social criticism, focusing on the detrimental effects of the machine on the worker has inspired William Morris, who later became another pioneer of the movement.

William Morris had a holistic approach to design and hand-production. He focused on furniture design, utilising patterns that celebrate natural life. His success still inspires many descendant 'designer-makers' even in the digital age, against endless re-production possibilities.



**Image 4** Honeysuckle furnishing fabric, design: William Morris for Morris & Co., production: Sir Thomas and Arthur Wardle Ltd., 1876, England. Museum no. CIRC. 491-1965. © Victoria and Albert Museum, London



**Image 5** Strawberry Thief, furnishing fabric, designed by William Morris, made by Morris & Co., 1883, England. Museum no. T.586-1919. © Victoria and Albert Museum, London

# 3. DESIGN INSTITUTIONS

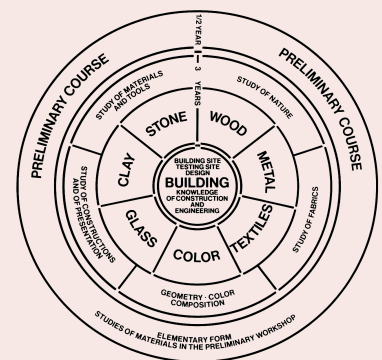
**“The mind is  
like an umbrella  
- it functions best  
when open.”**

**W. Gropius**

The revival of craftsmanship with Morris and Ruskin, aimed to improve the lives of designers and society, has been an inspiration to many design institutions. In contrast, Deutscher Werkbund had a new approach to products with high quality, genuine materials, but utilising the machines as a ‘tool’ of the designer. It had a large influence on architecture and design, through many exhibitions.

Walter Gropius, an architect from the Werkbund, established the design school Bauhaus, in Weimar. Bauhaus had a unique approach to design education, putting function over form, simplicity at heart, breaking the rules and mental barriers.

The school changed the approach to design globally, mostly in the USA, where many lecturers and artists moved to, after Bauhaus was closed in 1933 by the Nazis.



**Image 6** Diagram of the curriculum at the Bauhaus (trans.), design: Walter Gropius, 1923. Bauhaus-Archiv Berlin / © VG Bild-Kunst Bonn, 2016

**Image 7** Tea Infuser (MT 49), author: Marianne Brandt / photo: Lucia Moholy, 1924. Bauhaus-Archiv Berlin / © VG Bild-Kunst, Bonn 2016





# 4. DESIGN METHODS AND INNOVATIONS

Centuries of experience gained by the designers, have formed conventional design methodologies, approaches for various environments and needs. ‘Design thinking’ is an umbrella-term for the innovative problem solving methodologies including phases of research, ideation, prototyping, testing and implementation. ‘Participatory design’ approach of Buckminster Fuller, based on scientific and technology, creates a co-designer team of different professions.

Alternatively, user-centred design aimed to put the ‘user experience’ at the core of design process from the problem definition phase until repetitive testing. Service design methodology involves the multi-disciplinary approach with the business ‘value’ to enhance ‘user journey’.

**“We are called to be architects of the future, not its victims.”**

**B. Fuller**



**Image 8** IKEA’s giant retail-store maze and simpler web-experience are two different examples of service design of the same product. ‘Dark-patterns’ induce unplanned consumption. Store Map (Frisco, TX) © IKEA, 2018

Meta-design and human-centred design methodologies differentiate from the mentioned systems with their social-system approaches. Meta-design methodology has a holistic and social approach to empower people as part of the solution. Similarly, human-centred methodology focuses on ‘accessibility’ and ‘inclusion’ to have a better understanding of social-systems, aiming development.



**Image 9** ‘Empathy maps’ are important for ‘user centred’ design processes. They help defining problems of personas for an inclusive and accessible product. © IBM Design, 2018

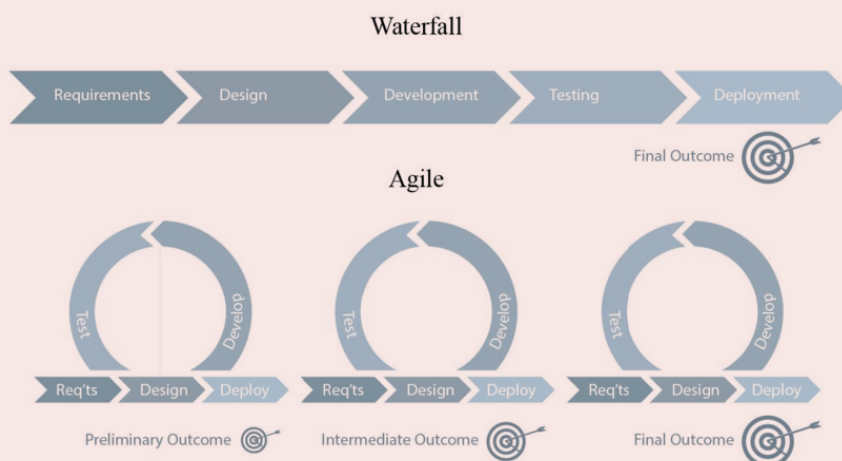
# 5. DESIGN MANAGEMENT

Design management, is the organisational aspect of ‘design’, putting design at the heart of the future of a business. Making a desirable, viable and feasible product, in the age of mass-production, require design-focused strategy and management for organisations.

One of the most important post-modern paradigms of the design management, is the design of digital transformation of current systems. An established design management strategy helps differentiating from the assembly-line type of software-development, to avoid becoming a feature-factory. An innovative design strategy should also reduce the detrimental effects of tight-deadlines and repetitive tasks on software teams.

**“We can’t solve problems by using the same kind of thinking we used when we created them.”**

**A. Einstein**



**Image 10** ‘Agile’ project management vs. ‘Waterfall’, Blackwell, Jonathan, Applied Visual Metaphors in Organizational Management, 2018

‘Agile’ methodology is not only quick, but also user-centred and flexible.

The users are involved in the process, giving direction to the iterative improvement, requiring lower cost and shorter time. In contrast, waterfall methodology is suitable for projects with well-defined requirements, when customer feedback is less important than measuring the progress.

# 6. BIOMIMICRY

Biomimicry is the approach of imitating natural structures and systems to solve complex scientific and design problems. Mimicking of aerodynamics of birds, self-cleaning surface design inspired by lotus flower are common examples. Natural occurrence is more than a 'proof of concept' for innovators, but also paving the way to a sustainable alternate of the current practice.

**“Those who are inspired by a model other than nature, a mistress above all masters, are laboring in vain.” L. da Vinci**



**Image 12** Leyla Yunis' Research Pavilion, Uni Stuttgart  
© ICD-ITKE, 2017

Carbon-fibre woven research pavilion in the University of Stuttgart, is inspired by the shell structure of 'potato beetle'. The concept of ICD/ITKE Research Pavillion 2013-14 is designed by Leyla Kyjanek Yunis and the production was based on generative design based on a natural model, while manufacturing was completed by a system consisting of robotic arms.



**Image 11** The lighting watercress  
© MIT Nanobionics group, 2018

MIT Nanobionics group is researching about how plants can replace current technological devices we use. The watercress engineered by the same group, can become the future book-light, that already glows for 4 hours. It is a sustainable alternative to current light-bulbs that have a 'designed' lifetime.



# 7. DESIGN AND CONSUMERISM

Consumerism is designing a 'virtual need' for becoming a better version, through advertisement of commercially available products. Industrial revolution has created a big shift on product life-cycles, as well as re-defining jobs, and life-styles. This social paradigm-shift resulted with producing and consuming in larger quantities, requiring workforce becoming a part of the assembly-line.

The challenges of society as 'consumers', are beyond being part of the assembly-line: continuous discontent of the 'self' through advertisements, dead-end of environment, increased social-gap and debt. The digital revolution of the industry, adds a new layer on the phenomenon, requiring more sustainable, transparent and sustainable solutions.

Martin Parr is known for his contemporary work, criticising 'consumerism' culture globally. His work focuses on the detrimental effects on the 'first world', instead of the common narrative - displaying the environmental effects on the third world. Souvenirs, tourism, national identity-related products are common artifacts in his photographic work.



**Image 12** 'Hybris Series' highlights the over-production causing supermarket waste, by taxidermy applied fruits.  
© Monica Piloni, 2013

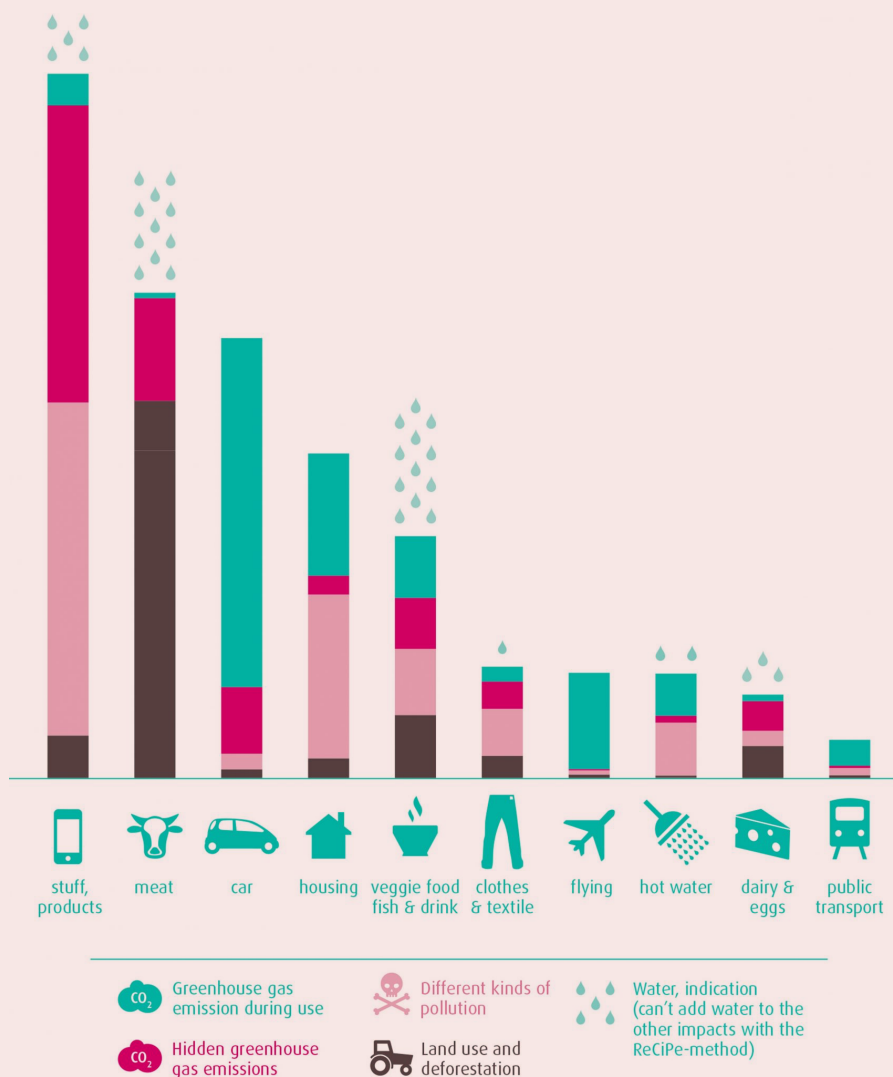


**Image 13** 'Common Sense, Germany', Martin Parr,  
© Magnum Photos, 1997

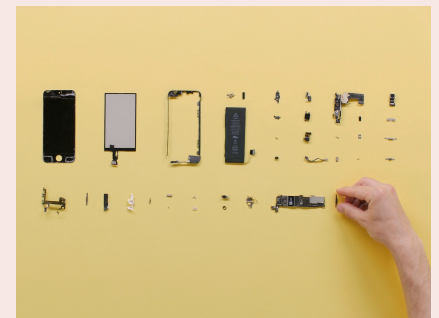
# 8. SUSTAINABILITY

Sustainability is maintaining the balance of nature at the realm of current development paradigm. The maintenance of 'balance' refers to environmental, social and economic aspects of sustainability. Thus, sustainable design requires a better understanding and new approaches within these systems.

Life-cycle management, energy and resource management, reuse, recycling and environmental impact management are core principles of sustainable design.



**“Ending is better than mending.”**  
**A. Huxley,**  
**‘Brave New World’**



**Image 14** Studio Formafantasma’s ‘Ore Streams’ questions innovation from sustainability point of view. Hard to dismantle technological tools are also hard to recycle. ‘Taxonomy of a phone’ is a part of the video installation, that is presented at NGV Triennial. © Formafantasma, NGV Australia, Melbourne, 2017

**Image 15** The biggest human impact on the planet: ‘the manufacture of new products’, Babette Porcelijn, The Hidden Impact, Publishing House Q, 2017

# 9. DESIGN FUTURES

**“People can foresee the future only when it coincides with their own wishes, and the most grossly obvious facts can be ignored when they are unwelcome.” G. Orwell**

Future studies are concerned by social, technological and environmental paradigms of the possible future. Design futures (future studies in design) is re-thinking how cities, systems and daily life of humans will require, considering the environmental and social changes. Predicted extreme climate conditions, food-scarcity are vital problems requiring re-designing not only the life-cycle of products, but also finding sustainable alternatives to current practices. Clean energy, new transportation and ‘future foods’ are important themes of design futures.



**Image 16** Julia Schwarz suggests lichen as an alternate food for after the environmental post-apocalypse. Schwarz has provided a variety of lichen-based edible food-products. J. Schwarz, *Unseen Edible*, 2018

Insects are largely abundant, as a future-food candidate with the ability to easily breed, rich protein content and low CO<sub>2</sub> emission in comparison to current meat consumption.

**Image 17** Katharina Unger’s answer to the food-paradigm of the future is the table-top insect farm. Soldier fly larvae are introduced to the chamber where they can replicate to provide protein-rich food in the kitchen.

Katharina Unger, 2013

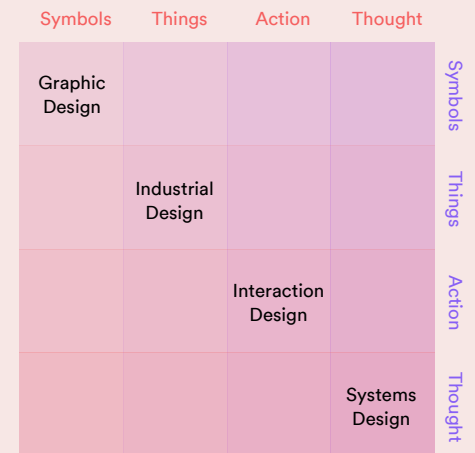




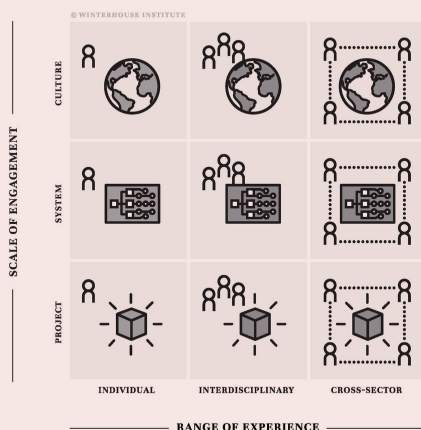
# 10. SOCIAL MACHINES FOR LIVING

As the scale of systems develop, their complexion and interdependency increase, as well as the definition of problems requiring more professions being involved in the solution. Complex problems without a singular and 'defined' solution, requiring counter-disciplinary solution ground, are called "wicked problems".

There are diverse approaches to solve 'wicked' problems, including a range of engagement and expertise. Richard Buchanan explains this phenomenon with four orders of design - as the problem scale grows, symbolic solutions evolve from 'graphic' to 'systems design'.



**Image 18** Four Orders of Design, Richard Buchanan, Design Issues: Volume 17, Number 4 Autumn 2001

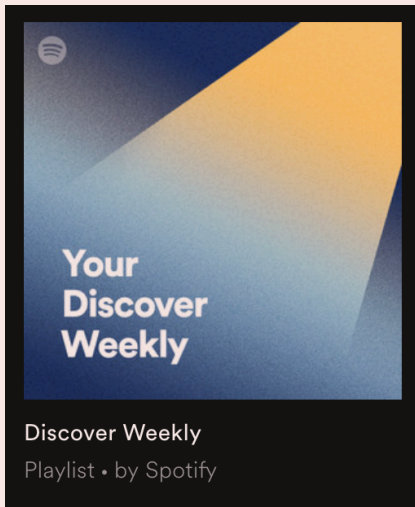


**Image 19** Social Design Pathways has taken shape with the collaboration of nearly 20 social designers, at the Winterhouse Symposium in 2013. The pathway aims to provide a framework to provide a solution-grid depending on team abilities and solution-scale to wicked problems. Winterhouse Institute, 2013

**“Eventually everything connects - people, ideas, objects... the quality of the connections is the key to quality per se.”**  
**C. Eames**

Since there is not a single-path to solve 'wicked problems', social designers have been working to develop frameworks to help individuals or teams (interdisciplinary or cross-sector). Social Design Pathways provides a range of solutions with various possibilities of engagement and team-size. Mapping out the problems and discussing different range of solutions at multiple levels, help providing multiple solutions from a singular-design to a large scaled one (socio-cultural change). 'Childhood obesity' was addressed at the 2013 Winterhouse Symposium. The individual-project was re-designing the school garden, where the largest (cultural cross-sector) solution has been the reform of the national school lunch program.

# 11. PERSONALISING DESIGN

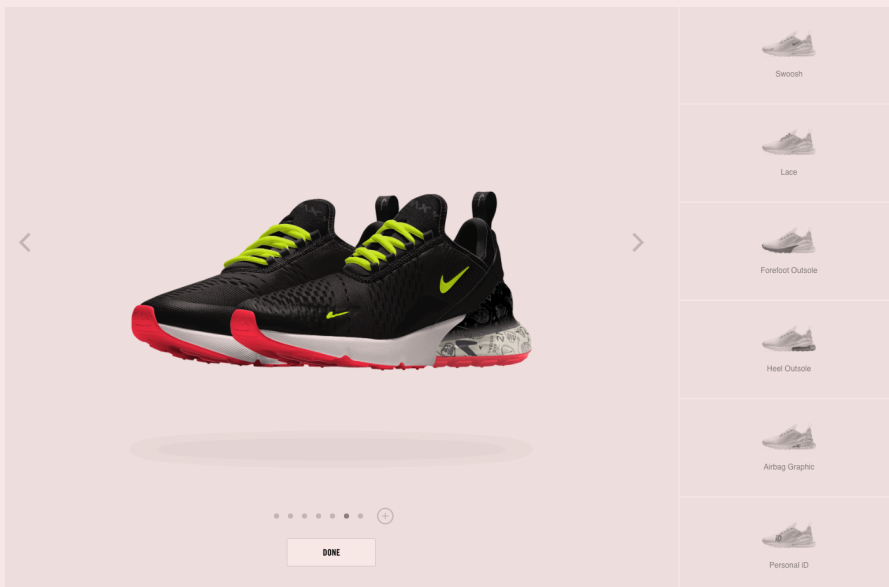


**Image 18** Software generated content, such as software-curated playlists, based on data-tracking are examples of personalisation in the digital age. Spotify, 2018

Personalised design is a 'systems design' where the product iterates itself according to the user. The concept of 'personalisation' is connected to the individualism in post-modern age where the world has almost become a global village.

Personalisation is focused on 'individuality' of the user during its life-cycle, rather than approaching users as members of socio-cultural groups.

Internet has been a driving force of personalised design, where computers have become personal communication devices instead of advanced calculators. Thus, early Apple computers in different colours, providing personalised user experience are early examples of personalising design in the internet age.



**Image 18** Nike iD is a popular example of personalised design, where users have the ability to add a personal tag, and design the colour of their unique pair of shoes.

Even though personalisation is perceived as a 'marketing tool', digital products such as music players (e.g. Spotify's generated lists) or search engines (e.g. Google's auto-complete) are highly-personalised products. The lack of 'artifice' in the digital age of infinite-reproduction, will increase the amount of personalised products, such as personalised assistants.

# 12. SUGGESTIVE READING

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