DESIGN STORIES

An insight into design history and contemporary practice from women's perspective







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An insight into design history and contemporary practice from women's perspective

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– 4 – INTRODUCTIONS

– 9 – DESIGN AS A STORY

– 11 – Women in Design History — Libby Sellers
– 17 – Women in Estonian Design from Past to Present — Triin Jerlei
– 23 – The Clothed Home: Seasonal Textiles in Domestic Interiors — Aleksandra Kędziorek
– 28 – Design and Identity: Creative Praxis as a Practice of the Self — Wiktoria Szawiel

– 35 – DESIGN AS A TOOL

– 37 – Socio-cultural Norms — Daria Wypiór
– 43 – Designing Quantum Experiences — Klementyna Jankiewicz
– 51 – NOfall: a Wearable Technology That Reduces the Risk of Dance Injuries — Sara Boś

– 57 – DESIGN AS A PRACTICE

– 59 – Illustrations from “Isolation” and “Why Do Kitchens Need Wheels?” — Anna Rosinke & Maciej Chmara
– 64 – Undefined Useful Objects — Kärt Ojavee
– 69 – Rethinking Ceramics — Raili Keiv

– 72 – SPEAKERS’ BIOGRAPHIES

The modern person spends most of their life in a designed world. Design is like the air we breathe – most of the time we don't think about it. And this is a good thing, when their design seamlessly enters reality, is perhaps the biggest success of a designer. However, individual people stand behind every design; with their own ideals, emotions, ambitions, their own characteristic taste, and often a distinct vision. Most of the time they exist in the shadow of their own projects, but sometimes they stand in the limelight, and this is when the character of the artist has a chance to manifest itself more wholely than is the case on a day to day basis. These days this happens during the many festivals, fairs, reviews, when catalogues are published, when interviews take place for topical magazines and sometimes even for popular ones, as well as when exhibitions take place in museums.

The musealization of design, which has become common in recent years, is one of the clearest proofs that we are becoming more and more appreciative of the meaning of design in our modern, contemporary life. This is connected, of course, with a certain risk – by moving the design practice to a museum it becomes all too easy to substitute the living tissues of everyday life with a product for show, which is severed from the matter of life, and this, I think, is deeply at odds with that which we hold most dear in design.

We hope that the publication we are offering to our readers will find it a fascinating weave of creation and practice, originality and normalcy, extraordinariness and everyday reality, an interlace which defines – and I will allow for my own opinion here – the essence of good design.

I am happy that the National Museum in Gdańsk was able to help with the creation of this interesting publication, which we will treat as the beginning of a long journey, during which our museum and design will from now on meet more often.

Jacek Friedrich
Director of the National Museum in Gdańsk

The *Design Stories* seminar is part of *Looking Through Objects,* a curatorial project that celebrates women's contribution to change in Poland, the Baltic region, and beyond. Women's role in design has changed over time from that of being muses and supporters to active protagonists, independent players, and thinkers. Over the last decade mindfulness and holistic thinking have become essential characteristics of design processes, more so than the spectacular, short-lasting showy qualities of design that we have seen in the past. Along with the *Design Stories* seminar, the project includes a touring exhibition featuring a selection of contemporary practitioners from Poland. The show's first stop is Tallinn (Estonia) at the Estonian Museum of Applied Arts and Design (17 June – 25 September 2022). In this iteration *Looking Through Objects* will feature 16 Polish and 16 Estonian designers in two sister exhibitions, which will give the audiences an opportunity to draw connections and spot differences between designers and researchers from these countries.

Within the broader context of the *Looking Through Objects* project the *Design Stories* seminar provides an interdisciplinary space where design researchers, historians, and practitioners can share their views and experiences on women's contribution to design. Intentionally, we wanted to position *Design Stories* at the junction of all the practices connected with design rather than make it solely academic. We feel that this approach is more in tune with the contemporary context of design, in which the fluidity of the practice is resisting the confined boundaries of given labels and titles. Due to this unique characteristic of design as a discipline, we find it more holistic and realistic to hear from historians, as well as acting designers directly involved in design through practice. We believe that this provides a range of voices and perspectives (observers, researchers, practitioners) that will help readers to draw their own conclusions on what design is today.

With this in mind we also wanted to gather subjective and objective perspectives from the participating speakers. These have informed the structure of the publication. In the section *Design as Tool* designers illustrate skills used to solve the issues they encountered along the way, and lastly in *Design as Practice* they reflect on their own experience. These provide an insight into their creative work and challenges and opportunities from their personal experience in the field. By contrast an objective perspective into design is provided by 4 researchers (writers, curators) in the section *Design as Story*. They provide an overview of the context within which practitioners operate. From their vantage point, we get a glimpse of the complexities and challenges of the contemporary design world.

This publication is reaching you at the start of the exhibition's journey, in Tallinn. Its next step will be Gdańsk in 2023. We are grateful to the National Museum in Gdańsk for their involvement in the realisation of this project. The seminar content can be experienced in digital and printed format and through the audio-video recording of the live-streamed seminar sessions (25–26 November 2021), which are free to access via YouTube and the SWPS University website. We feel that this publication is only the start of a longer journey. We are planning to use the format of the *Design Stories* seminar as a regular yearly appointment and as a platform via which to discuss design practice from the female perspective and with a special interest in female designers, their roles and attitudes.

Gian Luca Amadei, Agnieszka Jacobson-Cielecka



DESIGN AS A STORY





WOMEN IN DESIGN HISTORY

Libby Sellers

During the planning of the 1893 Chicago World Exposition, a committee of female activists championed for a pavilion of women's art and design, separate from that of the men. Their successful campaign, steered by businesswoman Bertha Honoré Palmer, sought to redress the lack of appreciation for work carried out by women.[1] More than 120 years later, women's contributions to design are still being singled out for discussion. Not for any abstract or aesthetic rationale, but because despite a century of progress the battle for equality is far from won.

Women are, and have always been, a significant part of the design profession – as practitioners, consumers, commentators and educators. Yet their names and stories are not as well-known as their male counterparts, nor are their achievements as laudably celebrated. And while female students have, in recent years, been in the majority at most international design schools, the most visible and commercially successful designers are still overwhelmingly male.[2]

Design is not unique in its gender bias, though this disparity is particularly at odds when dealing with an industry predicated on progressive and democratic ideals. However, as the concept of design matured in the 20th century it also inherited that era's prejudices and conventions. Just as it is impossible to discuss its history without engaging in binary notions of male and female, it is also impossible to ignore that design was historically, and to a large extent still remains, irrefutably patriarchal. The impact of this has been the marginalisation, disregard and suppression of women's significant contributions.

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1 Black, Hope L. *Mounted on a Pedestal: Bertha Honoré Palmer.* Master's Thesis. University of South Florida, 2007.

2 See www.kerningthegap.com/ as an example of reported statistics.

Like so many social injustices, the gender imbalance in the world of design can be squarely attributed to women's historical access to professional education. Prior to the late 19th century, women were prohibited from even studying design, let alone entering the profession. At the turn of the century, a rising number of inclusive programmes, established by educational institutions and public movements, such as the British Arts and Crafts Movement, the Deutsche Werkstätten Hellerau and the Bauhaus School of interwar Germany, actively encouraged women. Although, despite their stated goals of egalitarianism and equality, they failed to break with convention and, in effect, ended up reinforcing gender inequality.

With the promise of welcoming "any person of good repute, without regard to age or sex,"[3] female enrolments at the Bauhaus School outnumbered males 84 to 79 in its first year, which was 1919. As a result, like many of her peers Anni Albers (1899–1994) had high hopes for her Bauhaus experience. However, on arrival at the school she was directed towards the 'women's section' and compelled to study weaving. "Weaving?" she noted. "Weaving I thought was too sissy. [...] I went into weaving unenthusiastically, as merely the least objectionable choice."[4] Despite its progressive views, the school's founding director, Walter Gropius, had grown fearful of the impact so many women would have on the school's professional reputation. He limited female quotas and coerced the decreasing number to study the so-called 'feminine' decorative arts. Consequently, few of these amazing talents left the Bauhaus School with prospects that would equal or surpass those enjoyed by their male counterparts. The careers of Gropius, Wassily Kandinsky, László Moholy-Nagy and Ludwig Mies van der Rohe are revered, yet names like Benita Otte (textiles), Marguerite Friedlaender-Wildenhain (ceramics), or Alma Siedhoff-Buscher (toy design) have limited recognition.

Even when educational obstacles were overcome or women found alternative routes through, they were often denied the professional respect they had fought so hard to gain. In 1927, a young Charlotte Perriand (1903–1999) applied for work at the revered Parisian studio of architect Le Corbusier. The response she received was curt. Seeing little space for women within his plans to revolutionise the modern world, Corbusier sent Perriand packing with the now-famous quip; "We don't embroider cushions here." It is the kind of crippling, sexist slight many women suffered to the detriment of their professional capability and credibility. One month later, while at the annual exhibition Salon d'Automne, Le Corbusier found himself spellbound as he admired Perriand's anodized aluminium and leather-clad 'Bar Sous le Toit'. Her brazen and gifted vision caused a sensation and Corbusier hired her on the spot.

This systemic bias reveals itself not just in practice but also in the way design history has been documented. Written from a predominantly male and western perspective, early 20th century accounts restricted their definitions of design to either architecture or industrial production. Many creative skills were downgraded or completely disregarded by historians and academics, eager to emphasise modernism's love affair with machine manufacturing, functionality and technology. As Caroline Criado Perez notes in *Invisible Women*, design became "male by default."[5]

Ilonka Karasz (1896–1981) was one of the first women admitted to the Royal School of Arts and Crafts in her native Budapest, though her career truly began after she immigrated to New York City in 1913. While working as a graphic designer and illustrator for *New Yorker* magazine, between 1925–1973, she also designed dress fabrics, rugs, wall hangings and upholstery for automobile and aeroplane interiors. In addition to textiles, she designed silverware, ceramics, furniture and wallpaper. There was little to which she could not turn her gifted hand. Despite extensive acclaim during her life, Karasz and the breadth of her career are not as well known today as those of her more industrially focused female contemporaries, such as Perriand, Florence Knoll or Ray Eames.

It wasn't untill the 1980s that this bias began to be acknowledged when a wave of feminist design historians started asking "where did all the women go?"[6] It is a tribute to their efforts that so many once forgotten, ignored or undocumented names, have been restored to their rightful place, and that once devalued disciplines have been rewritten back into the canon. A feminist reevaluation of modernism not only repositioned these disciplines back into the canon of design history, but has also continued to discover many new names along the way.

An area that remains a constant battleground is the recognition of women in collaborative practices, especially with regard to ascribing credit within a husband-and-wife partnership. As the experiences of Aino Aalto (1894–1949) or Lella Vignelli (1934–2016) illustrate, eminent female designers are far too often denigrated as mere support systems for their talented husbands. Indeed for postmodern architect Denise Scott Brown (1931–), who's ca-

3 Gropius, Walter. *The administration of the Staatliche Bauhaus in Weimar*. 1919.

4 Albers, Anni. *Conversation between Gene Baro and Anni Albers*. The Brooklyn Museum, 1977.

5 Criado Perez, Caroline. *Invisible Women: Exposing Data Bias in a World Designed for Men*. Chatto & Windus, 2019.

6 Sellers, Libby. *Women Design*. Frances Lincoln, 2018, p. 8.

reer is inextricably linked to that of her late-husband, Robert Venturi, the battle continues.[7] Among the many pithy and finely tuned commentaries, her most poignant was *Room at the Top? Sexism and the Star System in Architecture*. The article is a detailed account of the many slights, misattributions, and discriminations Scott Brown suffered throughout her career as an architect, planner, teacher and theorist. It remains as provocative and valid today as when it was published in 1989.[8]

The history of the fight for women's rights is interwoven with the history of civil rights in general. In 1950s America, Norma Merrick Sklarek (1926–2012), the first black-American female architect, was restricted by the prejudices of her time due to concern that her skin colour would dissuade clients. Sixty years later black women make up less than 1% of all licensed architects in the United States – a disheartening statistic that is being addressed on a global scale by groundbreaking groups such as First500.[9]

The sweeping geopolitical changes of the last 100 years have impacted all areas of life, the design industry included. Lina Bo Bardi (1914–1992) was an Italian-born, Brazilian-based, architect who oversaw hundreds of projects, from grand scale buildings to furniture and set design. However, as Brazil fell into dictatorship in the 1960s, the great achievements of Bo Bardi (and her compatriots) were completely overlooked, and the international design community's focus shifted elsewhere. It wasn't until the 1990s, during a revival of interest in Brazil, that Bo Bardi's work finally found recognition outside her adopted country. As the gaze of the international design community continues to span horizons beyond western nations, and questions concerning the colonisation of design commentary come to the fore, other overlooked or underappreciated designers are receiving their due credit.

For some manufacturers, female designers were an asset to their companies. After the Second World War, women's increasing role as the decision makers for major purchases, such as kitchens, domestic goods and cars, was reinterpreted by marketing departments through their savvy promotion using slogans such as 'designed by women for women.' This was the case for the so-called 'Damsels of Design' – at General Motors in the late 1950s. Predominantly recruited from the industrial design department of the Brooklyn based Pratt Institute, their role in Detroit was to work on car interiors; dashboard, door and seat detailing, trim, colours and fabrics. Their innovations included retractable seat belts and childproof latches that could be controlled from the front seat – safety features which remain important today. For the most part they were able to shrug off the obvious obstacles by excelling at their jobs, yet the entrenched sexism of the car industry eventually won out and many of the team left General Motors.

Frustrations aside, these women brought liberal and humanitarian goals to the often profit-driven industries in which they worked. Their approach was symptomatic of a generation of industrial designers who utilised advanced materials and technologies to improve all aspects of our lives, particularly the domestic environment. Inspired by the way synthetic materials such as foam, plastic, and fibreglass could be formed and moulded into nearly any shape, designers and architects such as Danish-born Nana Ditzel (1923–2005) and Italians Anna Castelli Ferrieri (1918–2006) and Cini Boeri (1924–) ushered in a new era of pragmatic, everyday design for the post-war market. By focusing on the end user, these designers initiated a seismic shift away from the monocultures established in the earlier part of the century. Instead of designing for industry they were designing for people.

Today, the mantle for human-centred design has been taken on by designers such as Hella Jongerius (1963–) and Patricia Urquiola (1961–). While they are amongst a minority of contemporary women to have reached the pinnacle of industrial design, by seeking alternatives to the systems of production and distribution, inherited from the industrial era, they have proven that the possibilities for change, growth, and expansion are increasingly optimistic. And by taking a more holistic approach to products and their manufacture, one that draws on experience from social sciences, including ethnography, economics, and environmental studies, they have opened the field of design to new opportunities, as well as to a rich variety of participants and collaborators.

Historically women have always thrived in new territories where there are no male custodians, and where they are free to invent their own ways of working. Design's expansion into new areas, in response to advances in science, technology, and social and economic changes, has positively benefited women and is, to a great extent, being driven by them. Muriel Cooper (1925–1994) set an early example in the 1970s with her pioneering work in digital interface and new media design. Meanwhile, Neri Oxmam (1976–), heir to Cooper's great legacy, is spearheading ground-breaking research into future manufacturing technologies and materials, through the Mediated Matter Group at the Massachusetts Institute of Technology (MIT).

7 For information about Scott Brown's demand for recognition from Pritzker see www.architectsjournal.co.uk/archive/call-for-denise-scott-brown-to-be-given-pritzker-recognition?utm_medium=website&utm_source=archdaily.com.

8 Originally published as "Room at the Top? Sexism and the Star System in Architecture." *Architecture: A Place for Women*, ed. Ellen Perry Berkeley and Matilda McQuaid, Washington, DC: Smithsonian Institution Press, 1989, pp. 237–46.

9 http://first500.org/?utm_medium=website&utm_source=archdaily.com.

Since those first progressive few entered the early 20th century's international design schools and movements, the history of women in design has been steered by the pioneering footsteps of a minority. By either seizing windows of opportunity, or by (increasingly) creating their own future careers, their stories portray how women thrive at the vanguard. Perhaps the gender gap will finally be closed when we can ensure that more women not only remain at the forefront, constantly challenging its borders, but that their great achievements are also formally and officially documented.

WOMEN IN ESTONIAN DESIGN. FROM PAST TO PRESENT

Triin Jerlei

This essay focuses on women in Estonian design history. Our small country functions as the subject for a case study on the role of women in a peripheral transitional design economy. Its premise is that gender relations within design economies vary greatly and are ultimately subject to the local conditions under which design as a discipline has developed, as well as the individuals who shaped it. The ultimate aim is to explore the background to the role of women in contemporary Estonian design as a gradual and fascinating process that challenges international modern debates and questions present narratives. Importantly, local and regional design economies consist of different fields, materialities, and personalities, which have shaped the development of the design economy itself. In Estonia the importance of women in design rose due to the strength of areas seen as traditionally femenine, which later shaped exhibition design, design theory and other related areas, whilst also paving the way for contemporary female designers.

The advent of local modernism, at the start of the 20th century, already saw several influential female designers emerge in Estonia. These included *Atelier für Kunstgewerbe*, the all-female collective that designed furniture and interiors between 1900 and 1914, and Agnes Ney who worked as a designer at the Lorup glass factory in the interwar period. However, local design did not get a chance to develop into a defined and recognized discipline before the turmoil of the Second World War began, and then the Stalinist, centralised regime destroyed the local emerging design culture. Hence, this essay focuses on the Soviet and post-Soviet era in Estonia as the crucial period for development. The Soviet occupation of Estonia lasted for half a century and during that time numerous changes took place within politics, society, and design itself. This essay will not attempt to give a thorough overview of all the factors that influenced the position of women within the Estonian economy, nor their chronology. It will, however, focus on discussing the variations between central and peripheral design economies and the multitude of factors that influenced their development.

The beginning of design, as a defined profession (albeit not with its contemporary name), in Soviet Estonia can be traced back to the mid-1950s when the first artists were employed in local factories. In my opinion, one of the key reasons for the success of women in the Soviet Estonian design system was the prosperity of 'feminine' fields born out of the applied arts. The first institution in the Soviet Union that specialised in design was the VNIITE, *Vsesoyuzny Nauchno-Issledovatelsky Institut Teknicheskoy Estetiki* (All-Union Scientific Research Institute of Technical Aesthetics), established in 1962.[1] It didn't have a branch in Estonia and in 1955 the Artists Union launched a local initiative for hiring designers to work in factories.[2] The absence of technical design continued to shape local design in various ways. For example, elsewhere in the Soviet Union leading print publications focused on technical aesthetics as exemplified by the iconic Russian publication with the same name; *Tekhnicheskaya Estetika* [Technical Aesthetics]. In parallel to other Soviet republics, Lithuanian design debates could often be found in *Mokslas ir Technika* [Science and Technology].

In the Soviet Estonian context, however, the leading design magazine was *Kunst ja Kodu* [Art and Home], which focused on interior design and home decoration. Its impact extended beyond the Estonian border. Between 1962 and 1966, the magazine was also published in Russian.[3] According to Andres Kurg, a total of 50 000 issues were printed, which made the magazine one of the largest of its kind in the entire Soviet Union.[4] This fact illustrates the importance of Estonian interior design in the All-Union communist party context, but also the importance of interior design in shaping Estonian design culture.

The importance of interior design within local design culture is hardly surprising. Estonian furniture was renowned throughout the Soviet Union. Here, one of the defining factors was arguably the legacy of the Luther glass factory, which continued to thrive as part of local Soviet modernism, but was increasingly influenced by Nordic design. Grace Lees-Maffei maintains that interior design is often traditionally considered as a 'feminine' field, although the professionalisation of the discipline was dominated by men in the industrialised West.[5] In the local Estonian context, the leading figures in design were also usually male, this included all the heads of the Department of Interior Architecture, for example. However, since the early period in the development of local interior design strong female figures have been employed in factories and have contributed to *Kunst ja Kodu*.

Interior design is closely connected to the prominent Soviet Estonian textile industry. In 1975, Estonia produced 2.5% of all the cotton in the Soviet Union, 87% of it went for export.[6] At the same time, Estonia had the largest amount of cotton produced per capita in the entire Soviet Union. The small country was also second in terms of wool production, 83% of which left the home market.[7] This fact additionally explains the importance of women within local design. Even though the production of textiles came under the Ministry of Light Industry, and the manufacture of other household items was governed by the Ministry of Local Industry, both disciplines were in constant dialogue. The Industrial Art Committee, which was tasked with disseminating design information and educating local design professionals, was one of the few local organisations that dealt primarily with design. Its members included designers from various fields and materialities, including textile design. At the same time, the gender structure of Estonian textile artists was similar to many other design economies: it was largely female. Thus, textile design, another traditionally feminine field, played an important role in the development of local design and was more closely connected to industrial design, and other related fields, than in many other design cultures. For example, the first editor of *Kunst ja Kodu* was a female textile artist called Leida Madisson who held the position between 1958 and 1971.[8]

The design economy in Soviet Estonia differed in its renunciation of idols compared to Western modernism. The anonymous factory setting did not support the creation of modern renaissance heroes such as Le Corbusier, Alvar Aalto or Mies van der Rohe. Factory catalogues rarely mentioned the designers behind specific products. This peculiarity did not, however, mean the absence of certain canonised personalities whose influence

1 Azrikan, Dmitry. "VNIITE, Dinosaur of Totalitarianism or Plato's Academy of Design?". *Design Issues* 15, no. 3, 1999, p. 45.
2 Estonian National Archive ERA.R-1665.2.160 (1955).
3 Kaunas County Public Library collections, magazine *Iskusstvo i Dom*.
4 Kurg, Andres. "Almanahh 'Kunst ja Kodu' 1973–1980" [Almanach "Kunst ja Kodu" 1973–1980]. *Kunstiteaduslikke Uurimusi/Studies on Art and Architecture* 13, no. 2, 2004, p. 113.
5 Lees-Maffei, Grace. "Introduction: Professionalisation as a Focus in Interior Design History." *Journal of Design History* 21, no. 1, 2008, p. 1.
6 Aader, L. "Kergetööstus [Light Industry]." *Eesti NSV Tööstus Üheksandal Viisaastakul [The Industry of ESSR During the Ninth Five-Year Plan]*. Tallinn: Eesti Raamat, 1972, p. 91.
7 Ibid.
8 Kurg, Andres. Op.cit., 114.

would have transcended disciplines and materialities. For example, the so-called father of Estonian industrial design, Bruno Tomberg, the head of the industrial art department at the State Art Institute of the Estonian SSR, had trained as an interior designer, and yet wrote numerous articles on design and contributed to numerous related disciplines, including textile design, ceramics and curation. However, production systems implemented at the time, prohibited the emergence of successful and lucrative design practices and bureaus. Additionally, under Socialism factory designers were often paid several times less than ordinary employees.[9]

Therefore, although Estonian design was stylistically and philosophically influenced by international modernism, the systems in place within the local design economy were radically different. Design exhibitions were generally popular, however. For example, the exhibition *Space and Form III*, which was held between 1976 and 1977, was visited by 26,018 people,[10] an impressive number in a country of 1.5 million. This shows that there was a keen interest in design amongst the general public. Yet, as described above, there was little financial gain to be had here. Within the Soviet hierarchy of art disciplines, design was behind art and sculpture, which saw large and lucrative commissions. The reason for the prominence of women in Estonian design can be attributed to this absence of financial benefits, which later modified traditional gender hierarchies. The occupations that brought power and money could be found in politics – closer to the central authorities in Moscow – whereas local institutions that dealt with design were not visible enough to draw attention. Many women who pulled the strings within Estonian design during the Soviet period remained relatively unknown to the general populace.

A good example is Ingi Vaher who ran two local design institutions: the Industrial Art Council, responsible for maintaining the aesthetic standards of local production, and the aforementioned Industrial Art Committee. Vaher started her career as a glass designer at the renowned Tarbeklaas glass factory. In fact, in 1953 she was the first designer hired in a postwar Estonian factory. Together with her colleagues Helga Kõrge, Mirjam Maasikas and Pilvi Ojamaa, Vaher was instrumental in establishing Nordic-inspired local glass design, renowned for its fascinating combination of minimalist form with skillful cuts and engravings. Later, having completed a doctorate at Leningrad university, she dedicated her life to shaping local design policies and politics. However, although Vaher's work as a prolific glass designer is now widely acknowledged, her achievements in directing and shaping Estonian design are still not recognised by the wider public. The Industrial Art Council was often discussed in local media, yet its role has been overlooked in the contemporary context. On the other hand, thanks to its invisibility, the Industrial Art Committee was an excellent example of a peripheral Soviet design institution. The organisation did not publish any books or pamphlets. Its work could be seen in intangible lectures. Even though the institution had a real impact on the development of local design culture and the dissemination of design information, its work did not leave any material traces and was mostly hidden from the general population.

British scholar Jill Seddon stated that: "the drive towards 'professionalisation' excluded women from the public face of design in that they did not achieve the highest positions within government or professional bodies, nor did they occupy gatekeeping roles within training or education."[11] Herein lies the significant difference between Soviet Estonia and many, if not most, Western countries. In the Estonian context, this 'public face' of design remained relatively invisible and many women achieved high positions and leadership roles. The lack of large centralised design institutions allowed individuals to gain more significant roles – and yet, paradoxically, many of them have not received the recognition that they deserve. The political, social and cultural challenges present in the study and analysis of Soviet political institutions, in a post-Soviet context, are also important. These challenges are arguably the reason why a number of important figures, including many remarkable women, were overlooked in the study of Soviet Estonian design. However, in spite of their relative invisibility, they have been influential in shaping local design culture, including the gender politics within.

When the Soviet Union collapsed the local Estonian design economy was faced with a difficult challenge. The insatiable Soviet market, with a constant deficit of commodities, disappeared. At the same time local products were often made using outdated technologies and thus failed to be competitive on global markets. There were no economists or entrepreneurs capable of leading local factories into these changing times. Thus, local mass production virtually disappeared, and the factories that survived were mostly reduced to cheap affiliates of international corporations that saw no need for locally hired designers. Local design systems disappeared, while design culture, which was shaped and led by strong female figures, survived.

9 Interview with a former employee of Tarbeklaas, 3.09.2010.

10 Estonian National Archive ERA.R-1954.2.327 (1976–1977), p. 11.

11 Seddon, Jill. "Mentioned, but Denied Significance: Women Designers and the 'Professionalisation' of Design in Britain c. 1920–1951." *Gender & History*, vol. 12, no. 2, 2000, p. 444.

In this peculiar situation, the fields and materialities that fared the best were traditionally craft-based and often considered as feminine occupations, these included textiles, ceramics, and jewellery making. With such a large number of female role models amongst previous generations of designers and educators, it is no wonder that women continued to shape these areas of design. Today, textile artists such as Mare Kelpman and Krista Leesi, leather designers like Stella Soomlais, or ceramic artists such as Raili Keiv, not to mention countless other strong women, have initiated change in their own fields and in design as a wider discipline, both locally and internationally. Strong female-led Estonian design culture, developed over decades, and in spite of political difficulties, has also played a role in their achievements.

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THE CLOTHED HOME: SEASONAL TEXTILES IN DOMESTIC INTERIORS

Aleksandra Kędziorek

Pre-electric times saw the use of textiles as a type of seasonal attire for interiors in manor houses, aristocratic mansions and peasant cottages alike. Contrary to the logic of contemporary, low-maintenance architecture they required constant care, remaining at all times within a fluid process involving the maintenance of rituals, as well as continuing to be sensitive to subtle, cyclical changes in the environment. As such, they were the domain of women, namely weavers who stood behind their production, and housewives who ran the household. This presentation is based on research presented in the Polish pavilion at the 2021 London Design Biennale. It discusses womens' engagement in caring architecture and the tuning of domestic spaces to the rhythm of the natural world.

Although it is future-oriented, my paper will firstly dive into the past – to pre-industrial and pre-electric times. This was long before any women could be officially involved in the field of architecture and design, yet they had an important say in shaping the urban environment, and domestic interiors in particular.

Magdalena Morska, née Dzieduszycka, a Polish noble active at the turn of the 19th century, was the owner and manager of the Dzieduszycki estate in Zarzecze in southern Poland. Along with Izabela Czartoryska, founder of the first Polish museum, and Helena Radziwiłł, author of the English garden Arkadia, she was one of the few women who were active as important art collectors and self-sufficient managers of extensive lands and estates. When commissioning their building projects to key architects of that time, they sometimes collaborated with them so closely that from today's perspective we could easily name them as co-authors of some of the projects. This is not very surprising if compared to a book released at about the same time in the US by Catherine Beecher, sister of Harriet Beecher Stowe, the author of "Uncle Tom's Cabin". Catherine Beecher's manual "The American

Women's Home: Or Principles of Domestic Science " (1869) included extensive instructions not only in the everyday running of the house, but also tips on how to work with architects and constructors. The book even included some sections on architecture that prepared women for actual work they could carry out on the home. As the owner and manager of the Dzieduszycki estate, Morska turned its surrounding park into an English garden. She also commissioned the design of the palace to renowned architect, Christian Piotr Aigner, and published a book released in Vienna in 1836, which included commissioned drawings of the palace and her own commentary on its interior design, surrounding park, and some tips on gardening.

One of the drawings published in the book presents a living room with an intriguing textile piece that covers both its walls and ceiling. An art historian might argue that from a stylistic and form-based point of view it resembles a 'tent room', popular in Biedermeier interiors, akin to the one by Karl-Friedrich Schinkel in Charlottenhof in Potsdam. Contemporary designers, however, who are keen to search the past for inspiration in solving current design issues, recognise the drawings as less formal, more functional, and probably a bit more poetic.

Together with artist Alicja Bielawska and architects Małgorzata Kuciewicz and Simone De Iacobis, from Warsaw-based architectural studio Centrala, we represented Poland at the London Design Biennale in June 2021. The exhibition, which I curated, was entitled "The Clothed Home: Tuning in to the Seasonal Imagination". It was our response to the main topic of the Biennale envisioned by its curator, Es Devlin: "Resonance". The exhibition explored ways in which textiles were used in domestic interiors of pre-electric times. However, we analysed them not as elements of the décor, but as mediators between the human body and the environment. We explored the idea that their presence in domestic interiors turned a home into a resonator. Their cyclical appearance reflected the rhythm of seasonal change: they arrived in home interiors as and when needed in response to changing external conditions such as temperature, light and humidity. Before the invention of central heating or air conditioning they were key in moderating microclimatic conditions in the home.

We were most intrigued by bygone practices connected with the clothing and unclothing of interiors for different seasons. These practices, performed mostly by women, allowed for a conscious participation in the cycles of nature, as well as celebrating the passage of time, with an enhanced sense of immersion in the circadian rhythm and the sequence of light and darkness. We found this very inspiring in the context of contemporary climate-responsive design. It also serves as a hint from the past on how to care for one's close surroundings, and as a tool to prompt us to consider the discomfort of unstable weather conditions which,

cocooned in contemporary apartments, we have managed to forget. Thanks to this process one is able to become sensitive to very subtle changes in one's environment.

We underlined these aspects in the exhibition space. When a visitor entered they found themselves surrounded by 12 artworks by Alicja Bielawska depicting her artistic interpretation of different types of textiles used in subsequent seasons. The exhibition also included a short film in which choreographer Marysia Stokłosa animated the objects on display, recalling old everyday domestic rituals. Surrounded by textiles representing different seasons, visitors found themselves, in a way, inside the wheel of time.

This was represented by a kilim that depicted 12 seasons, which were at one time used in the Central European climate zone. This included some seasons that we no longer have. Each season was assigned a colour matched by those seen in the artworks. The summer seasons were represented by cool hues, and the winter seasons by warm ones. This was meant to visually enhance the cooling down or warming up of interiors.

Our exhibition was based on extensive research that included historical paintings, drawings, archival photos and documents, such as the book by Magdalena Morsk. We also utilised ideas that ranged from the mediaeval period to the 1920s and 1930s, right up until the 1970s and 1980s, as was the case with the photographic documentation of Polish traditional households by Zofia Rydet.

We discovered that home textiles were present in manor houses, aristocratic mansions, and peasant cottages, thus in every social class. They differed in quality, but not very much in their functionality. They were so ubiquitous that over time they seemed to become almost transparent and were long overlooked. Many of us would recognize this type of interior design solution from our grand or great grandmother's houses.

Here is an excerpt from the topology of domestic textiles that we created. It gives examples of textiles that functioned in different seasons and were addressed to different microclimatic conditions:

Muchołap: characteristic for the summer season, separated the interior of the house from its exterior during heat waves. It also provided a protective barrier against insects and privacy, whilst ensuring constant air circulation.
Zasłona: window screens made from light fabrics, designed to regulate the ingress of light. They inspired the daily contemplation of sunbeams wandering around the room, thus provoking conscious participation in the cycles of nature.

Baldachim: a bed canopy used to shade the bed during sleep, allowing other occupants of the same space, including animals and plants, to have continued access to light.
Chodnik: pathways created along routes used daily in the house, also used in the warm seasons to protect bare feet from splinters.
Zaplecek: warmed the wall during cold days in spring so that one could lean against it without feeling a chill. Some of these terms also refer to parts of the body, which is why we kept them in Polish (e.g. *zaplecek* comes from *plecy* – back). It also provided multiple layers of insulation for the wall during winter.
Podpinka: (here we come back to Morska's living room in Zarzecze) this had the function of lowering the height of a room for the duration of the winter. It reduced the area which needed to be heated, and prevented excessive heat loss.
Narzuta: covered furniture and a section of the floor, increasing thermal comfort of the users. In old peasant houses it would be thrown over one's shoulders when going outside (as visible in its Polish name: *narzucać* – throw over).

The textiles often had a life cycle of their own. They went through different phases, serving first as clothes, and sometimes ending up as recycled yarn for a rug. They also helped create comfortable living spaces. When a woman brought a dowry of eiderdowns, bedspreads, tablecloths and napkins to her new husband's home, she could furnish herself a comfortable nest. In the Middle Ages and Renaissance, canopied headboards travelled with their owners and were set up at every destination marking out one's personal space. This was the case for the Wawel tapestries that travelled together with king Sigismund II Augustus from castle to castle.

But let's return to the connection between textiles and seasonal changes which was crucial for us in this project. I began this paper with a case study of a palace, so I will end it with something much more modest and closer to our time: a modernist wooden summerhouse designed by Polish architects Oskar and Zofia Hansen. This is where we began to understand how important the rituals of clothing and unclothing space were and how thermal discomfort, and the need to adapt space to the changing weather conditions, can cause a person to become a more conscious participant in the cycle of nature.

We spent quite a lot of time there as I was custodian and curator of the house between 2013 and 2017 (it is now a branch of the Museum of Modern Art in Warsaw). Centrala was also responsible for its architectural inventory. We have returned to the house many times to study it from different angles. Last year we visited to re-interpret the space anew from the perspective of its textiles.

It was a very refreshing experience. It turned out that the Hansen family treated the house as a living organism, and that they clothed and unclothed it according to the rhythm of the seasons. Due to its semi-open structure, it was impossible to heat the whole house. One always had to decide which spaces were going to be used during the colder part of the year. Thus the house functioned as a climatic apparatus.

When we returned to it to gain a fresh perspective, we discovered the omnipresence of textiles, something that we had previously overlooked. Most of these were introduced by Zofia Hansen. For example, she installed a 'house eiderdown', a more modest, hand-made, version of the textile that Morska had introduced in her palace a century earlier. The 'house eiderdown', woven by Hansen, was made from materials typically associated with eiderdown. It was fitted between the collar beams, so that it could be hung below the ceiling in winter making it lower, and preventing heat from escaping upwards.

One might ask, why was such a solution necessary in a summerhouse? In the 1990s the property, located in the town of Szumin, became a year-round house and had to be equipped quickly for colder seasons. The Hansens were inspired by extensive studies into vernacular architecture and different survival solutions that were still talked about at that time. They introduced textiles to help the task at hand. This heralded a changeable feel to the house, according to the Season. Sometimes it would be a spacious, airy, and open summer house, and at other times it would become an inwardly focused, textile-clad, enclosed winter home. The need to cloth and uncloth the house in Szumin, according to the changing weather conditions, worked to enhance one's experience of the natural world outside. Something which we, cocooned in our centrally heated and air conditioned apartments, should perhaps try to remember and experience anew, in order to become more sensitive to our natural surroundings and aware of the changes they are currently undergoing.

DESIGN AND IDENTITY: CREATIVE PRAXIS AS A "PRACTICE OF THE SELF"

Wiktoria Szawiel

In this paper, I intend to discuss the relationship between creative praxis and how it can become a means for the self-constitution and self-positioning of the practitioner in the present. My graduation project will act as reference; I will discuss how the multiplicity of methods and processes applied in one's own practice affects artistic or professional identity. That is to say, one's placement in the creative field simultaneously renders visible the ambivalent tensions that organise it. Ultimately, I will suggest different perspectives that reflect on how an artistic education could be an experimental domain that fosters attentiveness and sensitivity to the world, and not just simple responsiveness to transitional fashions or rampant demands of the creative industry.

CREATIVE PRAXIS AS A "PRACTICE OF THE SELF"[1]

I would like to reflect on the making of my graduation project in terms of showing how creative praxis may be used to establish a relationship between the personal identity of the practitioner and the 'world' – i.e. what the exterior and 'the other' means to us in our actuality, and how that exteriority can be expedient to the constitution of the self. Even though I did not intend to establish this correlation at the start, from the perspective of time, I can see that it was an intuitive attempt to prepare myself for an imminent encounter with the 'real world'. A favourable circumstance was that my project was closely related to the problem of the exterior. Its starting point was a fascination with landscapes – landscapes that intrigued me, that were important to me or impressed me for other reasons. A casual insight into what appeals to us when looking outside the window led me to research the connection between landscapes and identity, the cultural meanings of landscape and its functions. In physical terms, I aimed to visually represent the spirituality of the eastern landscape.

My project focused on the particular and melancholic Eastern European landscape of spacious plains, mists, and forests, as well as on the images of landscapes that I know, and those I remember, from my childhood. These images were also visible in popular culture, such as in films, literature and art. They have their own symbolism that can be read and interpreted by anyone who grew up in this iconographic atmosphere. The general conclusion was that landscape is, as Simon Schama argues, "the work of the mind." "Its scenery is built up as much from strata of memory as from layers of rock" (Schama 6–7). In other words, landscape is a cultural construct. We project our cultural legacy, our state of mind, and our feelings and desires onto it. The emotional weight bestowed upon landscapes could be explained by their function as carriers of human memory. We, and our recollections of the past, evolve. Landscape, however, is more permanent. In the words of Margaret Drabble, it is "a link between what we were and what we have become." It is one of the reasons why we feel uneasy when a familiar landscape is altered; "we lose not only a place, but ourselves, a continuity between the shifting phases of our life" (Drabble 270). To paraphrase José Saramago, "images see with the eyes who see them" (Saramago 207). By asserting that a landscape sees with the eyes that see it, it is turned into a mirror of our memories and feelings, encoded with meanings which can be read and interpreted. Put differently, there is a reciprocal relationship between us and the exterior.

But how can one capture the iconographic richness and immaterial qualities of a landscape within a physical object? In order to facilitate the translation of a landscapes' ephemeral characteristics into a tangible matter, I divided the eastern landscape into phenomena. For example, I considered the perspective of air as thickness, temperature as colour and light as translucency. It helped to structure my research and acted as a guide along the creative process. More importantly, however, material experimentation allowed me to gain insight into the theoretical part of the project. There seemed to be a relation between the work of the hand and the work of the mind – it made me question the landscape, and think about it from angles that I would have probably never considered if I hadn't approached the topic from different perspectives.

1 I borrowed this term from Michel Foucault's late studies on the constitution of the subject – a *practice of the self* or a *technology of the self*. It permits "individuals to effect by their own means, or with the help of others, a certain number of operations on their own bodies and souls, thoughts, conduct, and way of being, so as to transform themselves in order to attain a certain state of happiness, purity, wisdom, perfection, or immortality" (Foucault 18).

Although, in a certain sense, this project was a way of dealing with my uncertain cultural and national identity what was more important in the long-term was that I have come to realise that I also have an identity as a practitioner. And in contrast to the cultural baggage bestowed upon me, it is something that I can *construct*. Working on material samples, in a struggle to materialise non-tangible concepts, and in parallel, the necessity to *write* about what I was doing, became a way of deconstructing myself. Objects and written fragments, which appeared along the way, became a record of this process. It became a task through which, as Nietzsche taught us, we grow conscious of our *becoming* – "a *poiesis* in which the latencies of each present are brought to light in an endless process of self-overcoming and futurity" (Hutter 142). In this sense, daily experimentation practice enables one to understand the unconscious processes of self-constitution – placing oneself in the continuous mode of *autopoiesis*.[2] The consequence is that, as Horst Hutter rightfully observes, "conscious artistic creation itself may be learned by studying unconscious forms of *poiesis*. In becoming artists we imitate nature, but we also learn about the workings of the world" (Hutter 16).

SELF-POSITIONING AND ENGAGEMENT WITH THE PRESENT

While developing my graduation project, the different modes of thinking such as material experimentation, filmmaking or writing, made me aware that what I have always thought to be implicit and intuitive are actually a set of practices, exercises, or routines that I choose or not to perform. To look into one's own practice is an inquiry into those unconscious modes of *poiesis,* which at the same time bring forth a deeper understanding of reality and sharpen attentiveness in relation to the outside – to our everyday existence. In other words, it is an action that "means nothing other than a logical manoeuvre to render explicit circumstances that, in the masses of tradition, are present in 'implicit' – that is, inward-folded and compressed – forms" (Sloterdijk 6), or in the words of Gilles Deleuze, "it is a question of recognising, of bringing to light or into the conceptual or the explicit, what was simply known implicitly without concepts" (Deleuze 129).

Delving into and dissecting methods and processes applied in one's own creative praxis, on the one hand enables understanding of one's artistic or professional identity, that is to say, one's placement in the creative field, and on the other it renders visible the latent forces that organise this field – the ambivalent tensions that characterise the art and design scene. The instilling of artistic values through the set of practices and aesthetic experiences used to form future art or design professionals is equally efficient in the management of the creative class. The same principles that govern artistic expression and freedom, that is, the artistic *ethos*, incorporated in the rhetoric of creativity and innovation, become a paradigm for the sustenance of the ambiguous economic situation of creative professionals, as well as an incentive to voluntarily contribute to existing models of the art and design market. In other words, artistic and creative practices are closely related to the problem of modern *modes of subjectivation* (Foucault, 1983); strategies designed to "conduct the conduct of free and autonomous subjects" (Szawiel, Ramos do Ó & Vallera 16).

If we view education, and especially the arts education, as a way to simply respond to the quest for solutions that are considered as relevant, urgent, utile, or fitting into the prevalent zeitgeist, we are cast into the logic of the circumstantial responsiveness to the demands of the creative industry. When one desists this imperative, and allows the very possibility of engagement with the world without an aforethought or predefined intentionality, it opens up an atypical space of self-transformation and self-displacement in the present, which is not an absence from the present (Masschelein, 2010). It is a process that could be described, following Gilles Deleuze and Félix Guattari, as *itineration.* Here, one is "in search of the 'singularities' of a matter" instead of looking for a finite form, and in contemplation of "a continuous variation of variables, instead of extracting constants from them" (Deleuze and Guattari 372). In the educational or creative context, this could mean an openness to diverge and wander without predefined objectives – paradoxically, intentionality can diminish perceptiveness by obscuring other eventualities. Jan Masschelein writes that "being absent means that we are not there, that we are captivated by the horizon of expectations, projections, perspectives, visions, views, images, dreams" (Masschelein 282). Conversely, attentiveness is a lack of intention and the suspension of judgement. This kind of approach, which Masschelein describes as *attending to the present,* would require exposing or submitting oneself by giving attention to reality as it is. Also, by exceeding oneself in order to discover "an interior exteriority that puts the oneself at issue" (Love 27). It is a movement towards the understanding of oneself that brings in the understanding of what is other and exterior to us. It brings a possibility of thinking "within that fragile moment when the question is not yet determined enough for the hypocrisy of an answer to have already initiated itself" (Derrida 98). In other words, it is the creation of a plane of resistance to predefined modes of thinking and expected responses.

2 I use this term in its traditional Platonic meaning, as bringing to being what is not yet there, and in relation to oneself, as taking charge of one's own becoming through self-cultivation.

CONCLUSION

In this paper I have tried to demonstrate that regardless of the often conflicted, unclear, or dubious tensions that operate in the creative field, there is a space or a possibility within the domain of one's personal practice to approach it as an experience and experiment: "an asceticism, a care, an *epimeleia* of a specific type (of which all Foucault's techniques of 'self' are instances)" (Stiegler 109). Viewed in this manner, design education differentiates itself from simple responsiveness to transitional socio-economic demands of the moment. Personal creative praxis, as an experimental domain, can be a plane on which unconscious forms of *poiesis* are brought to light allowing for sharpened attentiveness and sensitivity to both oneself and the world. The practical consequence of this is that through a set of practices or techniques one can construct a means of observing reality that allows for conscious self-positioning within the net of institutional, economic or social obligations, inhibitions and interdependencies. Thus, one becomes aware of the possibilities and limitations of one's own agency in the present in order to find fissures for making one's way through.

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DESIGN AS A TOOL





SOCIO-CULTURAL NORMS

Daria Wypiór

What are cultural norms and why do we so often ask the question *is this normal or appropriate*? How does shame affect our lives and is it always negative? Using these questions as a starting point, Daria Wypiór will discuss the influence of design in overcoming taboos.

Is this suitable? By posing this question to the experts, we hope to get a clear answer which would solve our problem. However, things are not as simple as they seem. What does the word *suitable* mean in itself? Is it a synonym for the word *natural*? If so, does natural mean something that is beneficial to us, something which is suitable for our body and soul? Can we say that the *unnatural* is truly harmful? Finally, is it not the case that everything our body allows us to do is natural?[1]

According to Agnieszka Stein, "the only way to look at what is natural is to see if it exhibits in all people, regardless of culture and without special effort – then you can call it natural."[2] The answer to the question *is it suitable?* is not clear because our knowledge is not sufficient. As in many cases, it possesses features derived from what is natural, while at the same time combining aspects of culture.

Although socio-cultural norms help us to function in society, they also form a kind of blueprint for appropriate behaviour in a given situation. Thus, our sense of what is the norm is constantly changing. An example of this is the difference in attitudes towards the so-called *educational spanking*, which has clearly changed in recent years. However, when norms block free conversation, a rather big problem arises; how can we answer the inno-

1 Wypiór, Daria. "Show Where Your Nose, Ear, Vulva Are." MA Thesis. Academy of Fine Arts in Gdańsk, Design Faculty, p. 9.

2 Stein, Agnieszka. *Nowe wychowanie seksualne*. Mamania, 2018, p. 22.

cent questions of a child who does not yet adhere to the norms? Especially if we ourselves often have trouble accepting our own sexuality, for example? It is likely that no-one completely adheres to cultural norms. Is this good for the safety of our society, or is it the case that it is such people who are the backbone of a culture and who influence development?

CULTURE OF SHAME

In 2017, actress Alyssa Milano accused popular film producer Harvey Weinstein of sexual harassment. Other actors who were victims of the producer's abuse unexpectedly came forward in her wake. This turned into the #Metoo movement, which resonated globally. It showed that sexual violence is a widespread problem that affects millions of women around the world. Within 24 hours, 12 million posts appeared on Facebook alone. Unsurprisingly it turned out that sexual violence is a global problem faced by many women.[3]

Analysing posts bearing the hashtag #Metoo is disturbing for most women. It is also the case that many women become paralysed with fear when faced with a violation of their intimate sphere. Shouldn't the defence mechanism which appears when one is threatened be characterised by aggression, escape, and a call for help? How important is the feeling of shame when you become a victim of sexual assault?

A newborn baby knows nothing about nudity. Its sense of shame does not differentiate between its closest relatives and those newly met. It carefully observes the world that surrounds it, discovering new emotions, including fear and uncertainty towards strangers. We can see this when a child hides behind the proverbial mother's skirt. She/he needs time to get used to the new person, to feel safe in her/his company. Fearing others is a natural defence mechanism inherited from our ancient ancestors. For a child a newly encountered person is a threat.[4]

3 "Dwa lata temu jeden hashtag zmienił świat. #MeToo." https://spidersweb.pl/2019/10/metoo-historia-molestwowanie-seksualne.html.

4 Wypiór, Daria. "Show Where Your Nose, Ear, Vulva Are." MA Thesis. Academy of Fine Arts in Gdańsk, Design Faculty, p. 11.

In her book "Nowe wychowanie seksualne" [ed. New Sexual Education] Stein divides shame into:

- Shame (emotion) – the need to belong, fear of separation.
- Shame (toxic) – fear of rejection, fear of being judged, the desire to fit in.[5]

Shame (emotion) – its function is to keep us safe in both the physical and emotional realms. It is a positive emotion which helps us to set our limits and choose the relationships in which we want to be more or less open. It also protects our privacy and allows us to distinguish the offers that make us feel uncomfortable. Children experience the above-mentioned shame which protects them from danger. The parent often uses the feeling of shame to manipulate the child by using phrases that most of us remember from our childhood, such as "don't do that, people are watching" or "you should be ashamed". In this way the parent exerts pressure mechanically shaming their child. This makes the child comply with the parent's expectations more than his/her emotional development would allow.

A second type of shame, a toxic shame, is created under the influence of socio-cultural norms and educational activities. The need to belong changes into a fear of rejection. On the one hand the child feels inner discomfort – shame (as an emotion) – and on the other, the pressure imposed by the parent and the words "don't be ashamed". In the course of her/his development, the child receives misleading messages that it should not be ashamed in dangerous or frightening situations, but only when the environment demands it. How can one continue to trust their emotions when receiving such mixed messages?

Shame (toxic) often suppresses innate shame and can create dangerous situations in adult life. We feel ashamed of being a victim, so we don't tell anyone when we are being hurt. We freeze when we should run away. We shut ourselves off from certain experiences or even pretend that they don't exist. We fear that the harm we have experienced is to some extent our weakness which we find hard to admit.[6]

DESIGNING IN A TABOO SPACE

Sexuality, eroticism, mental health, autism, and death are just a few examples of issues perceived as taboo by our culture. Something that is not talked about loudly and preferably not at all. Each of these topics is surrounded by a series of misconceptions passed on

5 Stein, Agnieszka. *Nowe wychowanie seksualne*. Mamania, 2018, pp. 123–25.

6 Ibidem, pp. 128–29.

from generation to generation. Is it worth touching on subjects that cause strong discomfort to the majority? Unfortunately, taboos have always affected the quality of our lives. The conspiracy of silence creates a sense of ignorance and fear in society.

"I believe that truly creative people are those who enter the forest and ignore all traces of those who have been there before. Otherwise they are just followers. Not someone who creates a path. For it takes courage to go where no-one has been" – Fabio Novembre.[7] Touching on taboo subjects in design requires courage. The designer must take into account a possible negative social response because people are afraid of what is unknown. Designing in a forbidden space does not simply require the solving of a defined problem, but also the creation of safe conditions for the reception of the project. The audience must feel comfortable enough to look at the given topic from a completely different point of view.[8]

Genes are not enough when learning how to walk. We need someone to hold our hand when we take our first steps, and to lift us up when we fall. I believe that an increasing number of children are being brought up in families that are aware of the importance of openness in conversation. Unfortunately, some children are not so lucky. The only place where they can learn about sexuality is in school or on the Internet.

When graduating from university, I assumed that this thesis was the last chance to tackle a risky subject. After having pondered various topics, I chose child sexuality, which remains a taboo subject for most parents. It evokes difficult emotions in them, such as anxiety, fear and disgust. This may be due, among other things, to the fact that as a society we are still unable to talk about sexuality. We can freely share our experiences of health issues that affect us, but when they concern the intimate sphere we whisper and call them 'women's issues'. If adults are unable to talk about this among themselves, how can they talk about it with their children? We are not allowed to use simple words such as penis, vagina or menstruation freely.[9]

7 Szypulska, Anna. "Buntownik z wyboru." *Biznes Meble*, październik 2018, p. 77, https://wydawnictwo.meble.pl/gfx/e-wydanie/biznes-meble-pl-10-2018/77/index.html#zoom=z.

8 Diehl, Jan Carel, and Petra Salarić. "How to Design for Taboos? A Design Intervention to Overcome the Taboo of Menstruation in India." http://resolver.tudelft.nl/uuid:31e2c596-c6fc-43a8-9374-ab5a53097aa0.

9 Piotrowska, Karolina. *Rozwój seksualny dzieci*. Natuli, 2019, pp. 16-17.

My graduation project was entitled "Show Where Your Nose, Ear and Vulva Are." It is a teaching aid intended for children at an early school age, and contains basic knowledge about the anatomy of the genitals, including simplified models of genitals connected using magnets. It is something like a 3D puzzle. It also contains an instruction manual with the correct names of the organs. Defining the target group properly was key in the design process. Identifying three personas: the child, the educator and the parent, allowed me to focus on their individual needs in order to make them feel safe and at ease with the project. I believe that the small steps method helps to tame taboos. In the initial cognitive phase, the child does not need to know the cross-section of individual organs. It does not need to know how the sperm moves, for example. At this stage children should be familiar with their bodies and aware that they have something more than a pee-pee, including basic knowledge of personal hygiene. Knowing the correct vocabulary not only gives meaning to something that exists, but also highlights the essence of the body part in question. A child who is aware of her/his own body also has the ability to draw attention to disturbing situations in their environment.

San Francisco-based designer Lauren Lee designed the "Warm Wall", a convex, heated, wall installed in public restrooms that provides women with temporary relief from menstrual cramps. "By creating a tangible public resource, this proposal seeks to address the taboo that has largely shaped women's perception of the monthly cycle as something that should be kept hidden from the public realm,"[10] Lee wrote about the project. "Blood is pervasive in most Netflix series' watched by teenagers. This type of blood show on a screen excites, and elerates the entertainment message. And then suddenly there's menstrual blood, which is dirty, which needs to be hidden, best make it blue. It is incredible that blood, which comes from violence, is more sexy than that which gives life."[11] Although menstruation is a natural physiological process that affects us mothers, sisters, aunts and wives, we are still unable to talk openly about it. Instead we teach our daughters that the pain they feel is part of being a woman. She has to get used to it and stop whining, take a painkiller, and preferably bear it in silence.

Lauren's designs not only bring relief to women, but also provoke conversation, and create compassion between women who do not know each other. The designer took into account

10 Hitti, Natashah. "Lauren Lee's Warm Wall is Designed to Alleviate Women's Menstrual Cramps." www.dezeen.com/2018/05/05/lauren-lee-warm-wall-alleviate-women-menstrual-cramps/

11 Gruszecka, Marta. "Menstruacja to w polskich szkołach temat tabu." https://kulczykfoundation.org.pl/edukacja/baza-wiedzy/Menstruacja_To_W_Polskich_Szkolach_Temat_Tabu.

the physical, as well as the emotional comfort of the user. One sometimes feels better after just a few words such as "I understand, I have it too" or "do you need something that could make it better?". An exchange of experiences is required not only to improve one's mood, but also as a comparative tool. What is the menstrual cycle like for other women? If it's different for me, should I be worried?

Lauren's project is just one of a fairly wide range of initiatives that deal with the taboo subject of menstruation. The designers' exploration of if, various organisations' efforts, and the power of social media are undoubtedly changing attitudes towards menstruation. This can be seen, for example, in the advertisements for sanitary towels that have abandoned the use of a blue liquid, which I still remember very well, instead using a red blood-like liquid. This is not enough however.

Designing in taboo spaces is an attempt to tame forbidden subjects. It creates a new normality, a new meaning for the word 'suitable'. Designers working in taboo spaces are distinguished not only by their courage, but also by their sensitivity, delicacy, and above all empathy. Although they are not afraid to be provocative and to ask difficult questions, they also know how to listen, because in every field of design it is the user who is most important.

"Ultimately, designing for the taboo is about the erasure of the taboo. It is about design as a subversive act, as a tool for dismantling." I think that Julio Nelson's words are a perfect answer to the question of what designing for taboo spaces is.[12]

12 Nelson, Julio. "Designing for the Taboo." https://medium.com/@Artorius/designing-for-the-taboo-58d02c09f16a.

DESIGNING QUANTUM EXPERIENCES

THE ROLE OF DESIGN IN THE DEMOCRATISATION OF QUANTUM COMPUTING

Klementyna Jankiewicz

The next big technological revolution, quantum computing, seems to be just around the corner. Once fully usable quantum computers reach the mainstream, they will drastically change a number of industries and impact our well-being and everyday lives. One of the consequences of introducing this new technology will be a need for the general public to understand it and its impact on society. It will also cause an increasing demand for a new *quantum* workforce. However, quantum mechanics is known to be extremely hard to comprehend, let alone to work with. Good design, including user interface and experience design, can help democratise this transformative and disruptive technology by opening it up to a wider public.

This article is based on my experience designing interface solutions that bring quantum computing closer to the user.

QUANTUM COMPUTING AND ITS IMPORTANCE

Let's start with what exactly quantum computers are. Classical computers, including the ones that we use every day, use binary bits to represent information. In quantum, computing data is instead encoded in quantum bits – qubits. Classical bits can either be in the state of 0 or 1 as can qubits, although the latter can also be in a combination of these two states at the same time. This is called *quantum superposition* and is one of the phenomena used in quantum computing. It affects a quantum computer's computational powers compared to a classical machine. For example, four bits can represent one number

from 2^4 possible numbers. Four qubits represent all 2^4 possible numbers simultaneously. This impacts a quantum computers' performance, which means that they will be able to solve some problems millions of times faster than classical computers.[1]

While we will not see a desktop quantum computer any time soon, quantum computers available through cloud services will start delivering value to businesses in the near future, and the recent prognoses show a lot of promise. According to McKinsey, quantum technology will potentially be worth more than USD1 trillion by the mid-2030s.[2] Although, it could start being beneficial for business within the next few years.[3] The most significant potential lies in revolutionising industries such as cybersecurity, chemical engineering, finance, or manufacturing.[4] These are all billion-dollar industries with a substantial impact on our lives.

The entrance of business-ready mainstream quantum computing will subsequently increase the requirement for a new quantum-trained workforce. Finding candidates with the desired skill set is already an issue for the industry.[5] Building diverse teams might prove to be an additional challenge. The STEM (science, technology, engineering and mathematics) industries are known to be biassed towards people with specific socio-economic backgrounds and are harder to access for women.[6] A lack of diversity among employees would impact the whole of society. Let's use the pharmaceutical sector as an example. This field could be drastically changed by quantum computing, giving us possibilities to develop new drugs that we have never seen before. However, if the specialists working on these problems are mainly of a particular socioeconomic background, will they be able to ensure that the medicine being designed is truly beneficial for everyone?

1 King, Andrew D., Jack Raymond, Trevor Lanting, et al. "Scaling advantage over path-integral Monte Carlo in quantum simulation of geometrically frustrated magnets." *Nature Communications* 12, 1113 (2021), https://doi.org/10.1038/s41467-021-20901-5.

2 Hazan, Eric, Alexandre Ménard, Ivan Ostojic, and Mark Patel. "The next tech revolution: quantum computing." McKinsey, 2020, www.mckinsey.com/fr/~/media/McKinsey/Locations/Europe%20and%20Middle%20East/France/Our%20Insights/The%20next%20tech%20revolution%20Quantum%20Computing/Quantum-Computing.pdf.

3 *Financial Times*, www.ft.com/content/bbff5dfd-caa3-4481-a111-c79f0d38d486.

4 Bova, Francesco, Avi Goldfarb, and Roger G. Melko. "Commercial applications of quantum computing." *EPJ Quantum Technology* 8, 2 (2021), https://doi.org/10.1140/epjqt/s40507-021-00091-1.

5 https://www.zdnet.com/article/quantum-computings-next-challenge-finding-quantum-developers-and-fast/

6 Reuben, Ernesto, Paola Sapienza, and Luigi Zingales. "How stereotypes impair women's careers in science." *Proceedings of the National Academy of Sciences*, 111 (12) 4403–4408, March 2014, doi: 10.1073/pnas.1314788111.

THE NISQ ERA

Regardless of the promise, quantum technology is still in its infancy. We are in an era called NISQ – Noisy Intermediate Scale Quantum. "Intermediate scale" refers to the small number of qubits still used by quantum computers, ranging from 50 to a few hundred in the near future. Let's imagine a classical computer with a comparable number of bits, it would obviously not be very useful. "Noisy" means not fault-tolerant and prone to errors. The term was coined by theoretical physicist John Preskill[7] who wrote that NISQ devices can have useful applications but "the 100-qubit quantum computer will not change the world right away — we should regard it as a significant step toward the more powerful quantum technologies of the future."

Yet, these early stages are a perfect time to ensure that the future, post-NISQ quantum, is widely accessible. We have a rare chance to design tools from scratch that will lower the threshold of entry to quantum for a broader and more diverse public. So why aren't we all quantum experts? In popular culture, quantum physics is portrayed as comparable to black magic. Something not accessible to mere mortals. While the access to quantum should be broader, we see several problems when approaching quantum disciplines.

THE LANGUAGE

My collaborator Piotr Migdał often talks in his presentations about how children learn the basics of mathematics or physics. They learn natural numbers by counting fingers and objects around them, not by understanding the von Neumann construction, a complicated mathematical definition. They grasp the basics of classical mechanics by playing with wooden blocks and balls and not by learning calculus, the mathematical study of

7 Preskill, John. "Quantum Computing in the NISQ era and beyond." *Quantum* 2, 79 (2018), arXiv:1801.00862v3.

continuous change. And yet, when it comes to quantum mechanics, the very first step is to get acquainted with the language of mathematical descriptions based on complex numbers and wave functions.

COUNTERINTUITIVE QUANTUM WORLD

Furthermore, quantum seems counterintuitive to our classically-trained minds. *Quantum entanglement* is one of the most important phenomena in quantum mechanics, where entangled particles or systems stay 'connected' regardless of their spatial distance. Albert Einstein famously called it a "spooky action at a distance". Could this counterintuitiveness be changed? John Preskill writes that "perhaps kids who grow up playing quantum games will acquire a visceral understanding of quantum phenomena that our generation lacks."[8] We need quantum "LEGO bricks" that could allow us all to play and experiment with quantum mechanics without thinking of high-level mathematics.

THE EARLY DAYS OF QUANTUM COMPUTING

Because the field is still in its early stages, we also simply don't know what an actual mainstream quantum computer is going to be like. There are many possible hardware architectures available in quantum computing, including photon-, atom-, ion- and superconductor-based solutions, to name just a few. Each specific architecture affects the whole structure of a computer, including its algorithms and, therefore, its usage.

DESIGN – A TOOL TO BUILD BRIDGES BETWEEN QUANTUM AND USERS

Design can be helpful in overcoming the barrier between the user and quantum. It should, in fact, play an essential role in bringing quantum closer to the user, especially in this early-stage era. It can be a great tool to lower the entry threshold to quantum computing and make it more intuitive and approachable. Including designers in the development of quantum computers should be especially important in regard to user interfaces and user experience design.

Any technology that a user interacts with has an interface – a means to control it. Good UI (user interface) design makes the interaction intuitive, efficient, and effortless. The same applies to quantum computers, but it bears even more importance due to their future impact and the problems as mentioned above.

Currently, most of the introductory tools used for quantum are classical textbooks, so the 'interface' takes the form of static mathematical equations. When it comes to UI for quantum devices, the most common solutions are code libraries written in Python. Although Python is a popular high-level programming language, these are still highly specialised tools. When it comes to more visual and interactive solutions, IBM's Quantum Composer[9] or educational tools gathered by QPlayLearn[10] are some of the more notable examples. Yet, there is still a big gap to fill.

VIRTUAL LAB BY QUANTUM FLYTRAP

This gap was one of the reasons why I joined forces with quantum physicist Piotr Migdał. We decided to use a different approach to most of the industry. We design tools to be as visual and as interactive as possible, with minimum coding literacy expected from the users. Instead of concentrating on abstract representations, our GUI (graphical user interface) visualises specific quantum hardware or a problem the user works on. It makes it more user-friendly and closely tied to existing technological solutions.

One of our projects is a free-to-use Virtual Lab (lab.quantumflytrap.com/lab). It is a no-code introductory tool to quantum, used to teach Quantum Information courses at the University of Oxford and Stanford University. It is a browser-based simulation and visualisation of an *optical table* used in photonic quantum computing, where qubits are based on photons – units of electromagnetic radiation – such as light. Similarly to a real-life optics lab, they can be manipulated by mirrors, beamsplitters, polarizers, and other elements in the Virtual Lab.

While all the maths is there for more advanced users, the basic GUI is visual, interactive, and game-inspired for an inviting learning experience. Elements such as light sources, detectors, typical optical lab equipment, and logic elements, can be dragged and dropped

8 Preskill, John. "Quantum Computing in the NISQ era and beyond." *Quantum* 2, 79 (2018), arXiv:1801.00862v3.

9 https://quantum-computing.ibm.com/composer/files/new.

10 https://qplaylearn.com/

to an empty canvas and arranged to simulate an experiment. We also featured a puzzle game built on top of the Virtual Lab for first-time users, where we use the experiments as puzzle-game levels.

A 'SIMPLE' EXPERIMENT

At the start of this paper I mentioned *quantum superposition*, the fundamental principle of quantum mechanics. It states that a quantum system (e.g. a photon) simultaneously exists in all possible states until it is measured. A thought experiment illustrating this paradox, well-known from popular culture, is Schrödinger's cat. It states that the cat is simultaneously both dead and alive until we take a measurement, that is, until we open the box where the cat is hidden and check (measure) its state – of being alive or dead.

While it would not be practical nor ethical to use a real cat, we can recreate this experiment with light. We can send a light beam through an element called a beamsplitter in an optics lab or, more conveniently, in our Virtual Lab. A beamsplitter is a piece of glass with a mirror coating that both reflects and transmits light, splitting our beam in two. Thus, part of the beam goes through the beamsplitter, and part is reflected from it. Think of it as similar to looking through window glass; when you see both what is outside (light transmitted through the glass), as well as your own reflection in the window (light reflected from the glass).

Let's now take a single particle of light – a *photon*, instead of a light beam. The photon is an elementary particle, a quantum (the smallest possible amount) of light and other electromagnetic radiation. This means that it cannot be divided into anything smaller, neither in half nor into other particles. So what happens to a single photon after it passes through a beamsplitter if it cannot be divided? Is it transmitted, or is it reflected? It actually exists in both states at the same time – it is in a *superposition* of these states. It is simultaneously transmitted and reflected until we perform a measurement. If we measure its state (of being reflected or transmitted), it will prove to be only either reflected or transmitted (because it can't be divided!). However, before the measurement, it is in a superposition of all the possible states.

Quantum superposition is a concept that can easily be investigated with the help of the Virtual Lab. Users can simply play with the beamsplitter element or explore a simulation of one of the historical experiments where it occurs, such as the Mach-Zehnder interferometer.[11] They can also investigate it in our introductory Quantum Game at lab.quantumflytrap.com/game.

THE PROCESS OF DESIGNING LEARNING EXPERIENCES

Seymour Papert created a very useful concept for designing educational experiences, based on "low floor" and "high ceiling". It was later broadened by Mitchel Resnick[12] who added "wide walls". Resnick described Papert's concept stating that "for a technology to be effective [...] it should provide easy ways for novices to get started (low floor) but also ways for them to work on increasingly sophisticated projects over time (high ceiling)." He added an extra dimension to this concept – wide walls. "It's not enough to provide a single path from low floor to high ceiling; we need to provide wide walls so that kids can explore multiple pathways from floor to ceiling."[13]

Our Virtual Lab is not designed for children (although teachers can use it in schools with an age-appropriate introduction), but we tried to keep the concepts created by Papert and Resnick in mind during the design process. The drag & drop puzzle-like environment is inviting for beginners. At the same time the simulation of quantum states and several mathematical tools make it useful even for the most advanced user. It can serve as a research tool for scientists or a time-saving simulation for quantum engineers. A sandbox-like environment, a broad selection of elements, and fully-adjustable parameters lead to an open-ended experience. Anyone can design their own experiments or recreate historical ones.

THE TIME FOR DESIGN TO ENTER THE QUANTUM

Good design, including user interface for quantum computing, can make the interaction with technology intuitive, efficient, and effortless. As designers, we can affect the amount of time spent on getting to grips with a particular technology, which can help in its adoption by users. By developing reimagined introductory tools we can help demystify quantum. Design can make this transformative technology easier to comprehend, letting

11 https://lab.quantumflytrap.com/lab/mach-zehnder.

12 Resnick, Mitchel. *Lifelong Kindergarten. Cultivating Creativity through Projects, Passion, Peers, and Play.* MIT Press, 2017.

13 Resnick, Mitchel. "Designing for Wide Walls", 2020, https://mres.medium.com/designing-for-wide-walls-323bdb4e7277.

the general public take its first steps into quantum. The time for designers to build great user experience solutions for this area couldn't be better. There is enough development, investment, and hype, to bring quantum to everyone's attention. At the same time, we still have space to build truly inclusive solutions ensuring that the general public has an easier path to join the quantum revolution when it happens or, at least, understands its future impact on everyone's lives.

NOfall: A WEARABLE TECHNOLOGY THAT REDUCES THE RISK OF DANCE INJURIES

Sara Boś

Classical dancers are constantly balancing on the verge of mobility and endurance. Ankle injuries account for 70% of all ballet-related injuries. NOfall is a wearable band designed to support the correct positioning of the foot while learning classical dance, thus increasing the safety of dancers.

From the audience's perspective ballet is associated with lightness, fluidity, and effortless movement. The reality is very different – classical dancers are constantly balancing on the verge of mobility and endurance. Daily training is associated with numerous injuries, and so brings with it a high risk of the premature end to professional career. Despite the high risk of injury among dancers, the ballet community does not offer specialised products to help prevention. This study proposes a design solution which promotes the correct technique while learning classical dance, thus increasing the safety of dancers.

Ballet is an art form, which is often compared to the most demanding professional sports. The dance class is the cornerstone of the daily ritual in this culture. Ballet techniques require extraordinary precision of movement, based on the extremes of the body's mobility. Each step is defined by a series of rules and requires the whole musculoskeletal system to be active. The first years of education focus on developing appropriate habits and the basics of dance technique. Exercises in the point position are among the most advanced. In this position, the toes support one's entire body weight. Relaxing any part of your muscles can cause loss of balance.

Technique is learnt at the beginning of a professional ballet education, when children are in the early stages of adolescence. Since anatomy development is dynamic at this age, it is often difficult for young learners to control their body. Rapid growth may affect the flexibility of the musculoskeletal system, balance, coordination of movement, muscle tension, and ligament development of young dancers. At this stage of development it is very hard to achieve precision in movement.

The anatomical predispositions of a child, and the nature of the dance technique create a dangerous environment for serious injuries. According to scientific publications related to injury vulnerability, ankle injuries account for 70% of all ballet-related injuries. They are mostly the result of incorrect technique. A common mistake is foot inversion – a twist of the foot towards the centerline of the body. The musculoskeletal system is most vulnerable to disturbances when a movement reaches the extremity with regard to the range of activity for muscles, ligaments, and joints. Exercises in the *pointe* and *demi pointe* positions cause the most impact and are among the most injury-prone steps.

Additionally, most ballet institutions are characterised by an authoritarian approach of teachers, dancers' fear of criticism, competition, and peer pressure. Pain in the ballet community is normalised and accepted. Dancers often hide the fact that they are in pain, which essentially means ignoring any symptoms of injury. This attitude leads to serious negative consequences for the overall physical and emotional health of the dancer. Analysis of the above-mentioned aspects which accompany learning classical dance proves that in order to reduce the risk of injury, ballet dancers and specifically young learners need specialised solutions.

Unlike ballet, the world of professional sport accepts the monitoring of physical, physiological, and biomechanical predispositions of athletes as a norm. The measurement of these parameters enables the recording of movement, a detailed analysis of applied techniques, and observation of general health. Technological development drives the electronic miniaturisation process. In professional sport a wide range of sensors are used, which have become smaller and smaller. Every single day electronic devices are more discreet and even closer to the body.

A new chapter in the way athletes are monitored has now opened due to the development of wearable technologies. These are integrated with clothing, footwear, or sports tools. Their electronic microcircuits do not affect the user's comfort. The testing of athletes, previously carried out in laboratories, has been transferred to the training environment. Football pitches, ski slopes, and tennis courts are the new lab centres. All an athlete needs to do is wear the right t-shirt for training sessions. Smart clothes and accessories have gained new responsive functions. They inform the user of the risk of injury, incorrect posture, and body overload. Technological progress has not only contributed to the reduction of research costs, but above all, it has increased the precision of measurements and their ergonomics.

Based on scientific studies on the injuries sustained by dancers and the character of dance technique, a decision was made to design a product that would support the correct position of the foot while learning ballet. Children between the ages of 10 and 12 years were defined as target users of the device. The methods used to monitor athletes, and the application of wearable technologies, were considered as optimal tools to design a product which would take into account the dynamic movement of dancers.

One of the first decisions made at the beginning of the design process was to define areas of the foot that allow for the positioning of an electronic circuit which would monitor ankle inversion. The points on the foot that see a maximum angle of foot inversion were subsequently analysed. An empathic study was used for this purpose. This is a research tool used to retrace the steps of the target user in a natural context. Plaster mass in liquid form allowed us to obtain a clear record of impact on the anatomical structure of the foot. The greatest tension was noticed between the upper metatarsal area and the outside of the ankle joint. Foot inversion can be defined as a change in the position of the midfoot in relation to the ankle. An analysis of the implementation of electronics in professional sport led to a decision to use IMU (Inertial Measurement Unit) sensors. The three-axis IMU sensors – accelerometer, gyroscope and magnetometer – precisely define the orientation of the foot in space. In order for the wearable band to function properly the IMU sensors had to be calibrated with every use.

An important aspect of the project was to identify the communication between the device and the user. The human body collects information from the environment through the senses. The context of the dance made it impossible to pass on information using a beam of light, sound, and smell. Haptic technology, which allowed for a more precise vibrating impulse, was found to be the least preoccupying for the user, and at the same time proved to be an effective and clear way of communicating incorrect foot positioning.

Necessary electronic components which enabled the device to operate (a microcontroller with a Bluetooth module, a battery, pogo pins, a button, and a led pin) were added to the IMU sensors and the vibration motor. The Bluetooth module enabled product calibration and data transfer to a simple application. The selection of optimal elements was very important for the later stages of designing the housing. The electronic components

primarily defined the dimensions and the form of the device. They were divided into two systems and connected by a cable. The main system, due to its larger size, was assigned to the metatarsal area. A second IMU sensor, with a vibration motor, was anchored in the ankle area.

Research into existing examples of wearable technologies led us to develop hard housings, compatible with flexible covers, adapted to the surface curvature of the foot. The flexible cases were integrated with a textile band to ensure the precise orientation of the modules on the foot. The elements were then sewed together allowing proper disposal of product components. The textile band was stabilised using a common solution adopted in medical stabilisers – a heel cut. The design concepts were prototyped using SLA and LCD 3D printing technology. PLA (polylactide) and TPE (thermoplastic elastomer) filaments and flax textiles were used in the prototype phase. All the samples were tested in the context of the dance. The design process was a multi-thread optimization based on the iteration principle.

The ecological and social aspects of the project created several dilemmas. Most of them were representations of a compromise. In a world that is becoming increasingly sensitive to the environment, the ability to produce circular products is not only an option, but a necessity. In mass production the housing should be made using polylactide (PLA). The production of polylactide-based objects is an example of sustainable manufacturing. Carbon dioxide removed from the atmosphere during the cultivation of plants returns to the ground as compost. The raw material used for the construction of the material is mostly glucose-rich corn and sugar grass, which can be obtained locally from the annual harvest. Production waste can be a source of biomass to fuel factories. An important aspect of the use of PLA is the proper disposal of products. The most common mistake is storing polylactides with plastic waste. PLA is considered an eco-friendly material. The waste should be composted in appropriate conditions in industrial composting plants. Unfortunately, there is no such facility in Poland, thus PLA products cannot be called eco-friendly.

The new generation of synthetic textiles is a milestone towards sustainable development. Unlike flax and hemp products, PLA is distinguished by high mechanical strength. It shows high resistance to abrasion and stretching. Research on polylactide fibres continues. Currently, they are only a component of the clothing composite, the second integral part of which is cotton. Continuing technological progress gives hope that in the near future PLA fibres will transform into a single-component clothing material. This is the optimal choice in the context of this project.

NOfall is a tool that supports children who are learning dance technique, but only at the beginning of their education. As the technique is mastered, there is no need to continue the relationship between the product and the user. The tool is to be the property of the school, lent to students for the duration of their dance lessons. The idea of product sharing, as opposed to consumerism, supports the reduction of mass production to real demand. Working in a broader context has a positive impact on the environment.

The NOfall wearable band, which supports the correct positioning of the foot for little dancers, will increase their safety while learning to dance. In some cases the product also has the potential to save a dancer from ending their career and abandoning their passion. In others, it acts as a tool for diagnosing the source of incorrect posture. Even if it only serves to avoid tears and helps a little with regeneration, I believe that any attempt to help protect dancers in the analysed context is necessary. The concept described above is an attempt to counteract just one of the many injuries sustained by the body through dancing.

DESIGN AS A PRACTICE





ILLUSTRATIONS FROM “ISOLATION” AND “WHY DO KITCHENS NEED WHEELS?”

Anna Rosinke & Maciej Chmara

Anna: We would like to start by presenting a series of illustrations that I made to comment on the pandemic reality of our family life as designers. We will then talk about an ongoing project for the design of multiple mobile kitchens.

ILLUSTRATIONS FROM “ISOLATION”

In April 2020, like most of the world, we became stuck at home. We stayed in Berlin where the lockdown, implemented after the outbreak of the COVID-19 pandemic, was quite strict. We were allowed to go out for a walk once a day. The lives of many people, as well as ours, changed dramatically. I soon realised that this daily reality of work, kids, relationships, and life balance, or rather the so-called life balance, was so absurd that it needed to be captured in some way. It was then that the first drawings of the “Isolation” series very spontaneously came to life. At that time all our lives seemed extremely fluid, and there were no boundaries between our work and life with two kids at home. Most of the situations shown in the illustrations are not very exaggerated. They capture different moments at home or in the studio in the context of our “professional life”. I used quotation marks because we created many projects and continued to teach, but it is not an image of professionalism that many of us have. Big projects came to life at that time, but the way they were created did not meet the ideal of how we usually work as designers. Thus, in many images you see our kids playing somewhere in the background, or us trying to engage them in topics connected with our work. This was a way to stay focused on both the task at hand and on them. During the lockdown we started to think about life being connected to work in a far more human way than before. We carried out several projects.

One of the illustrations shows the creation of a short film which we did for the Dresden State Art Collections. It was an instructive animation encouraging people to create masks. It showed how to make textile masks at a time when there was a shortage. Due to the limitations we had during the lockdown, we had to transform our living room into an animation studio for four days. During this time we could only use materials that we had at home, because all the shops were closed.

Maciej: We drove around 30 km to get to a shop to buy some coloured paper. We also had to transform our flat so that half of it was dark and the other half light in order to make the video. All of these situations were captured by Ania in her drawings.

Anna: As you can see in the illustrations, many of our projects were also a part of our living space or our studio, with furniture placed all around us in different configurations to facilitate working. These included mobile kitchens and food, which played a crucial role at that time, because there were hardly any pleasures left except for having a nice meal or going out for a walk.

Maciej: Before the lockdown, I started a private, slightly ironic, Instagram channel called @borschtsch_bar, which referred to Polish beetroot soup called "barszcz", which all Germans pronounce '*borschtsch*'. While I was running the account, baking bread suddenly became such a big thing. At the time there was also a shortage of yeast and toilet paper in supermarkets. It was an absurd situation. I started to post what I was baking online, and I cooked even more than usual. We were baking and cooking like crazy! I was cooking three to four times a day, and I always baked two loaves of bread in the evening. We ate one between 10 and 11 p.m. with some olive oil and red wine, and the other was saved for the next day. I became fascinated by bread-making. At the beginning of the pandemic, I was invited to be a guest professor at the Academy of Fine Arts in Wrocław. I initiated a course called "Speculative Gastronomy", although I was able to be there in person only once. When the lockdown started, I reflected on how I could teach gastronomy online, finally continuing with what I was supposed to be doing, but remotely. The students and I cooked together simultaneously. We would talk about what we were missing with regard to food, about the shortages in supermarkets, and about food culture.

I knew from previous cooking projects about the importance of social connections when cooking and eating together. However, while cooking online with the students, I realised that we were all connected because we were cooking the same things at the same time. We had the same ingredients, and we smelled the same smells. We shared the same aspects and the same food despite being in different countries. This created a very surprising and strong bond between the students as a group, and between the students and me. They told me that they were finding the other classes hard to cope with and always looked forward to cooking online together. We discussed all these things. In the following semester, I ran another class in Berlin, called "Designing Culinary Delight to Become". I invited various people, including philosophers, chefs and activists, to talk about the different connotations of food. We continued to cook together while running the class. I found it fascinating, and it opened up new ways of thinking about food and the digital mobility of cooking.



“WHY DO KITCHENS NEED WHEELS?”

Most of our kitchens have wheels. This started with the “Mobile Hospitality” project around 10 years ago when we invited strangers to dine with us in a mobile kitchen. We travelled around Europe and in parts of the US. The kitchen which we made was very functional, and we were able to travel with it while cooking and inviting people to eat together. It was very much about eastern European hospitality, inviting strangers, urban culture and how we deal with urban space. This first project led to plenty of other kitchens and other cooking projects. These included a community kitchen which we ran together with the Caritas Foundation in Vienna at a time when there was a lot of debate about the refugee situation. We created a shared kitchen where one could go with friends and cook together, with much more space than in their own flat. What we discovered, was an unconscious goal to free the kitchen from its immobility, to make it transferable and return it to the centre of our social interactions.

I believe that cooking and baking – especially baking bread and kneading dough – give us satisfaction because all our senses including smell, eye sight, hearing, and touch are engaged in this process. In effect, we saw people being increasingly happy. It was evident that all of this could lead to a better quality of life. Doing it together with other people especially improves quality of life. We believe that our mobile kitchens give an alternative perspective to the topic of kitchens, social constellations, and on how we cook, and how we cook together, as well as how we dine with other people.

Anna: It was never our intention to make many mobile kitchens. Two years ago, when we were invited to create an exhibition by the Kunstgewerbemuseum in Berlin, we realised that we had already designed 10 mobile kitchens by this time. We treated each project individually as an answer to another brief. Some of them were conceptual such as a backpack, a type of grill, a fishing set, or a DIY kitchen which we made for the exhibition of Nomadic Furniture 3.0 for the Museum of Applied Arts (MAK) in Vienna. We tried to find pleasure and delight in design, drawing, and eating throughout this time.



UNDEFINED USEFUL OBJECTS. EXPLORING THE FUTURE

Kärt Ojavee

At my studio one can find an old spinning wheel and traditional looms, next to a set of tools that I use for experimenting with electronics and sensors. I also try out and develop new materials in the same space. I highly value the process of working hands-on with a material and of being in a dialogue and deliberating on how to experiment with it. These methods trigger important processes that would otherwise remain inactive.

There is a resemblance between the painting, the "Lacemaker", by Johannes Vermeer and a woman from the present day working on programmable smart textiles. Placed side by side, these images can be read as evidence of the importance of working with hands-on materials, something which is still relevant so many years later. The following paper can be viewed as a trip back in time to explore the future through a small selection of my works, which are all connected to each other, starting from the year 2000 to the present day.

I would like to start by connecting the past to the present using an idea I developed in 2003 as a school project, during which I looked into the future and thought of what it would be like. I questioned the environmental changes that we could not see but which we were highly dependent on. I thought about air pollution and viruses and designed a collection of face masks. I look back on this project now, at a time when the future is here, and see that it is an everyday accessory. My masks were richly embroidered and decorated, but not very functional.

Thinking along the lines of what the future would be like has continued to be an important part of my work ever since. Before continuing towards the present day, I will briefly step a few years back in time, to the year 2000. It was then that I started an important set of experiments on decay in textiles. I was curious about how the natural environment would treat materials after having buried them in different soils. I was also interested in how they changed over time.

The study continued with a set of clothing that included a collection of plain white t-shirts, the surface of which was treated so that once the textile was stained a pattern of fish scales would appear on it. Thus, instead of the t-shirt being ruined, it would gain a design. The pattern gave personality and character to the clothing. At the time I was concerned about how fast fashion was taking over the clothing industry and how we could slow it down. I was also interested in how the textile would change over time in relation to the owner/user and the environment.

Looking at changing textiles and environments took me onto another long journey of working with smart textiles, in collaboration with Eszter Ozsvald, a product designer from Hungary. It was 2009, we were sitting in my studio and I was eating an avocado for the first time in my life. We were thinking about a textile that would be in symbiosis with humans and the environment. One that would act as a synthetic living organism, a soft screen, or a robot. Within a month we had created such a material from scratch, both doing it for the first time. The textile reacted to touch. Patterns of tiny cells would appear on its surface when people were around. These would then disappear slowly after everyone left, leaving the trace of a human presence behind as a visual echo. I named my works "Undefined Useful Objects". I wasn't sure where they belonged. We ended up producing soft textile-based screens and exhibiting them at galleries, conferences, convention centres, and so on. Developing the technology to make a hybrid textile included a lot of experimenting, electronics design, programming, interaction design and material research. I was learning about new things and perspectives every day, and I started collaborating with the Centre for Biorobotics at the Tallinn University of Technology. This process resulted in the simultaneous development of two kinds of products: a programming board for others to use and a collection of textiles called "First Views on Mars".

While working on the large scale installations, we conducted experiments and developed interactive comfort objects such as pillows with integrated electronics. Here, the embroidery pattern on the pillow was functionally related to silver threads which conducted electricity and made the object reactive.

Meanwhile, it was 2014, the *internet of things* had been around for a few years and was a hot topic. I was interested in taking it to a level where it could be part of nature. So we could 'like', 'tag', and interact with objects. The work was analytical, but also aroused my curiosity about how this would feel. I collaborated with Jaan Rebanean, an engineer from the Centre of Biorobotics. We integrated sensors which we placed in a moss-covered stone and in collaboration with architect Larissa Kondina, printed another stone in 3D. I took this 3D version into the countryside. They were placed 100 km apart. When a person

in a gallery touched the stone, the 3D version would light up, and this would be visible through a camera in real time. This transfer of touch from one object to the other was immediate, perhaps poetic, and a little eerie at the same time. Following this experience, I teamed up with another Estonian textile designer, Johanna Ulfsak. We were interested in creating a fabric capable of surpassing its own physical presence; to somehow connect the object with the outside world. We designed a wavy textile that gathered information about events and changes, and responded to them, while being at sea hundreds of kilometres away. The fabric reacted when a stronger gust of wind swept over the sea. The fabric also changed when a wave rose with a storm. It was a 20m long handwoven textile with integrated electronics. The data was measured and gathered in real time and the changes occured in the textile immediately. After weaving this textile, we became more interested in the basic weaving structures and contemporary materials that have changed the world of design, as well as products surrounding us that are distinct to the present day. We were interested in the relationship between textile art and design and industrial mass production. The project was called "Save As". All the materials we used were designed to be long lasting. We used fibreglass, carbon, PVC, and optical fibres. Imperfections that were handwoven into the textile presented evidence of human presence; the fragility of humans facing these heavy materials. It was handwoven, and all of the materials were isolated from their initial function.

After working with industrial everlasting materials, I started to explore ones that are made to decay and which have a predetermined time of use. Inspired by local traditional knowledge and global mythologies concerning sea-related craft, I made objects that are based on tools developed through the centuries. I created a speculative future scenario where communities living near the sea use the resources available to them to carefully craft useful, and in some cases, impractical objects and materials. Each object opened up questions regarding the inherent value of materials, traditional knowledge and techniques, and the relationship between fragile ecosystems and human societies, which are part of them. For example, the "Dissolving Hat" was made of a biocomposite. This was a leather-like material that I cooked from sea sourced substances, polysaccharides and melanin. It combined a pirate hat with a sou'wester and had a predetermined time of use. It was also designed to question the reasonability of using raw materials sourced from oceans.

There were also various tools for catching seaweed made from materials developed and handcrafted especially for this purpose, clothing that was made from valuable seaweed-derived materials, which would feed our skin while wearing it, and mittens that were not for working, but for relaxing. I also wove a large "Resting Sail" on my looms. It was based on what I found out about the history of sailing and about the important role of women

in this area. They were very innovative, for example, combining the knowledge of wool as a material, weaving as a technique, and textile coating, in order to make durable sails.

This project inspired me to look further into the past and to contemplate the meaning and role of textiles in the history of economy, ecology, politics, and everyday life. I questioned what makes one fabric valuable and another worthless. I suppose that the importance of a textile is not only defined by the hours spent producing it, or by the rarity of the material, but also by the value, meaning, and function we attach to it. So I started an investigation into the role of plain weave-based textiles. A white flag is an example of a communication tool in which the value of the material shifts towards the value of the meaning. On the other hand, with a Molotov cocktail, the textile becomes part of a revolution or part of a weapon that can make it more efficient. I wove these objects with radically different purposes together into a continuous fabric, pondering on whether that would return them to their initial state of mere fabric-being.

I will sum this journey up by illustrating two ongoing investigations. The first is a project called "Ashtrade" which, similarly to the previous one, looks into the value of a material. I have been working on this together with Annika Kaldoja and Marie Vihmar (StudioAine). The ash comes from oil shale industry residue where 230 million tonnes of ash are piled up and made into a plateau of 800 hectares. We are looking at how this hazardous residue may be used in the carbon-neutral technologies industry, enabling the extraction of minerals and metals from the ash. These mountains of ash may now be viewed as future currency, due to be traded between those industries that are in need of critical raw materials. The project highlights the shifting notion of what constitutes waste and how it can be transformed into something of value, as well as foregrounding the environmental stewardship of these wounded landscapes. We were blown away by these scenes, eerie and breathtakingly beautiful at the same time. I felt as if this could have been the essence of the Anthropocene era. Next to this enormous functioning organism we made experiments on a human scale. Among other things, we crafted the ash into prayer beads to act as depositories for future materials. This is an ongoing project.

I have also recently been working with an engineer at the Estonian Academy of Arts on a challenging project to develop a bio-based nonmaterial. I am fascinated by the scale of one nanometer, which is one-millionth of a millimetre. For example, one DNA strand is two nanometers in size. The breakthrough in knowledge and technology that allows us to work with materials on a nanoscale is interesting because many life processes take place on that scale. Designing on a molecular level will allow us to create materials in the same way as nature does.

I would like to halt my continuing road trip at this junction. My method often involves gathering a messy cloud of vague ideas about something, and then dealing with uncertainty and entering unknown territories. I carry out research on different aspects and make a set of objects, and in some cases I have experiences which have an unknown effect. When I started being a designer, I was very concerned about where I belonged: is what I did design or art, or something else? By now I have learned to really enjoy this position of uncertainty.

RETHINKING CERAMICS

Raili Keiv

Hello from my studio in Berlin. You have given me a good reason to look back on my journey as a ceramic designer, which has been quite long. At the beginning I studied ceramics and then continued on to product design. I like drifting between these two parallel worlds by exploring them through clay and porcelain. I like their characteristics, as they adhere to our current needs. They are reusable, long lasting materials, and perfect to use with food. Ceramics also look beautiful and bring a timeless dimension to our everyday lives. Let's take a closer look at my latest projects which I named "Porcelain Meets Concrete"; "Porcelain Meets Wood", and "Porcelain Meets Metal".

PORCELAIN MEETS CONCRETE

When I started working with concrete, I tried to mix it with different materials like rubber, textiles, and plastic. I also found that together with porcelain it forms one of the most exciting combinations. I was fascinated by the contrast between grey and porous concrete and white glazed porcelain. So I decided to explore it a little further. The easiest way to start was by combining concrete with popular tableware, such as incomplete plates, cups, and other things – stuff I found. The first series of objects was called "Porcelain Meets Concrete. Reuse." I started by trying to figure out how to connect these two materials and make them stable and long-lasting. Concrete, usually associated with large-scale architectural objects, was used as part of a dining set. The visual and tactile dialogue with delicate and fragile porcelain was compelling. I designed a new coffee set where the body was made of matt white porcelain, and the handles were made of concrete. The form was inspired by Estonian Cafe Culture from the 1950s to the 1980s when concrete was very present in Soviet modern architecture. Cafe's of that time appeared to me as a charming combination of minimal elegant interiors and natural craft with an artistic accent.

PORCELAIN MEETS WOOD

This collection was born together with my baby. Being pregnant, I couldn't work with concrete because it is heavy and dusty – simply an unhealthy material to work with for a pregnant woman. So I decided to use wood. I had an idea to combine two materials – warm wood and cold porcelain – entering into dialogue and acquiring commonalities. I soon concluded that wood does not like to come into contact with any liquids as it becomes unstable and is not possible to control. I tried local Estonian wood and studied Japanese ways of integrating wood and ceramics. Maybe I could explore this avenue a little further. Then suddenly I found myself working with the patterns that I saw, and I discovered that a funny and weird combination between print and porcelain worked very well, and was practical. This was exciting as my previous work was concentrated solely on the shape and function of a material. This time I focused on its technical and physical properties and did a visual aesthetic study. The outcome was something akin to an animated wooden vessel. Porcelain transforms into wood or the other way round, bearing the visual characteristics of the other material.

PORCELAIN MEETS METAL

The third material dialogue, which was very important to me, was to combine porcelain with metal. I had a chance to look closer at the world of metals through experiments which is, to me, the best way to understand materials. This was a unique opportunity to learn from the mistakes I made while experimenting with the materials. I enjoy those moments when I don't know the answer to something. Perhaps that's why these projects are different. All the errors, failures, and dead ends lead the project to the next step. First, I tested vessels made of different metals like aluminium, iron, and steel. It was fascinating to explore the difference between weight, colour, shine, and polish. Then I returned to using porcelain and covered the pieces with a metallic glaze. The porcelain vases looked like they were made out of metal, but they weren't. This took the experiment a step further than when I combined porcelain with wood. I am not joking – I tricked the user into thinking that they were looking at a metal object, which needed only to be touched for them to realise that they were actually holding a ceramic piece.

THE SHIFT

My latest project is a series called "The Shift". The inspiration, among others, came from interior design and architecture in general; the ceramic process of making moulds and casting consists of the same procedures. Looking at buildings gives me many new ideas, and their dynamics inspire me. I started to break the moulds and shift them. And it has been fun! I simplified the concepts through a playful process and then continued in that direction. It is all about curved and straight lines and positive and negative spaces.

I created this series using marble techniques, where two porcelain colours are simultaneously poured into a mould. This resembles marble a lot. Once again the materials meet halfway. Is it marble, or something that looks like marble? My projects are not a single series or collection. They are all interconnected and in dialogue with each other. Or better, I would say that I have a never ending project. Over time I integrated the technical and aesthetic aspects and balanced them out so that neither would suffer at the hands of the other. The idea of rethinking material still pops up in my works. And after all, as a designer, I am happy when my work is understood without having to explain it. It is even better when people choose the things I make and want to use them for the long term. In general, my activity is a balance between being a ceramicist who makes utilitarian objects for sale, and experimentation with materials so as not to get stuck in one place.

After all, is a plate just a plate, or is it not?

ALEKSANDRA KĘDZIOREK

Aleksandra Kędziorek is an architecture historian, curator, and editor based in Warsaw. For the Polish Pavilion at the 2021 London design Biennale she curated „The Clothed Home: Tuning in to the Seasonal Imagination". Among other projects she curated the travelling exhibition "Oskar Hansen: Open Form" (in collaboration with Ł. Ronduda and S. Guttierez for MACBA in Barcelona, Serralves Museum in Porto, Yale School of Architecture, Museum of Modern Art in Warsaw, and National Gallery of Art in Vilnius, 2014–17). Aleksandra was also a custodian of the Oskar and Zofia Hansen House in Szumin (2013–17). She published extensively on the history of architecture and design, including the books *CIAM Archipelago: The letters by Helena Syrkus* (with K. Uchowicz and M. Wirkus, 2019) and *Oskar Hansen–Opening Modernism: On Open Form Architecture, Art and Didactics* (with Ł. Ronduda, 2014).

ANNA ROSINKE
MACIEJ CHMARA

Chmara.Rosinke is a creative studio designing, directing, and executing objects, interiors, exhibitions, and pop-ups from concept through to creation. Many of their works are inspired by functional and socio-cultural aspects and strive to combine craftsmanship with a conceptual and ecological approach to design. Anna Rosinke and Maciej Chmara met during their architecture and design studies at the Academy of Fine Arts in Gdańsk. Their projects have been shown during the Milan, Dutch, Paris, New York, and Vienna Design Week, in MAK, the Austrian Museum of Applied Arts, and other international design fairs and exhibition. They are the authors of "Essays on Kitchens" published by Spector Books in 2019, which coincided with their exhibition "Mobile Kitchens" showcased at the Kunstgewerbemuseum in Berlin in the same year. Anna and Maciej teach at Universität der Künste Berlin.

DARIA WYPIÓR

Daria Wypiór graduated at the Academy of Fine Arts in Gdańsk and Łódź. As part of her design approach, she is guided primarily by empathy and sensitivity as well as the broader context of her projects, by taking care not only of the needs, but also the emotions of the users. Daria's versatile approach to design themes is reflected in her portfolio, which is ranging from industrial products, jewelry, as well as nautical design, and architecture projects. Daria was a finalist in the MAKE ME 2021 – international design competition for young designers at Łódź Design Festival, as well as Design 32, a national competition for the best design diploma. She is also the winner of the Grand Prix in the design category at Gdynia Design Days.

KÄRT OJAVEE

Kärt Ojavee is an artist, designer, and researcher. She experiments with new technologies and traditional textile fabricating techniques, testing the boundaries of both disciplines. In 2013, she defended her thesis "Active Smart Interior Textiles: interactive soft displays" at the Estonian Academy of Arts, supervised by Maarja Kruusmaa at the Centre for Biorobotics. Besides working on her own practice, Kärt is currently a research fellow at the Estonian Academy of Arts' Interior Architecture Department where she is researching on experimental biomaterials and living materials.

KLEMENTYNA JANKIEWICZ

Klementyna Jankiewicz is a designer working at the intersection of science, technology, culture, and education. She designs interfaces for quantum technologies. Klem co-founded Quantum Flytrap, which solutions are used by the industry as well as professors at Oxford and Stanford. As a part of Jankiewicz Studio, she has worked with cultural and educational institutions worldwide. Klem was a visiting designer at the Centre for Quantum Technologies at the National University of Singapore, she worked with the Hebrew University of Jerusalem, the University of California Irvine, and JW3 London. She has designed the artwork permanently covering the whole facade of POLIN Museum in Warsaw. She also cooperated with Adam Mickiewicz Institute, most recently developing projects for LEM 2021. Klem's projects were showcased at international design exhibitions and festivals, such as New York Maker Fair, ICFF New York, 100% Design Tokyo, 100% Design London, and Seoul Design Week among others.

LIBBY SELLERS

Libby Sellers is a design historian, independent curator, and writer based in London.

She was former senior curator of London's Design Museum (2000–2007) and supported emerging design through her eponymous gallery (2007–2015). Now Libby focuses on writing and curation for personal initiatives, private galleries, and public institutions, including the first-ever design exhibition at Frieze New York 2020. She has authored numerous essays, catalogues, and publications on design and is a juror on international design awards. In 2018 Women Design, a survey of inspiring female practitioners from the last 100 years, was published by Frances Lincoln and has resulted in countless lectures, talks, and articles on gender diversity in design ever since. Women Design has since been published in numerous languages and is now available in paperback. In 2014 Libby was honoured by the British Women of the Year awards as a Woman of Achievement in the Arts.

RAILI KEIV

Raili Keiv is a ceramic designer who lives and works in Tallinn, Estonia. She is intrigued by the possibilities included in both ceramics industry and small-scale studio work. Raili is fascinated by the perfection and efficiency of industry while admiring the errors that keep unintentionally appearing in small-scale pieces produced by hand in her studio. During her studies, she has also completed internship at the porcelain factory "Kahla" in Germany. After completing her studies, Raili set up her studio in Berlin and has recently moved back to Tallinn where she is living and working now.

SARA BOŚ

Sara Boś is currently the Head of the Robotics and Digital Workshop and tutor on the Industrial Design Programme at the School of Form in Warsaw. Her research focuses on parametric design and digital processes in manufacturing and interested in exploring the symbiotic relationship between industrial manufacturing and handicrafts. Sara graduated from School of Form with a diploma in Industrial Design and Academy of Art and Design in Wrocław and later worked at Oskar Zięta studio. Her designs were exhibited at Dutch Design Week, Milan Design Week, and Gdynia Design Days. Currently, she teaches at School of Form in Warsaw. Before embarking on her design and robotics career, Sara trained as a gymnast, ballet dancer and music player (double bass).

TRIIN JERLEI

Triin Jerlei is a design historian, educator, and curator. She is currently working at the Estonian Museum of Applied Art and Design and at Middlesex University in London. Her research interests include transnational design histories, local design in Soviet Estonia, and history of factory glass. Triin received her PhD from the University of Brighton in 2016 for the research thesis "Industrial designers within the Soviet Estonian design ideology of the Late Socialist period, 1965–1988". She has taught at several universities in Estonia and internationally, and curated several exhibitions.

WIKTORIA SZAWIEL

Wiktoria Szawiel is a designer and a PhD candidate in Arts Education at the University of Lisbon, Portugal. She graduated from the Academy of Fine Arts in Warsaw, Poland, with a bachelor degree in Product Design and the Design Academy Eindhoven, the Netherlands, with a master degree in Contextual Design.

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