

HOW DID WE END UP HERE? MAKING DESIGN HISTORY RELEVANT FOR FUTURE INDUSTRIAL DESIGN ENGINEERS

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ABSTRACT

In the wake of the design thinking hype, the design discipline has expanded far beyond the boundaries of the physical product. Systemic design, public design, responsible design and more-than-human design -to name a few- are shifting design practice towards the intangible, the relational and the pluriversal. Although knowledge of the history of the design discipline can still be seen as foundational for the development of future design practitioners, the traditional focus on individual product designs and their individual (male) designers along the chasm of modernism-postmodernism, no longer seems to fit. In this paper I propose an alternative approach in teaching first year industrial design engineering students about design history, reframing design history education as a tool for disciplinary sense-making. Rather than following a canonical chronology, historical content is organised around themes relevant to contemporary Industrial Design Engineering practice, helping first-year students understand why the various topics of their programme matter. The approach thus aims at providing historically informed answers on contemporary design topics, in order to equip the students with a clear starting point for their task of shaping a desirable future.

Keywords: Design history, design education history, interaction design, human-technology relations, design culture

1 INTRODUCTION

Design history education has been approached from different perspectives. Each perspective resulting in a different view on design history and subsequently also with different outcomes and contributions to design education and design practice. For design history education at the Industrial Design Engineering schools in the Netherlands, the perspectives that have been used can be characterised by the keywords ‘historic’, ‘cultural’, and ‘methodical’ [1]. These approaches are mainly focussing on using the knowledge of design history for inspiration in contemporary design. When our programme management asked to incorporate design history as a subject in the very first module of the new Industrial Design Engineering (IDE) bachelor curriculum of the University of Twente, I took the chance to develop a new reason for teaching design histories; making sense of the discipline. Now that in the wake of the Design Thinking hype the discipline has broadened extensively [2,3], it can be hard for freshmen to understand what type of professional they will develop themselves towards. Especially with all the new topics that came with this shift from merely designing products to designing for transitions in a systemic way [4]. In this paper I will elaborate on how I used design histories to let the students make sense of their future discipline. The paper will start by discussing the theoretical backgrounds for the decision to adopt this new approach. Then, from the selection of relevant course contents and presenting some examples from the lectures the paper will conclude with a discussion on the feedback from the students.

2 HISTORY OF DESIGN HISTORY EDUCATION

When I studied IDE at the Delft University of Technology myself, design history was taught like general history in a classical way. The history of design was approached as a history of events, leading to a timeline or a canon of important artefacts, designers, and design ideas. The courses were also delivered from textbooks [5,6] that presented the history of design in chronological order. In order to better understand the emergence of certain design movements and their ideas this approach was later complemented by the emphasis on the cultural component in the history of design. This approach [7–9]

regarded design (also) as a cultural and social phenomenon, leading to an understanding of designs, related to their historical context. To make design history knowledge even more operational for design practice, these approaches were supplemented by a methodical perspective, that I developed and taught for the IDE programme at the University of Twente from 2012 onwards. Design history is herein regarded as a source of inspiration for contemporary design practice from a method point of view. This perspective is characterised by an emphasis on the process of designing and the methods which designers (historically) applied [10,11]. Different design movements, groups, and individuals are herein compared and analysed. Key of this approach has been, that the comparisons were not based on a similar timeframe (as in the classical historic approach) or on a similar context (as in the cultural approach) but on a similar design problem [12]. In this way, knowledge of design history could have a more practical contribution to the development of future designers.

3 CONTEMPORARY DESIGN DISCIPLINE

Valtonen [13] has convincingly shown that the industrial design engineering profession has become more complex over the decades. Expanding the designing of merely aesthetic objects in the 1950ies with manufacturing processes in the 1960ies, ergonomics in the 1970ies, branding in the 1980ies, Experience design in the 1990ies and interaction design and innovation in the 2000s (Figure 1).



Figure 1. Simple schematic of the historical development of the IDE discipline; from things to interactions to (product-service) systems: the complexity increases

Along the way, the topics that the future designer-to-be has to learn also expanded with new engineering subjects as electronics and programming. However, also with the integration of other disciplines like psychology, sociology, anthropology and communication science. In contemporary design, the emphasis has also shifted from products and solutions, to design for behaviour change and addressing societal issues [4,14,15]. For freshman, it therefore can be hard to grasp what they actually started studying, why they have to learn all these topics, and how they should apply and integrate them. This is where I started to think that design history could serve as an applicable lens to exemplify these developments and showcase them in both an explicit and appealing way.

4 CONTEMPORARY DESIGN HISTORY EDUCATION

When design has become so broad in topics, design history can be used to show how all these topics became relevant and why the students should know about all of them. Historical precedents can also make clear that it is important to integrate all these topics in the design process. Showing the first prototype of the famous cantilever chair by Mart Stam from the modernist period can make clear why knowledge about production technologies is important. This prototype is namely built from loose tubes and appendages as Stam did not have the machinery to bend the tubular steel like he had envisioned. This can be then directly connected to the *Endless chair*, developed by Dirk van der Kooij in 2012. He printed this chair with a converted robot arm from plastic waste. From there one can explain about 3d-printing and rapid prototyping, recycling of materials, whether this type of recycling is sustainable, and

even about the material characteristics of thermoplastics that make this type of recycling possible (Figure 2).



Figure 2. from left to right: the prototype for the cantilever chair by Mart Stam (1926), the Endless chair by Dirk van der Kooij (2012) and Dirk van der Kooij with his robot, producing a chair live at the Dutch Design Week in Eindhoven

Another example is streamlining. Through the advancements in airplane and automotive technology in the 1930ies, the teardrop shape became a real design icon. As a metaphor for progress it remained popular to promote innovations like the Philips dry shaver, nicknamed “the Egg”. From there one can discuss about the relations between form giving, meaning, metaphors and marketing. However, one can also explain about wind tunnel testing, the characteristics of drag and the factors that determine C_w -values. This can then be directly linked to contemporary cycling technology, like the streamlined helmets that caused a stir in the media when they first appeared in the Giro d’Italia in 2024 (Figure 3).



Figure 3. from left to right: promotional graphic for Tatra passenger cars (1937), advertisement for a Philips dry shaver with streamline styling (1951), and a member of the Visma-Lease-a-bike professional cycling team during time trials in the 2024 Giro d’Italia

5 TOPICS AND IMPLEMENTATION

Design histories were implemented in the very first quartile of our new IDE curriculum. Based on the overall teaching approach of our programme [16] the course is part of an integrated full-time module of 15 European Credits with the theme ‘Ideation’. In this module the students do several short design projects -called sprints- accompanied by theory courses and skills courses [17]. In the end there are nine sessions of two lecture hours for the design history part of the module, finalised with a written exam. Total study load available for the subject is therefore one EC. As this is ample time to dive deeply in the rich history of the discipline, the course design had to be selective in what topics to cover. Because the idea of the Ideation module is to frame the students for their future discipline (and in that way also for the rest of their study programme) this selection should balance carefully between the different aspects of the programme. Most important in that is the balance between ‘design’ topics and ‘engineering’ topics, represented by the vision of the module to make the students ‘bi-lingual’ [17]. Basis of this dual language idea is that future designers have to become profound in the ‘language of engineering’ (= mathematic) and the ‘language of design’ (= the visual) to be able to communicate with all future

stakeholders and across disciplines [18,19]. For their own design practice they should also understand how to integrate these. In order to specify IDE further from design engineering as such, we adopted a categorisation of topics across three domains (Figure 4), where “industrial” represents things like ergonomics, human-centred design, marketing, and design management.



Figure 4. Visualisation of the design history-informed answer to the question “What is IDE?”, covering the three domains with historic examples; Industrial – Design – Engineering (adapted from Mulder-Nijkamp [20])

So ideally there should be engaging design examples with engineering aspects, like in the comparison of the chairs in Figure 2, as well as examples about industrial and designerly aspects like aesthetics and marketing. Then all these subjects should also come together, like for instance in the streamlining example from Figure 3. The final selection of topics for each of the nine sessions is listed in Table 1.

Table 1. List of Topics in order of appearance in the course

What is Industrial Design Engineering (IDE)?	From styling products to systems design
The role of Aesthetics in IDE	From Art Nouveau to Biomimicry
The history of IDE Education	From Bauhaus to becoming bi-lingual
The role of Technology in IDE history	From mechanics to electronics
The concept of Functionality in IDE	From utility to significance
The development of Interaction	From the tangible to the intangible
Philosophy of Technology and IDE	From Utopia/Dystopia to responsible design
IDE as an <i>engineering</i> discipline	From woodworking to 3d printing and AI
The future in the history of IDE	‘Making technology available for people’

In this paper there is however not enough space to illustrate all the topics. For reference, an example from session two about aesthetics is presented (Figure 5). The ultra-short timeline aims to illustrate how the diversity in the contemporary styling of artefacts is inspired by design movements from the past.

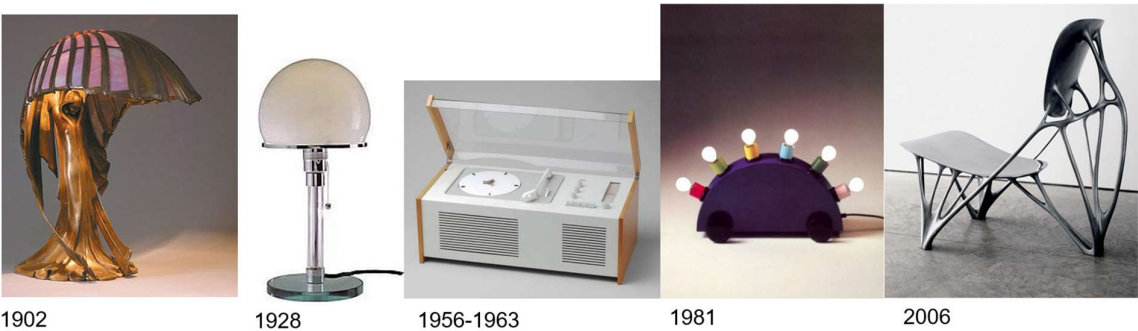


Figure 5. Example timeline for the topic “Aesthetics”: from nature inspired Art Nouveau (=figurative) to abstract functionalism (=geometric) and back (!)

6 EVALUATIONS

The course was relatively positive received. In the student evaluation 81% of the respondents reported that they were “satisfied with the overall experience” [21, p.16]. This was based on 52 students responding on a total of 168 participating in the course and a questionnaire with a 4-point scale from “strongly agree” to “strongly disagree”. Written feedback from the students also mentions “Historical examples and physical products presented in class helped make the material engaging and easier to remember.” [21, p.16]. Apparently, we also reached the goal of informing the students about the characteristics of the discipline. The report of the accreditation committee that visited our programme shortly after, mentions about the first module of the new curriculum that the students gained “a deep understanding of what designing entails”, and that it “helped lay the foundation for the rest of the modules” [22, p.8]. However, there was also critique. From the respondents, 45% disagreed on the statement “The instructor’s teaching methods for the Design Histories part were effective.” [21, p.15]. Although apparently, this did not refrain most of them from being satisfied with the overall experience of the course as mentioned earlier. Also, during a mid-term interview round the panel of students “felt that it might help to structure the lectures into more distinct time frames (e.g. 1900-1920 and 1920-1940 instead of 1900-2000 every lecture)” [23, p.1]. So, these students apparently were not yet convinced of the effectivity of the new teaching approach.

7 DISCUSSIONS

As said, only one EC to teach about design history is very little. However, with this new approach this short introduction can still be valuable as a foundation for connecting all the different topics within the remainder of the bachelor programme. By having concrete images of design examples that have linked together these topics in the past, the idea is that it will be easier to navigate the future complexities of the discipline. Whether this effect is really achieved will however only be visible when the first cohorts have finished their bachelor’s programme. The format of the exam with mostly multiple-choice questions did not so much allow to check whether the students indeed acquired this level of insight. Also, although the student evaluations showed a relatively positive image, they only represented a minority of the students participating. In the future it will be worthwhile to follow up on the development of the students, also because the selection of topics in the course could possibly be better aligned with the final result of the completed Bachelor curriculum redesign. Anyhow, to secure the link between design history education and contemporary design the list of topics should be closely monitored to keep it up to date with the prevailing topics in the current state of the discipline. Lastly, from the students’ remarks in the mid-term interview it can be concluded that some of them apparently had another idea by the subject name “design histories” and were possibly disappointed that they did not learn the history of design in a ‘proper’ way with a classical periodisation. However, to have such an overview in distinct timeframes of twenty years as mentioned is maybe easier for studying, it is also an oversimplification that is not really helpful in understanding the complexities of the present. Because, in the end it is about preparing our students to become competent industrial design engineers, not design historians.

8 CONCLUSIONS

In a diverse discipline like contemporary industrial design engineering, knowledge of the history of the discipline can provide stepping stones for positioning all the different topics of the programme. Instead of with a chronological overview, our bachelor curriculum started with presenting the history of design in close connection to these topics, which resulted in reported awareness of our students about their future as designers.

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