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Intimacy

EMBODIED KNOWLEDGE,
CREATIVE WORK AND DIGITALIZATION
IN CONTEMPORARY FINNISH FASHION

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Intimatizing Fashion – Digitalizing Intimacy

Many are familiar with the fashion and textile company Marimekko, but what else makes up Finnish fashion and design in the 2020s? What lies in the usually invisible creative work process that begins with sketching and ends in a finished product? What impact do digitalization and datafication have on a designer's work? How are the boundaries of intimacy and the body drawn in dialogue with a garment, and redrawn now that digital clothing and wearable technology are everyday occurrences? This book examines the close relationship between a garment and the body from the perspectives of design work and finished garments, as well as the impact of advancing technology on both of these. The book is based on extensive interview material, the diploma works of young designers, and tacit knowledge we have accumulated through practical research, teaching and design work. It also draws from the exhibition entitled *Intimacy* we curated for Design Museum Helsinki (8 October 2021–13 March 2022). It examined fashion as embodied culture through seven distinct themes. Like the exhibition, this book represents findings from our research on Finnish contemporary fashion, as well as topical debates in current fashion studies. The book ends with a gallery showcasing the exhibition at the Design Museum. The book is intended both for students in the field and for the greater public that is interested in these debates and designers.

By taking a close look at the work of designers and their finished products, this book describes the tightly interwoven relationship between fashion and the body, which in the 2020s is at a turning point: fashion is becoming digital and young designers are challenging some of the traditional hierarchies and practices of fashion. In this millennium, fashion is expected to take a stand and change the world. It is an arena not only for creativity but also for critical thinking and doing, with the designer playing a key role. *Intimacy* offers views onto aspects of fashion that are usually unseen: the design process, its closely linked background research, and diverse experimentation.

We consider the intimate relationship between body and garment: how a garment positions itself between the self and the world as a kind of social skin or interface, through which we build connections with some while differentiating ourselves from others. Fashion is no longer limited to traditional clothing design, but encompasses a large variety of activities and methods. In addition to clothing, fashion is assuming an increasingly concrete presence in physical spaces in the form of installations, sculptural entities, or two-dimensional painterly works or photographs, breaking down the boundaries between fashion and other arts, as well as the idea of fashion consisting purely of clothes. While extending beyond traditional garments into space, fashion has also broken away from the body into installations and,

most recently, the digital world. In the digital sphere, the concrete garment and body melt away into binary "ones and zeroes": visually impactful virtual garments placed onto virtual figures such as game characters, avatars or virtual models and influencers. Additionally, new digital channels – particularly social media platforms like Instagram and TikTok – have become increasingly important distribution channels for fashion, building upon the illusion of a personal relationship between brands, designers and the consumers of fashion. Conversely, there has been a simultaneous move towards increasing embodiment, with wearable technology positioning itself on the skin to measure some of the body's most intimate functions – breathing, heart rate, sleep and stress levels, for example.

Intimacy positions itself at the crossroads of traditional fashion and fashion's expanding field. It gives a voice to well-known Finnish fashion designers, fashion companies and future hopes of the 2020s, as well as to lesser-known makers of workwear and wearable technology. It unravels the underlying work of designers and experts with traditional qualifications in fashion design who stand behind the garments, which is not always recognized in our product-centric fashion reality. They are joined by other professionals working in the sectors of fashion, clothing and accessory design, whose educational backgrounds are found in fields such as IT or engineering.

The book's themes reveal, on the one hand, the extensive revolution that is ongoing in fashion design and, on the other, a new kind of politicizing of fashion. During the 2010s, especially after the deadly collapse of the Rana Plaza factory complex in Bangladesh, where at least 1,132 people were killed and more than 1,500 were injured, fashion has obtained a new awareness of its impact on the environment and workers' rights. The appalling tragedy, which was extensively covered by mainstream and social media, sparked a debate that has had a significant effect on the fashion industry's production methods, the human rights of textile workers, and awareness of issues such as modern slavery, corporate social responsibility and the indispensability of transparency. Entering the 2020s, sustainability and corporate responsibility have also become major trends in fashion, globally as well as in Finland.

Many of the designers and companies discussed in the book, among them Marimekko, are now accounting for environmental impact in their operating models, with regard to material choices and production methods. Finnish labels such as Juslin/Maunula, Paintings and Nomen Nescio are among the younger generation of companies that have integrated ecological sustainability principles into their brand identity and work with recycled, upcycling or methods such as the zero-waste

1   Rissanen and McQuillan 2018. In zero-waste design, patternmaking becomes a part of the design process, rather than a separate phase. It means considering for example what will be done to any cutting waste – can it be employed as part of the production of the garment?

2   E.g. Bartlett 2019.

3   Särmäkari 2021.

4   Härkönen, Hokka et.al. 2022.

5   E.g. Barthes 1990 [1967]; Wilson 2013 [1985]; Ash and Wilson 1993; Davis 1992; Barnard 1996; Cole 2000; Entwistle 2000a; Titton 2019.

6   Merriam-webster. com, 2022.

7   E.g. Boris and Parreñas 2010; Wilson 2004, 2016.

8   Berlant 1998.

9   Wilson 2016; Paasonen 2018.

10   Berlant 1998; Wilson 2016.

11   Bruno 2008.

12   Turner 2012.

principle[1], which minimizes the waste generated in garment cutting. Adopting these principles has made fashion socially and politically aware.

By *politicization of fashion*[2] we mean not only the ways in which fashion addresses global cultural and political issues such as climate change, but also its attitudes towards prevailing body norms related to gender, sexuality, size and skin colour, among others. Many of the designers included in this book, such as Henna Lampinen, Ervin Latimer and LAURIJARVINENSTUDIO, have adopted a particular stand on fashion's social and cultural responsibility, non-discrimination and diversity, while also considering it self-evident that their design and production methods must not waste raw materials. These issues become particularly evident in the kinds of people and bodies for whom fashion is designed and that are used in customer communications. They are ways in which fashion can speak out and attempt to change the world and its prevailing norms.

Intimacy demonstrates the radical changes that are currently ongoing in the field of fashion design. They relate, among other things, to our understanding of a garment as an arena for self-expression: for whom and for what kinds of bodies are clothes designed for? At the same time, fashion has distanced itself from the body in the world of imagery and social media, where it is an increasingly crucial embodiment of our pictorialized and mediatized culture and a form of visual communication in itself. Social media has also had a major impact on the distribution of fashion, forcing the sector to communicate more openly with diverse audiences.

Another impact of digitalization has been that many designers and fashion companies, such as Matti Liimatainen and The Fabricant, have adopted new technologies as their design tools or abstained entirely from physical garment production, focusing instead on virtual clothing.[3] In a contrasting trend, wearable technology has claimed its place as a measurer of bodily functions, bringing the body back into the sphere of fashion in a new way. We use accessories such as watches and rings designed by Oura or Suunto to monitor our breathing, heart rate, sleep quality and stress levels, for instance to improve our fitness or work performance. Some employers have embraced wearable technology: companies like Image Wear make workwear with embedded technology to keep employees safe.[4] Fashion has long been seen as an area of culture that creates and communicates meanings[5], and today's mediatization and digitalization of fashion and design have only reinforced this. At the same time, these developments have broken down the traditional understanding of fashion equalling clothing, altering where and how fashion is distributed and consumed, as well as who designs it in the first place.

An analytical concept running through the book is *intimacy*. By definition, it means the state of being intimate, i.e. something familiar, informal and personal, marked by close association[6]; something that falls primarily within the private sphere. In recent decades, the concept has been used especially in feminist and queer research, being applied, for example, to studying various manifestations of labour seen as intimate and feminine: housework, care work, sex work.[7] Fashion can easily be paralleled to these, as it is generally a feminine sector based on handcrafting and sewing, traditionally seen as women's work. Fashion as a cultural phenomenon is also linked to women due to its association with body decoration and appearance alterations, despite the fact that most well-known designers are men and that men also wear clothes and look after their appearance.

The concept of intimacy is traditionally applied to explaining and challenging the boundaries between private and public, demonstrating, for example, how the capitalist system strives to drive a gendered wedge between *work* and *non-work*, with women and their endeavours falling within the latter due to their intimate nature.[8] The concept is also used for analysing digital platforms, whose entire premise is to form an "infrastructure of intimacy", built on the idea of sharing intimate information.[9] In this way, the concept illustrates how intimacy – that which is considered private and personal – not only defines issues and phenomena within the private sphere but also has a significant impact on our understanding of the public: what is defined as work, how we understand the body, or how we should act and in what register we should communicate on various social media platforms (e.g. Facebook, Twitter or Instagram). The concept has been used to demonstrate that the private and public do not categorically differ from each other, but instead overlap and influence each other in many ways.[10] The intimate defines and alters how we see the non-intimate.

From the perspective of fashion, intimacy is a productive concept. Chapter 2 looks at finished products – garments designed to be worn on a daily basis – and considers to what extent they crystallize the designer's understanding of intimacy and the personal, and how this is communicated through the garments' forms, materials and colours. Garments present themselves as interfaces between the intimate and the public; the self and the world. The relationship between attire and the body is very close: a garment is like a "second skin"[11] through which we publicly announce various aspects of our personal identities, such as age, social status and gender. At the same time, it is a "social skin"[12]

that creates an experience of the self to share with others. In this sense a garment is already virtual, generating interpretations – correct or incorrect – of who the wearer is and what they stand for.

Chapter 3 looks at clothing and fashion design as intimate and embodied work connected to ideas, materials and bodies. We examine the design process from the perspective of how a designer utilizes knowledge imparted by their own and others' bodies, on matters such as good taste, beauty or comfort. Chapter 4 considers the mediatization of fashion, which alters our conceptions of clothing, intimacy and the private/public boundary. We particularly delve into the interrelationship between fashion and imagery, social media as a new platform for creating, distributing and encountering fashion as image, and the impact of digital technologies on design work. We consider how fashion is virtualizing and how virtual elements are used in carrying out and teaching patternmaking, prototyping and manufacturing. We suggest that this technologization has brought together the sphere of fashion, generally seen as feminine, with the traditionally masculine one of engineering/IT.

Chapter 5 continues our analysis of fashion's ongoing digital transformation. We examine how wearable technology has become a part of fashion and how it alters our understanding of intimacy. It affects our very concept of clothing, with "smart garments" relying on the data they collect on the wearer to justify their very existence. The chapter analyses the understanding of the body that wearable or fashionable technology imparts to its users. It transcends the boundary between public and private that is the skin, homing in on bodily functions. Thus, wearable technology goes even further than the digital media that convey clothing and fashion, turning the intimate – private bodily functions – into measurable data and thus bringing the body back into the arena of fashion. Data on the body can be used in designing products and services, as well as altering the wearer's body and identity.

Chapter 6 looks at how fashion and our concept of intimacy are continuously changing, as fashion becomes conceptualized and finds new forms of expression. These changes are driven by technology, but also by fashion's close association with other fields, such as visual arts, architecture, music, performance art, films, gaming and spatial art. These encounters are broadening not only our understanding of fashion but also fashion's relationship with garments and the body. The other arts offer sources of inspiration and new forms of expression for fashion. We explore fashion from the perspectives of conceptualization and intellectualization[13], i.e. the changes that are blurring the boundaries between fashion and other sectors, between garments and non-garments,

and between people and our environment – the human and non-human.[14]

In this book, fashion is understood as a critical social institution that affects individuals and groups and alters our relationship with the world. Fashion is also seen as a sector of design that gives global trends and tendencies a local, individual and personal – intimate – form. Therefore, *intimate* is not purely a descriptive term; it is an interpretive framework and an analytical tool through which we open doors into the multilayered ways in which Finnish contemporary fashion and wearable technology handle issues within the spheres of the human and personal, as well as intimate data. The concept of intimacy can help in understanding the themes that have become increasingly visible and central to fashion, especially since the late 2010s and early 2020s. In this way, the concept goes beyond any specific, recognizable theme or garment type (e.g. underwear); instead, it draws attention to the individualization of contemporary fashion, the increasing significance of identity issues, and the growing role that personal data plays in the virtual fashion and wearable technology design process.

In this sense, this book bears witness to fashion's ongoing revolution(s). Many of the designers featured in the book use fashion as a medium for critiquing, challenging and presenting new mindsets. For young designers, designing is an opportunity for subverting some of the norms linked to bodies and identities, or for tackling social and ecological crises. In this respect, Finnish contemporary fashion follows the international trend by which the late 2010s and early 2020s are characterized as a new era of politicization of fashion.[15] Fashion magazines declared 2017 as the "peak of political fashion", after which a growing number of fashion companies – including US sportswear giant Nike, Vivienne Westwood in the UK, Dior in France and Prada in Italy – rushed to express support for feminism, LGBTQI+ rights, anti-racism or human and environmental rights.[16] One could say that this politicization trend reflects broader social and activist movements that the age of social media has turned global, such as #MeToo that calls for an end to sexism in the cultural sector, or Black Lives Matter, which opposes police brutality against people of colour.

Intimacy examines the global changes taking place in the fashion sector from the perspective of Finnish designers and fashion. The book includes previously unpublished research on the work processes of well-known Finnish designers such as Teemu Muurimäki, world-renowned companies like Oura and Suunto, and future greats graduating from Fashion Design at Aalto University. It is based on interviews with designers and companies, on (tacit, embodied) knowledge we have obtained as teachers, researchers and students of fashion design,

13 E.g. Clark 2012; Van de Peer 2014.

14 E.g. Vänskä 2018; Smelik 2018.

15 Bartlett 2019.

16 Titton 2019; also Vänskä and Gurova 2022.

FIG. 1 · Detail from Juslin/Maunula's installation *A Floating Surreal World,* presented at the exhibition *Intimacy* at Design Museum Helsinki (2021–2022). Photo: Paavo Lehtonen.

and on extensive visual materials. Interviews with designers were conducted between 2018 and 2021 and supplemented by media materials on the designers, free-form conversations and email exchanges, as well as documents produced by the designers and companies, including theses and website content. In relation to some designers and companies, the authors relied on case studies, and the research materials also included observational notes and diverse available data.[17] They were used to shed light on various aspects of the design process, as well as interpretations of and attempts to reinterpret the intimate and personal that are visible in the finished products. The book provides fresh perspectives on what it means for a designer to work not only in sketchbooks but with algorithms, and that their design teams now include app developers. We argue that a garment is more than a garment and that fashion is not just a sequence of rapidly changing trends: fashion, understood in a broad sense, is a research process that requires creativity and critical thinking, continuously redefining human existence as individuals and members of a community. This book describes the reserves of creative work and excellence that exist in Finland today: we want to make them better known and raise their value in the eyes of professionals and the greater public alike.
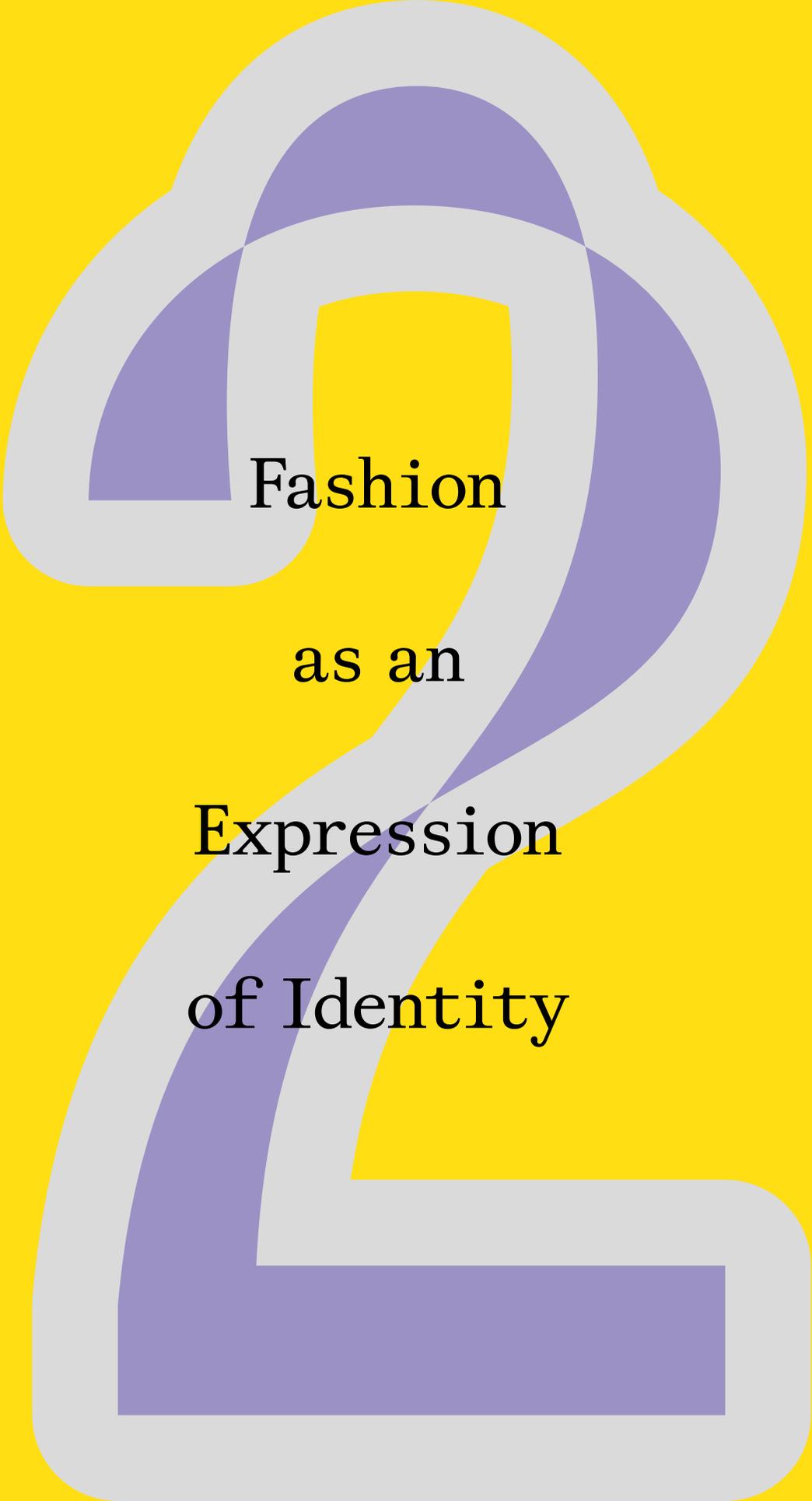
Fashion as an Expression of Identity

Intimacy is a concept highly charged with meanings. Its synonyms include familiarity, which is linked to closeness, privacy and corporality.[18] It involves the idea of a feeling that can range from "cool, close observation to hot involvement," as the sociologist Viviana Zelizer[19] puts it. Intimacy describes a close relationship between bodies, containing the idea of knowledge and attention that are not widely available to others. In relationships between people, intimacy means knowledge of secrets, bodily information and personal vulnerabilities, and may also involve a private language, shared feelings and memories. In relation to fashion, intimacy refers on the one hand to a specific kind of garment not intended for public view (underwear), but on the other hand also to the close relationship between a person and their clothing. It is this latter, rather than the former idea that is essential to this book.

Going beyond garments themselves, intimacy also relates to fashion as a concept that describes one's relationship with others and how the compound effect of a body and its clothing alters our understanding of a person's identity: what the wearer is like or is assumed to be like, not only in terms of appearance but of beliefs, values, worldviews, and so on. Our area of interest is the relationship that humans have with their garments and how designers construct this through their work; in other words, besides the meanings bestowed by people, we observe a garment's ability to build and alter our impressions of its wearer.

Traditionally, the concept of intimacy differentiates between public and private, local and global. The same task is carried out by a garment, which separates the intimate and private body from the public self by positioning itself between them. When the concept of intimacy is utilized as an analytical tool, it also demonstrates how society and our social relations are built upon the distinction between public and private and our related negotiations. The private and intimate are defined as personal aspects of our corporality, whereas the public is seen as an arena for thought. The distinction is also strongly gendered: the private and bodily are seen as feminine, while the public is rational and therefore perceived as masculine.[20] When intimacy is applied to clothes as an analytical tool, it has the potential to challenge this separation. The garment is simultaneously intimate and public, bringing together intimate thoughts and assumptions made by others.

Recent research has been challenging the aforementioned binarisms. Research on the commercialization of intimacy, for example, has suggested that intimacy is a central concept in defining the public sphere. These days it forms a part of routine media debates, where the intimate relations and disclosures of personal feelings and experiences of celebrities make up daily news fodder.[21] In fashion research, intimacy is a central concept that has been the subject of surprisingly little analysis and application, perhaps because it is so self-evident. In any case, a garment is a tool with and through which we negotiate issues such as the boundary between the private and the public self: most concretely the issue of what we want to cover or show on our bodies and, more broadly, what we want to reveal or hide about our private selves. The negotiation between private and public using garments and their related representations is a central, if not the most central, aspect of fashion as an embodied culture, in which intimacy plays a central role.

FASHION DESIGN AS RESEARCH-ORIENTED PRACTICE

Fashion and its related research are extensively linked to exploring and articulating the close relationship between our bodies and the world. Professor of fashion studies Patrizia Calefato has noted that "fashion has turned the body into a discourse, a sign, a *thing*."[22] By this she means that the body is not just a body, a material entity, but discursive[23], actively creating meanings about the person and the world. She also maintains that clothes play a central role in forming our understanding of the body and its transformations, if the body "simply lets itself open up."[24] Our understanding of the body does not change by itself but in close interaction with clothing. Like the body, clothes are also discursive/material meaning makers that help open up the body and make it intelligible.

Writing this book, we also felt it was important to draw attention to the broader context of international fashion research, since it is still a rather new field of research in Finland. One could say that as a research subject, fashion has been culturally and globally incohesive and falls between various disciplines. The formation and development of the field of research has relied upon researchers from diverse backgrounds in the humanities and social sciences: art history, cultural anthropology, ethnology, museology, sociology, cultural studies, consumer culture studies, marketing, media studies, film studies, gender studies and, lately, design studies. As an academic discipline overall, fashion studies is still a relatively young field. It has arisen in and around urban centres in which the textile industry has historically been located. The presence of the clothing industry in metropolises[25] like Paris, London, New York and Milan has thus given rise to fashion-related academic research and degree studies. Besides these locations, fashion studies can be taken in several European universities, such as Brighton and Edinburgh in the UK, Antwerp in Belgium, and Bologna and Bari in Italy, as well as Australia's Sydney and Melbourne, Toronto, Canada, and Wellington, New Zealand.

18 Wilson 2016.

19 Zelizer 2005: 14.

20 Berlant 1998; Wilson 2016.

21 E.g. Zelizer 2005; Saarenmaa 2010.

22 Calefato 1997: 72.

23 Also suggested by Judith Butler in Bodies that Matter (1993).

24 Calefato 1997: 72.

25 On fashion cities see e.g. Breward and Gilbert 2006.

FIG. 2 · Vyner Articles, shirt named Salmiakki from the Spring/Summer 2020 collection. Vyner Articles creates daily wear such as shirt jackets, which may be worn for work or leisure depending on the context. The brand is inspired by the history of workwear, playing on the concept of today's workers, who are not necessarily physical labourers but office workers, creatives, musicians or designers, for example. Photo: Vyner Articles.

FIG. 3 · Vyner Articles, overalls from the Fall/Winter 2018 collection. The brand designs work and casual wear for creative workers. The starting point for its collections is always a white garment that is reworked by printing, dyeing or other methods. The brand calls its clothes *artworkwear*. Photo: Vyner Articles.

FIG. 4 · Outfit from Rolf Ekroth's 2017 collection *June 17th 1994*. It made it to the final of the esteemed Hyères International Festival of Fashion, Photography and Fashion Accessories contest. The cape was made using the devoré (burnout) printing technique. The outfit was made in collaboration with Japanese textile designer Yuki Kawakami. Photo: Sofia Okkonen.

26 Lappalainen and Almay 1996.

27 There are several reasons for this downfall: automation of production, reduction in production volumes and the growth of imported cheap clothing, as well as the fall of the Soviet Union (a crucial export trade partner).

28 Jenss 2016.

29 The Centre for Contemporary Cultural Studies (CCCS) at the University of Birmingham has had a significant impact on the growth of fashion studies. Its students, including Angela McRobbie and Dick Hebdige, have carried out pioneering research on British working-class music and fashion cultures (Hebdige 1979) and on popular magazines directed at young women (McRobbie 1978; 1991). In France, especially Roland Barthes's (1990 [1967]) structuralist research on fashion as a meaning-transmitting system of symbols has also influenced modern fashion studies. For academic studies of fashion and urbanity, see e.g. Steele 2017 [1998]; Breward 2000; Breward and Gilbert 2006; Buckley and Clark 2017; Rocamora 2009.

30 For academic studies of fashion and urbanity, see e.g. Steele 2017 [1998]; Breward 2000; Breward and Gilbert 2006; Buckley and Clark 2017; Rocamora 2009.

Even though Finland was a big producer and exporter of clothes after the 1960s[26], this did not result in academic fashion studies, most likely because of the downfall of clothing manufacturing during the 1980s and 1990s.[27] There are still no degrees in fashion studies in Finland; the closest option is offered at the University of Stockholm, Sweden. Fashion studies are scattered, in the sense that they are included in study curricula as individual courses at several Finnish universities, most often within degrees in humanities and economics. Additionally, courses in fashion studies may be taken within more practically oriented degrees in clothing and fashion design, particularly at Aalto University. In this ambit, fashion studies aim to provide a broader sociocultural context for the work of designers and to contribute to shifting design practices more in the direction of critical action and thinking – to a practice that takes into account the social, cultural and ecological sustainability of fashion and the related responsibilities of designers. This also means that the objective of more theoretically oriented fashion studies is to educate future designers in research skills, to highlight fashion design as a knowledge and research-oriented practice and to equip young designers with historical, cultural and contextual studies in which to embed their design work. The young designers and companies represented in this book set an example in this respect: their design processes draw not only from design-related questions and concerns but also from historical and contemporary debates and research in fashion studies.

Because fashion studies as an academic discipline is located within and springs from diverse scientific and artistic disciplines, its research methods vary. Fashion studies is in a "methodological diaspora,"[28] meaning it was formed without a methodological canon, with the research approach depending on the methods used in the discipline in question. Researchers and designers coming from different backgrounds mostly shared an interest in fashion and the desire to identify new ways of investigating and understanding the world, art, popular culture and everyday clothing choices, and to include cultural and social research on fashion in their design work. This methodological openness has made room for practice-based research as part of the design process. This also applies to Finland, where young aspiring designers are trained to carry out contextual and practice-based studies for their collections and other projects already in their BA-level studies.

The spectrum of research subjects in which fashion designers and companies engage is also wide, as it is in theory-oriented studies. The designers represented in this chapter indicate that themes range from the history of fashion, popular and street culture, representations of fashion and mediatization of culture to questions of clothing as an intimate and embodied culture that defines the contours and norms of our intimate selves. Many designers focus on themes and attitudes that can theoretically be located within the rising interest of cultural studies in contemporary everyday phenomena. The interwoven themes of class, gender, pop and youth culture, metropolitan life and music became the core of research thanks to the establishment of the Centre for Contemporary Cultural Studies (CCCS) at the University of Birmingham in the UK[29] and still live on and are re-articulated in the work of contemporary designers. In many ways contemporary designers have become a part of the research community, not only as subjects of study by academics but also as those who contribute to fashion studies through their creative practice. Designers are, for example, elemental in studying and re-interpreting the styles favoured by youth, subcultures and street fashion in London, Paris, Berlin and New York, lately also in cities like Tokyo, Shanghai, Copenhagen, Stockholm and Helsinki.[30]

The Finnish company Vyner Articles is a contemporary example of how the history of fashion, pop culture and the working class can be studied creatively through practice-based research methodology, in their imaginative use of prints and texts in particular. The brand's name comes from the East London gallery district Vyner Street, and the label studies and designs workwear and casual clothing for today's cultural creative workers. Vyner Articles has developed the term "artworkwear" to describe their novel amalgamation of art, clothing and work. Their design philosophy is inspired by the history of workwear, although altering the idea of who today's workers are and what they wear. The label argues that today's working-class people are not necessarily physical labourers, but might sit with a laptop carrying out research or creative work, making music or designing. Typically, the line between work and leisure is blurred, and the same is true for work and leisure wear. In Vyner Articles' thinking, daily wear such as shirt jackets may be worn for work or leisure depending on the context. (Fig. 2–3)

The Finnish designer Rolf Ekroth (b. 1981) is in turn a good example of the continuing influence of sports, subcultures and the street in fashion design. (Fig. 4) Finland is conventionally understood to be a country where sportswear is among the most worn clothing style. Finns even define themselves, ironically, as "shell suit people", referring to Finland as a nation where everyone, regardless of age, gender or status, wears functional and sporty clothes. This tradition is clearly visible in Ekroth's design work, while it also taps into the more recent change in which a sporty lifestyle essential. Theoretically, the concept of *street* in explaining fashion and its changes is linked to critiques of the idea of Thorstein Veblen's trickle-down theory, by which fashion would trickle

AALTO FASHION

The internationally most visible part of contemporary Finnish fashion falls under the brand "Aalto Fashion". It refers to designers who have graduated from Aalto University and who have made the university's fashion and textile education known to the top-tier international press and helped to create a network of top-level professionals.

The success of Aalto Fashion builds upon a critical and creative exploration of changes in designing, visioning and material production that support and expand artistic exploration. It has unfolded through the development of new interdisciplinary strategies and internationalization that brought fashion and textile students together under the same programme in 2014. Fashion design education emphasizes creativity and conceptual fashion thinking, the meaning of fashion in the social and cultural context, as well as the importance of research methods, also in exploring and making materials.

Aalto Fashion has had a range of significant impacts on Finland's fashion design, economy and society in relation to the international development of fashion design and the broader fashion business. Through international fashion competitions, it has also made itself known to the international fashion professionals who play a key part in student recruitment to major fashion houses in Paris, London and New York, e.g. LVMH, Kering, Louis Vuitton, Maison Margiela, Raf Simons, Balenciaga, Adidas, and Nike.

31 E.g. Polhemus 2010; English 2013.

32 Buckley and Clark 2018.

33 Buckley and Clark 2018.

34 Carlyle 2008 [1831]. Sharon Peoples (2014: 8-10) writes about George "Beau" Brummell, known as the archetypal dandy, that Brummell was a social climber who reached the aristocracy by learning a strict behavioural and dress code in the army. Brummell literally bought his identity: he purchased a position in the Prince of Wales's Regiment and a uniform as a soldier. Having little interest in the army beyond its aesthetics, however, he resigned from service. After this, Brummell gained notoriety in London society by organizing washing and dress shows at his apartment, until his death at the age of 61, destitute and discredited, in Calais, France, in 1840.

35 Baudelaire 1965 [1863].

36 Lehmann 2000.

37 Simmel 2009 [1904].

38 Veblen 1994 [1899].

39 Simmel 2009 [1904].

40 Hebdige 1979; McRobbie 1978; 1991.

41 Chenoune 1995: 254.

42 Hollander 1994.

43 Polhemus 2010.

44 Mort 1996; Bolton 2004.

down from the elite to the lower social classes. On the contrary, it has been suggested that fashion "bubbles up" from the street to the catwalk: that trends are born within subcultures and street styles, outside of the traditional fashion system, on society's margins, and rise up into the system through the filter of designers and other operators.[31] At the same time, the concept of street is linked to dismantling the fashion system and to the rise of research on everyday, bodily clothing practices, as well as and instead of designer-led fashion studies.[32] Rolf Ekroth's starting points are strongly rooted in the ideas of street and everyday life: how daily routines and leisure activities such as sports mould the "fashion system of the ordinary,"[33] in which clothes play a clear role in identity-building. Ekroth designs men's fashion inspired by street styles and sportswear, thanks in part to his own experiences as an athlete, blending in classic men's dress styles. Ekroth's garments are lightweight, airy and layered, and their shapes, cuts and technical materials display the strong influence of sportswear.

Research on fashion and the body is well established, both theoretically and among designers. The most classic theories on fashion were born with the creation of class societies and relate to the ways in which fashion both builds and breaks down individual identities, social ladders and gender hierarchies. A theory on the intersection of body and clothes was created already in the early nineteenth century, when Thomas Carlyle defined the dandy as "a Clothes-wearing Man, a Man whose trade, office, and existence consists in the wearing of Clothes."[34] The dandy was also a social climber. For the French critic Charles Baudelaire, the bohemians of Paris and women's fashion and cosmetics in particular were symbols of a novel urban life characterized by continuous change,[35] whereas the German researchers of the metropolitan experience, Walter Benjamin[36] and Georg Simmel,[37] as well as Thorstein Veblen,[38] who studied the consumption habit of the nouveaux riches of the US east coast, saw the contemporary fashions of the turn of the twentieth century as a phenomenon that fundamentally defined people and their places in a world in flux.

For Veblen, fashion was also strongly gendered: he stated that fashion defined people as male or female while also determining their positions in society. According to Veblen, it was the duty of a fashionable woman to display the wealth of her husband, materialized in the form of uncomfortable, impractical and flamboyant clothing on the female body. Simmel proposed that uncomfortable fashion was proof of women's lower social status beneath men and claimed that fashion only existed in societies that subjugated women.[39] The same idea persists today: fashionable and showy clothing is not associated with power in society. Feminists have fought against this notion and the general view of women since the start of the 1900s, when trousers on the one hand and leg-revealing skirts on the other became symbols of women's emancipation. In the 1960s, this evolved into miniskirts. The twenty-first century's SlutWalk is a transnational protest movement created in the early 2010s, which defends women's bodily autonomy and right to bare as much or little skin as they want. Clothes have thus played a significant role in political activity promoting women's rights.

Class theory has been a very popular perspective from which to analyse fashion as an embodied and feminine culture. The intersection of class and gender has remained strong throughout recent research, both European and American, ever since the establishment of the CCCS at Birmingham, where there was a particular focus on young men's musical subcultures from the 1950s onwards.[40] London, the mecca of youth and men's fashion, experienced the so-called Peacock Revolution in the 1960s,[41] which revolutionized menswear, ditching the normative suit in favour of brightly coloured, embroidered clothing.[42] In the 1970s, the clothes and styling of punk and glam rockers opened new perspectives onto the use of clothing as a means of communicating a subcultural identity.[43] Style magazines of the 1980s, such as *The Face* in Britain, turned their gaze onto the "new man", a man interested in fashion and consumption, whose style drew from gay men's trends, by which straight men were permitted to pay attention to their appearance and admire other men.[44]

One example of the link between clothes and subcultures in today's young designer generation is Antonina Sedakova (b. 1991). Her collection *Communication Tube* (2017) is politically charged (Fig. 5). It is a study of creativity and identity in post-communist Russia and how an individual voice can be heard in a society that tends to strongly repress freedom of expression. Sedakova's collection was inspired by Soviet-era uniforms and 1980s' sub- and countercultures, which were forced underground by the official Russian culture. It examines possibilities for self-expression in a repressive regime that strives to control not only minds but also bodies. For her collection, Sedakova investigated archival photographs from the 1980s, documenting underground Soviet music circles and artists, and also interviewed her own mother concerning experiences of a communist youth association summer camp that sought forcefully to alter the mindsets of so-called problem youths. Although the collection's focus is on political history, the topic is of current interest in today's Russia, where subcultures and gender and sexual minorities in particular have difficulties expressing themselves and their opinions.

We speak of a new politicization of fashion, but, as Sedakova's work reminds us, clothing has long been

FIG. 5 · Antonina Sedakova's non-gendered garments display the influence of workwear and uniforms, as well as artistic anarchy. In her collection *Communication Tube* (2017), Sedakova captured the appearance and energy of 1980s' Soviet Union, although it also has links with post-communist contemporary fashion, the so-called Soviet chic created by Demna Gvasalia (founder of Vetements), Russian fashion designer Gosha Rubchinskiy and stylist Lotta Volkova. The collection gives praise to creative youth rebellion against narrow-minded societies. Photo: Antonina Sedakova.

45   Wilson 2003 [1985]; Davis 1992; Craik 1994; Vinken 2005; see also Skeggs 2002; McRobbie 1998.

46   E.g. Wolf 1991; Chernin 1981; Bartky 1990; Bordo 1993.

47   Wilson 1992: 6–7.

48   E.g. Tseëlon 1995; Cole 2000; Entwistle 2000b; Geczy and Karaminas 2013; Twigg 2013; Vänskä 2017a.

49   During the 21st century, the number of peer-reviewed journals publishing fashion research has grown rapidly. On this topic see e.g. King and Clement 2012.

50   Blumer 1969: 275–291.

51   Entwistle 2000b.

52   Foucault 1988.

53   Watkins 2018.

54   E.g. Titton 2019; Mends, Ringrose and Keller 2019; Gill 2016.

55   Karmali 2013; Gibson 2014.

56   Bartlett 2019. The T-shirt was sold for around EUR 500 which puts it and the slogan into a somewhat questionable light and raises questions of whom exactly Dior means by "we".

57   Monica Titton (2019) has noted, however, that these kinds of gestures can be seen as "superficial", if, as in Chiuri's case, the design aesthetic "revolves around a reinterpretation of Christian Dior's silhouettes from the 1940s and 1950s, takes cues from the branding savoir-faire of John Galliano, and relies heavily on her problematic 'appreciation' and exoticization of 'foreign cultures'."

58   Heywood and Drake 1997.

59   Titton 2019. See also Victoria Browne, who discusses the topic extensively in Feminism, Time, and Nonlinear History (2014).

political. (Subcultural) garments have been used as tools for expression of identity – for socially and politically marginalized groups, whose existence is for one reason or another not recognized or accepted by the dominant culture. In the West, these groups have traditionally included gender and sexual minorities, but – as Sedakova's collection proves – they also include political nonconformists or those who simply fight for their right for equal treatment. Fashion fulfils a paradox: it offers means for creatively negotiating one's identity, either adapting to norms or challenging them.

The spheres of feminist art and pop culture research have also given rise to a fashion tradition in which gender is a central analytical tool.[45] One of the premier trailblazers is the art historian and fashion researcher Elizabeth Wilson, who was examining fashion as a gendering social technology as early as the 1980s – a time when so-called second-wave feminists mostly viewed fashion as a culture of oppression against women.[46] By her 1992 fashion studies reader *Chic Thrills*, Wilson pointed out that the atmosphere had changed, with a new academic interest in fashion related to the erosion of "great narratives" and all-encompassing theories, and to the rise of postmodernism. The narratives that she referred to saw shifts in fashion as reflections of Western civilization and progress and as demonstrations of the superiority and distinction of Western culture over others.[47] Wilson wrote that fashion is opposed to essentialism, being an embodiment of the fact that culture has no invariable meanings or identities. Fashion is a central part of contemporary culture, which is in constant flux, drawing attention to the fact that any meanings we assign to the body, identity and gender also continuously change.

Since the late 1990s and, particularly, in the 2000s, scholars have increasingly turned their gaze onto fashion, the gendered and sexual body, and other identity-defining aspects, as well as the interrelationships between these.[48] It is a testament to the importance of the body and embodiment in fashion that the first academic peer-reviewed journal focusing entirely on fashion studies, *Fashion Theory: The Journal of Dress, Body and Culture*, established in 1997 with Valerie Steele as editor-in-chief, explicitly mentions the body in its very title. From its inception, the journal has published research focusing on fashion as a culture that moulds the body and the self.[49] Therefore, even though fashion can appear across the board of our daily lives, from eating habits to cars and interior décor, as Herbert Blumer proposed in the 1960s,[50] most often it materializes on the surface of the body as clothes and body decorations ranging from hairstyles to makeup, tattoos, jewellery, piercings and other body modifications.[51] Researching, interpreting and attempting to change ideas of the body are also central themes in the work of many Finnish

contemporary designers. But before turning to these, a few words about theory of gender.

FASHION CREATES GENDER

Instead of directly theorizing on intimacy, fashion studies in the 2000s has wanted to analyse the ways in which fashion builds cultural understandings of the body and identity through clothing. Besides Elizabeth Wilson, this has particularly been influenced by the American philosopher Judith Butler's theory on the performative nature of gender, and by applications to fashion of the French philosopher Michel Foucault's theories on self-discpline, bodily control and technologies of the self.[52]

The shifts happening in the field of fashion are extensively linked to progress made in the arena of feminism. Today's global feminism[53] stands for equality, freedom and emancipation in various democratic nations around the world, which, for some scholars, has made feminism fashionable.[54] In other words, fashion has not just adopted feminist operating models but has turned feminism into fashion. Two French fashion houses provide good examples: Chanel has been closely linked to feminism throughout its history, from its founder Gabrielle "Coco" Chanel to creative director Karl Lagerfeld, who died in 2019 and whose fashion shows included, among others, a same-sex marriage in 2013 and a feminist protest in 2015;[55] meanwhile, Dior's current creative director and the first woman to hold the post, Maria Grazia Chiuri, released a T-shirt just a few months after her recruitment in 2016, bearing the slogan "We Should All Be Feminists" by the well-known Nigerian feminist and author Chimamanda Ngozi Adichie.[56] Ever since then, Chiuri has worked systematically to turn Dior into a feminist luxury brand, particularly through the company's communications.[57]

The fashionable status of feminism is nothing new, however, and also depends on the kind of feminism being referred to. At its core, feminism is a collective action whose aim is to increase people's awareness, change mindsets and offer tools for changing societal structures. In academia, feminism has striven to draw attention to women's achievements in various sectors in order to erode chauvinism in science, research, art and culture. Alongside academic feminism, feminist activism has also undergone diverse stages. In the West, feminism became mainstream during the period about which Wilson was writing: the late 1980s and early 1990s. This was described by the media as the "third wave" of feminism, while academia saw it as a new kind of feminist mindset and activism, one affected by postmodern theories of body and culture that differed from the second wave of the 1960s and 70s.[58] Although the wave metaphor has been criticized for oversimplification and mixing various discourses and points of view,[59]

FASHION AND FEMINISM

Fashion and feminism have always been intimately linked. Fashion has formed a part of feminist movements and clothing has been an important element of feminist activism. Attitudes towards fashion have varied, however. Elizabeth Wilson (2003 [1985]) and Wendy Parkins (2002), among others, write about so-called first-wave feminists – the suffragettes of the late 1800s and early 1900s. The movement called for women's suffrage, the right to work and study, and generally the opportunity to take part in society. The movement, run mostly by white middle-class women, viewed the fashion of the time – including corsets and hoop skirts – as a patriarchal conspiracy against women. The Women's Dress Reform (1868) stood for loose clothing, considering it a symbol of female emancipation. After the First World War, in the 1920s, the New Woman was a modern young woman who wore ankle-revealing skirts and tops without corsets, and moved more freely in the urban space. The shift in women's social status took the feminine ideal in a more androgynous and boyish direction, which was reflected and created in and through the clothes' geometric forms. Gabrielle "Coco" Chanel pioneered trousers and Jean Patou, sportswear for women. In the 1930s, Elsa Schiaparelli came up with culottes and "mannishness" became a fashion phenomenon thanks to cross-dressing Hollywood stars such as Marlene Dietrich and Katharine Hepburn.

The second wave of feminism dates back to the sexual revolution of the 1960s. It drew attention to inequality between the sexes and to discrimination against women in the workplace, emphasizing women's sexual autonomy and right to decide on their own bodies. Debates on the contraceptive pill and the right to abortion led to the feminist slogan "The personal is political". Second-wave feminism objected to fashion and called for "naturalness" in women, from whence the idea of burning bras. Feminism also had close links to fashion consumerism: in Finland the designer and founder of Marimekko, Armi Ratia, created the "Mari Girl", who typified the brand's consumer as an independent and equal subject who wore colourful and artistic clothing. In the US, the women's magazine Cosmopolitan underscored not only fashion but also sexiness in women. Second-wave feminists were also pre-eminently white middle-class women. Betty Friedan's The Feminine Mystique (1963) and the liberal feminist magazine Ms., founded by Gloria Steinem in 1971, gave women the voice that they lacked in mainstream media.

The third wave of feminism is generally dated from the early 1990s to the early 2000s. It was characterized by internal criticism and an emphasis on diversity among women. It saw fashion as a tool for emancipation. Again, it was mostly led by white women, being linked particularly to Judith Butler's gender performativity theory, according to which crossdressing or the body in drag is a crucial analytical tool. Feminist fashion was seen as offering women self-confidence, empowerment and a way to take control of their own sexuality.

60 Postfeminism can be understood in two ways: either anti-feminist discourse (McRobbie 2009) or internal criticism of feminism utilizing poststructuralism to theorize on subjecthood (Butler 1990).

61 E.g. Butler (1990); Fraser 2001; Haraway 1985, 2003.

62 Spivak 1981; hooks 1981; Anzaldúa 1987.

63 Butler 1990; Butler 1993.

64 E.g. Saarikoski 2009.

65 Bruzzi and Church Gibson 2008; see also McRobbie (2009), who has also warned against the commodification of feminism, which is in line with neoliberalist politics and its emphasis on individual responsibility and self-development.

66 In this, Butler follows the tradition of philosophy of language, e.g. J. L. Austin, who developed the theory of the speech act and according to whom words are actions (1990 [1962]: 4–11).

in this context it works to describe changes that have taken place in the relationship between fashion and feminism. The "postfeminist"[60] feminism of the third wave is characterized by internal criticism and an emphasis on pluralism, as well as adding new perspectives into feminist discourse, for instance in the form of identity politics, queer theory, eco and cyber feminism.[61] Intellectually, it challenged the earlier feminist waves' image of femininity and, especially, their negative attitudes towards fashion. It also enriched Anglo-American and Western European feminism with perspectives emphasizing the experiences of people of colour, Latinos and sexual minorities.[62] In short, third-wave feminism shifted attention away from a single female identity and the male-female dichotomy, and towards diversity among women and the hybridity of identity. Furthermore, it made feminine dress and make-up acceptable as feminist statements.

At this point, the relationship between fashion and feminism changed fundamentally. It was driven especially by Judith Butler's now classic book *Gender Trouble*, and a couple of years later their *Bodies that Matter*.[63] Butler's criticism was aimed at prior feminist research; she pointed out that "women" do not form a single homogenous group and that there is no "essential femininity" shared by all women in contrast to men. Butler also proposed that the body is discursive rather than unchangeable or determined from birth. Butler's starting point was that differences exist not only between the genders but also within each category – in this case women. They looked particularly at sexuality and wrote that our understanding of gender is intertwined with sexuality and that we generate expectations of both by replicating culturally determined and entrenched gestures, actions and styles. Therefore, Butler did not believe that we are born into a gender but grow up into it under the influence of gendering power mechanisms. Gender is built in the strongholds of social power, such as medicine, education and social practices. What appears to us as the essence of a gender is actually an interpretation born through repetition of gender-related rituals, which concretely affects individuals.

Butler's theory also revolutionized our understanding of fashion. Like Wilson, Butler's ideas brought clothes – or the clothed body, subcultural drag – to the heart of the theory and had an impact on turning fashion into an empowerment tool in feminist discourse. Second-wave feminism and Butler's influence on 1990s' feminist discourse was reflected for instance in the idea of "girl power", which celebrated femininity and defended the status of makeup, high heels and fashionable clothes as means for women's self-awareness and empowerment.[64] The popular TV series *Sex and the City* (1998–2004) also popularized the idea of fashion as a feminist action and emancipator of women. A set of articles on the series even described fashion as the show's "fifth character", used to parody and deconstruct femininity, not to mention bringing fashion designers such as Manolo Blahnik into the limelight.[65]

The garments designed by Helsinki-based Anna Isoniemi (b. 1991) are studies in femininity that can be seen to fall within the context of third-wave feminism. Isoniemi builds femininity through body-hugging, draped fabrics with printed metallic sequin patterns, showy graphic patterns and silhouettes better known from party wear. (Fig. 6) Her aesthetic, which approaches the extravagance of drag, was not reached simply through a study of historical women's evening wear, but also by examining functional sportswear and the world of motor racing, which is seen as a bastion of masculinity. Additionally, Isoniemi was inspired by the theatricality of 1970s' subcultural music scene, especially glam rock, which was an amalgamation of art rock, cabaret and sci-fi and deliberately worked to break down gender norms. Isoniemi's design choices emphasize the gendered meanings embedded in women's wear. Her collections include a printing technique that she discovered in the sportswear sector during background research for her first collection, which she uses to print sequins. Isoniemi was able to transform individually sewn-on sequins into a printed pattern, retaining the sparkle; this choice invites the viewer to consider the differences between everyday and party wear and has been seen especially in a collaborative collection with Adidas Original, in which the functionality of sportswear comes head to head with the flamboyance of ultra-feminine sequinned fabrics.

As demonstrated by Isoniemi's collections, gender performativity refers to the existence of a pool of culturally established gestures and symbols that can be copied and replicated to make gender – in this case femininity – evident.[66] In this sense, clothes are performative and they and the interpretations we make of them mould our understanding of gender. Garments do not just describe the intimate body beneath them but generate impressions of the wearer's gender or opposition to gender norms.

CLOTHES AS ARTICULATIONS OF GENDERLESSNESS

In everyday situations we continuously make gendered interpretations. They are usually not a result of lengthy or analytical consideration, but based on automated, entrenched readings. We have learned to connect certain ways of dressing with specific genders. In the field of fashion, gender is built on the one hand out of the web of meanings that designers weave into garments through various choices and, on the other, from the interplay of garment and body.

FIG. 6 · Two outfits from Anna Isoniemi's 2017 collection *Racing Stripes*. The collection was inspired by 1960s' motor racing costumes and futurism. The designer wanted the collection to exude movement, speed, power and minimalism. In her design work, Isoniemi combines the graphic aestheticism of sportswear and streamlined forms with the sparkle of evening wear.
Photos: Chris Vidal-Tenomaa.

FIG. 7 · Maria Korkeila's collection was designed for Fiskars, a company known for its orange scissors and other tools. The collection comprises garments and accessories for gardening and urban leisure. For it, Korkeila studied the company's history. The collection is made from recycled materials and vegan apple "leather". Photo: Chris Vidal-Tenomaa.

FIG. 8 · The visual image of Maria Korkeila's collection for Fiskars is inspired by photographs by the Finnish street photographer Ismo Hölttö from the 1960s–1970s, and by street fashion. Gender neutrality, an important design value for Korkeila, is evident in the collection's loose-fitting forms that allow the garments to be worn by diverse bodies. Korkeila's aim is to concretely change society through clothes and design. Photo: Chris Vidal-Tenomaa.

QUEER THEORY

The idea of gender performativity is closely linked to so-called queer theory. Apart from its meanings as "strange", "odd" or "eccentric", *queer* has been a derogatory term for a homosexual (particularly male). The appropriation of the term as an emancipatory tool is linked to Anglo-American activism in the 1980s and 1990s. In this context, the concept relates to human rights activism that calls for equal rights for gender and sexual minorities to those enjoyed by cis-gender heterosexuals. As part of academic research, queer theory is dated to the early 1990s, when it was formulated to challenge identity-centric theories on gender and sexuality. The premise of queer theory is that identities are variable and localized. Some of the pioneers of queer studies are Teresa de Lauretis (1991), Judith Butler (1990) and Eve-Kosofsky Sedgwick (1997). Queer theory has also been applied to fashion studies, e.g. by Steele (2013), Geczy and Karaminas (2013), and Vänskä (2017a).

HETERONORMATIVITY

Heteronormativity refers to institutionalized heterosexuality, i.e. the idea of heterosexuality as the only normal and acceptable model of sexuality. The concept of heteronormativity indicates that our understanding of heterosexuality as the norm is mostly based on subconscious ideas regarding the right kind of sexuality. It also shows that our societies are built upon not only gender hierarchies but also sexuality-related hierarchies. The concept was popularized by the American social theorist and researcher of sexuality Michael Warner (1991). In Finland, it has been discussed by Leena-Maija Rossi (2006), among others. In the fashion context it relates to the fact that the clothed body generates an assumption of sexual orientation. A girl in a pink dress, for example, is assumed to be heterosexual, whereas a boy in the same dress would be stereotyped as gay.

Judith Butler's views of gender as the sum of repeated actions and interpretations turned the then established view of gender on its head. Instead of thinking, as before, that a person's name, clothing and body hair, for example, were consequences of a certain kind of body and a specific gender, they were now seen as ways of generating an idea of gender in the first place. Certain repetitions materialize specific identities, meaning that material items such as clothing play a central role in generating gendered meanings.[67] The properties of clothes, such as colours, shapes and materials, have and communicate meanings and are tools with which designers can create, make visible, materialize, shape and challenge understandings of gender.

The central idea behind gender performativity is that gender is like a collage in which gendering symbols and meanings interrelate in various ways. They could potentially be placed in any order, generating either highly stereotypical or stereotype-challenging manifestations of gender – or anything in between. Fashion researchers have estimated that Butler's performativity theory will become "cemented" in the fashion studies canon[68]: we propose that this has already happened in both research and design. In the Finnish contemporary fashion field, designers customarily understand their creative work and the garments they design as tools for building and challenging understandings of gender. In other words, the starting point of designers is not that clothes reflect gender but that designers as well as wearers participate in this significance-bestowing process. The view that a garment in itself is not gendered but becomes so in interaction with the wearer and their body is fairly common among young designers: that a person (the wearer's body) and the object (the garment) work together to influence the interpretation of gender – or, in many cases, gender neutrality.

Genderlessness, or androgyny, unisex, or gender neutrality, is a hot topic in contemporary Finnish fashion. It has roots in the design philosophy of, among others, Marimekko, which was outspoken about using design and prints as symbols of gender neutrality already in the 1960s. As a concept, genderlessness is an umbrella term. It refers to a non-binary gender, which is neither masculine nor feminine but placed outside of the traditional gender dichotomy. Previously such neutrality in fashion was called androgynous or unisex but more common today are gender neutral, genderless, ungender and agender. Importantly, these multiple terms for non-binary genders do not have identical meanings, as they derive from diverse eras and societal and feminist contexts. Androgyny is the oldest of these terms, referring to the simultaneous presence of andros, masculine, and gyne, femininine; i.e. to an ambiguousness of gender in a given garment, body or appearance.[69]

Andorogyny is historically linked to first-wave feminism, which advocated for the right of women to participate in the masculine world, and paved the way for boyish, young "new women" to enter the public sphere. An iconic modern example is Cavin Klein's perfume CK One from 1994, one of the first cosmetic products marketed openly at all genders. The photographs shot by Steven Meisel for the perfume's advertising campaign were directed at gender-fluid customers and those who identified as women or men.

Unisex, on the other hand, was popularized during the second wave of feminism and refers to clothes that are suitable for all genders. One of the most famous designers of unisex is Rudi Gernreich, inventor of the "monokini". In the Finnish context, Marimekko's clothes, for instance the Jokapoika ("Everyboy", 1956) shirt with its vertical stripes or the Tasaraita ("Even Stripes", 1968) jerseys with their horizontal stripes became icons. Although Jokapoika was initially designed for men, it quickly became very popular among women as well. In contrast, the even stripes of the Taisaraita design indicated that the garments equally for all people regardless of age and gender. Jokapoika and Tasaraita are products of second-wave feminism's ideal of gender equality. In the following decades, with the rise of sports and the general casualization of fashion, unisex clothes became something of a national myth. Finnishness and couplehood became materialized in the unisex shell suit, which led to the somewhat pejorative idea of Finland as a down-to-earth, unfashionable and tasteless country.

Genderless, *ungender* and *agender* are interchangeable terms created in the 2000s, denoting an absence of gender. The words are contextualized in queer theory and intersectional feminism, defying binaries of gender and sexuality, accounting for race and ethnicity, and paying attention to body norms and the intersections of these. In fashion design, these concepts can refer to any garment that claims not to embody or represent any gender. In the latter part of the 2010s, examples of genderless fashion range from Palomo Spain's hyperbolically feminine menswear to the more casual, sombre and deconstructed looks of Balenciaga, and to such everyday garments as T-shirts, jeans, sneakers worn by most people worldwide. Just like the garments deemed gendered change, so does terminology. It is virtually impossible to give an exhaustive list of genders that defy the norm. The constant change is illustrated in a humorous "complete list of all genders" created by the pseudonym JotaroKissesDolphin on the storytelling platform Wattpad. The list represents over 100 genders from A to Z, among them, for example, biogender, "a gender connected to nature in some way" or veloxigender, "a fluid gender which moves so quicklyfor the owner to be able to identify what gender they are at a given time".[70]

67 Butler 1993.

68 Wissinger 2016.

69 Vänskä 2006.

70 JotaroKissesDolphins, n.d.

FIG. 9 · Besides gender-neutrality, Nomen Nescio stands for so-called slow fashion. Genderlessness and seasonlessness are fundamental values in making clothes sustainable and ethical. Photo: Lina Jelanski.

FIG. 10 · LAURIJARVINENSTUDIO's philosophy of fashion sustainability encompasses every level of the company's design. The principle behind their clothing design and production is zero waste, and they mostly use surplus and recycled materials. Gender fluidity forms another core element of sustainability, because then the company can refrain from making two separate collections. Pictured is an outfit from the 2022 collection. Photo: Mikko Vares.

71 Clark and Rossi 2020.

72 Clark 2019: 310.

73 Internationally, a fine example is the Palomo Spain label, established in 2015.

The aforementioned more established terms defining gender fluidity may relate to aesthetics or to a style of dressing.[71] They may also refer to a design philosophy and the overall worldview of the designer. Maria Korkeila (b. 1992), for example, has become known as a designer of genderless clothes. One of her fundamental principles is not to design for a specific, predetermined gender: this is evident for instance in the loose cuts of her collections (Fig. 7–8). This choice permits garments to be worn by diverse bodies, which in turn bestow gendered meanings upon the garments. An understanding of gender is therefore formed through the interplay between garment and body and varies depending on the wearer and how they style the garment and the look. It could be said that instead of assuming the authority over gender assignment, the designer gives it to the wearer. For Korkeila, genderlessness or gender neutrality form the core of her design work and brand, but the philosophy also has a political dimension, as Korkeila wants to be among pioneers of non-discriminatory fashion. For the designer, being political means striving to influence society through clothes – not just by commenting on the society but by concretely changing it through design.

Genderlessness also lies at the core of the Helsinki-based company Nomen Nescio (est. 2012), from the company's name to its communications and aesthetic. *Nomen Nescio* (abbreviated to N.N. or NN) is Latin and means an anonymous or unknown person. The brand's clothes are entirely black and minimalist, linked to the idea of non-seasonality and timelessness (Fig. 9). Being monochromatic is a part of Nomen Nescio's gender-neutral design philosophy, as is the fact that garments are patterned by testing them on diverse bodies and marked simply with codes that indicate the size. The garments have no external, internal or applied elements that would symbolize a certain gender, age or status. The reasoning is a desire to represent and promote equality and equal opportunities. As such, it approaches the idea of "women's wisdom", which fashion and design researcher Hazel Clark links to sustainable and slow fashion, suggesting that it appears particularly in companies in which women play a significant role. These companies foster practices that respect both people and the environment, which Clark terms "feminine strategies and values", and oppose "patriarchal values."[72] This is evident at Nomen Nescio, not only in their gender-neutrality, but also in manufacturing: their garments are not produced by cheap labour in Asia but locally, from materials purchased from responsible European producers. The company openly discloses information on all of its products and production chains on its website.

A third Finnish company operating around genderlessness, or androgyny as they call it, is the Tampere-based LAURIJARVINENSTUDIO aka LJS (est. 2019). Like Nomen Nescio, it offers a selection of black, non-gendered clothes. The company's collections comprise lasting classic garments with carefully considered additions of new products (Fig. 10). The idea of gender fluidity was sparked by the company's founder and chief designer, Lauri Järvinen, being unable to find suitable clothes for himself, so he decided to make them. LJS's design philosophy leans on the idea of diverse personae, bodies and styles that are not restricted by ordinary categories related to gender, sexuality or age.

LJS's political objective is for gender-neutral clothes to become the norm and for attire to become more permissive. Here, Järvinen particularly utilizes the concept of androgyny. Literally meaning the simultaneous presence of masculine and feminine, for Järvinen androgyny means an attempt to reduce inequality between the sexes. What is interesting about LJS's way of interpreting gender neutrality is that the designs are not based on classic geometric shapes or archetypal menswear, as usual; instead, LJS is inspired by soft and rounded shapes that would traditionally be gendered as feminine. This follows an international trend of utilizing women's wear archetypes as tools for challenging gender norms and creating a sense of gender fluidity, which has gained popularity since the mid-2010s.[73]

From the perspective of fashion studies and fashion design, Judith Butler's theory of gender performativity has been inspiring – not least because its power is largely based on how people build their genders through established dress-related rituals, norms and body alterations. Clothes focus our attention on gender and make it public. It is standard to assume that a person wearing women's clothes and styling their body in a certain way is a woman, and the same applies for men's clothes and men. Clothes are assumed to be self-evident signals of gender and are expected to articulate gender differences, even to reveal something about sexual orientation. The interpretations we make are not usually explicitly articulated but derive from tacit knowledge accumulated over decades, centuries even; written into fabrics, cuts, details and silhouettes and transmitted through the generations. The interplay between garment and body can generate, alter, emphasize or blur gendered meanings. Our attention is drawn not only to the anatomy beneath the garment but to the interpretive whole formed by the garment with the body. Gender allows for diverse interpretations, however, and many contemporary designers make this evident in their work, especially through gender neutrality.

QUEER HISTORY OF FASHION

The theory of gender performativity applied to fashion studies and clothing design is also closely linked to so-called queer theory. As part of discourse

on the formation of subjectivity and identity, queer theory emphasizes the mobility and changeability of identities. The theory has been used in parallel with the performativity theory, particularly in research on the fashion cultures of gender and sexual minorities, and in analysing their impact on the development of modern fashion in general. The exhibition *A Queer History of Fashion*, held in 2013 at the Fashion Institute of Technology in New York, was a milestone. It proposed that Western fashion and style played an important role among gender and sexual minorities as early as the 1700s. The exhibition and a collection of articles published in relation to it also made it evident that the history of Western fashion and today's couture are to an extensive degree products of the creativity of sexual minorities, and that therefore the meanings and visual code languages created by various marginalized groups are crucial even in contemporary fashion.[74]

The context for the collection *Clone Gone* (2021) by Ville Pölhö (b. 1996) is queer culture, especially the (recent) history of dress codes for gay men – the clothing archetypes and details through which members of the sexual minority were able to communicate between themselves (Fig. 11). In the background research for the collection and in the collection's garments, Pölhö works on the idea of dress codes as precise and detailed systems of symbols that only other gay men could read. At the same time, he draws attention to the fact that the garment archetypes and their details have had a broader impact on menswear, becoming crucial determinants of men's fashion. By this he refers to the fact that whereas women's fashion is characterized by a focus on the silhouette, as with Anna Isoniemi for instance, in menswear and men's fashion the silhouette tends to remain unchanged for long periods and changes are visible in details.

In his analysis of significant details, Pölhö researched several sources, including the French essayist and philosopher Roland Barthes, who examined fashion as a system of symbols. His work *The Fashion System* is in many ways an essential text for fashion studies.[75] It set off a whole research tradition: one in which clothes are read as meaning-generating symbolic texts and communication tools.[76] Therefore clothes and their surrounding texts build meanings and communicate something about fashion. On the other hand, Barthes also turned his gaze onto "revealing details".[77] In this respect, the author was inspired by the aforementioned figure of the dandy. His interest was not piqued by the figure as a historic personage, though, but as a representative of a certain style of dressing. A dandy is above all performative: a theoretical and analytical tool, in which "nearly imperceptible details" have a great significance. Why does Barthes emphasize them? Because details signify distinctions – not just from unfashionable fellow citizens, but a much more intimate difference.

Details on the garments are symbols that only communicate with "equals", i.e. those who belong to the same reference group as the wearer and who understand the meaning of the details in the same way. These significant details politicize the garment at the same time as they build community spirit.

The idea of the significance of a detail arises from the time at which dandies appeared: the turning point of the class society.[78] Barthes transferred the idea to his own time – the time of his essay at the turn of the 1950s and 1960s. Thanks to mass production, fashion was becoming a means for setting young people apart from adults, with the development of fashion and subcultures.[79] Meanwhile, it was also a time when homosexuality was socially stigmatized and in many places criminalized, and could not be openly discussed. Therefore, this intimate characteristic (sexuality) must be wordlessly expressed. In this context, the significance of clothes and details became inflated.[80]

In his thinking, Ville Pölhö was inspired by Barthes but especially by Hal Fisher,[81] whose later photo essay discussed the styles of gay men in the Castro district of San Francisco using techniques from so-called gay semiotics. The text begins with a note on the new social visibility enjoyed by the gay community and how this allowed the gay subculture to develop its own myths, cultural heroes, stereotypes and systems of symbols. It also presents archetypal gay representations found in the district, wherein details were crucial. Their purpose was to distinguish homosexuals from heterosexuals. Although the essay and its related pictures are humorous, they also have a more serious side: at the time they taught readers about how body decoration can be used to produce a representation of homosexual identity in a specific time and place, without being caught. In his collection, Pölhö analysed this historical background and how, where and in what social situations the meanings associated with gay men's styles appeared and how they are interpreted today; as well as how these meanings can be utilized and dismantled using fashion design.

Although the open expression of one's sexual identity is now possible in most Western democracies, the fashion researcher Shaun Cole reminds us that between the 1930s and 1950s, homosexuals still ran a real risk of being persecuted, assaulted or jailed for their sexuality. For this reason, it was extremely dangerous to publicly display their sexuality. Therefore, gay men, for example, had to alter their bodies to sound and look as ordinary – i.e. heterosexual – as possible: not speak at too high a pitch, avoid using jewellery and feminine clothes or body language, and wear masculine dark suits and neutral shirts. The same applied to lesbians: masculine butch lesbians, in particular, were advised not to wear men's clothes (suits and button-down

74 Steele 2013; "A Queer History of Fashion: From the Closet to the Catwalk" exhibition, Museum at FIT, 13/9/2013–4/1/2014.

75 Barthes 1990 [1967].

76 Davis 1992; Craik 1994.

77 Barthes 2005 [1962]: 60–64.

78 Vänskä 2017a.

79 Hebdige 1979.

80 Cole 2000.

81 Fisher 1977.

FIG. 11 · For his collection, Ville Pölhö carried out background research on men's vintage clothing. He deconstructed clothes by stretching, distorting, tightening, adding or removing the garments' dimensions, volumes and details. Uniform-like men's styles became more fun and carefree by exploring how their forms change during use. The marks left by the body are visible in the collection's garments as unconventional wrinkles, pleats, tears, stretches and alternative attachment methods. Photo: Sofia Okkonen.

FASHION AND FAT STUDIES

When we speak of fat studies in the field of fashion, we are speaking of so-called critical fat studies, whose proponents share a critical attitude towards the medical paradigm that is used to define fatness and is prevalent in the Western world. The aim of this field of research is to reduce the cultural stigma associated with fatness, to challenge body size norms and normalize the presence of fat bodies. In the sphere of fashion studies, fat studies have been related particularly to criticizing the glorification of thinness, challenging sizing standards in clothing and calling for representations of fatness. In the fashion industry, the buzzwords related to inclusion of fat bodies are body positivity and size inclusivity. Body positivity is linked particularly to the rise of the Fat Acceptance and Health at Every Size (HAES) movements in the US in the 1960s, the arrival of plus-sized fashion magazines in the 1980s and 1990s, and the popularization of blogs on fat bodies in the 2000s (Downing Peters 2021). With the idea of fat liberation becoming mainstream, larger bodies have become more visible and common in fashion media. It has also led to a greater availability of plus-sized clothing. In Finland, fatness has been critically studied by Hannele Harjunen (e.g. 2009). Fashion from the point of view of fatness has been analysed, among others, by the American researcher Lauren Downing Peters (e.g. 2018; see also Volonté 2021).

INTERSECTIONALITY, DIVERSITY
AND INCLUSIVITY

Intersectional feminism, also known as fourth-wave or post-race feminism, dates from the early 2000s. It is influenced by Black feminists, postcolonialist theory and a critique of Eurocentrism, and its objective is to describe identity through various differences and the interplay between them. The concept of intersectionality was launched by civil rights advocate and critical race theorist Kimberlé Crenshaw (1991) in criticizing how white feminists and the anti-racism movement had ignored Black (lesbian) feminists. Intersectionality is built upon a promise of accounting for complexity.

In the field of fashion, intersectionality refers to an understanding of the diversity of identity and of the fact that it is affected by factors related to gender, class, sexuality, ethnicity, skin colour and age, among others. It also criticizes the Eurocentrism of fashion, instead emphasizing its pluralism.

Diversity relates to individuals and inclusivity to groups. Diversity recognizes differences between people and how these affect the individual, whereas inclusivity means that personal qualities should not influence an individual's opportunities for participation. Within the fashion sector, diversity and inclusivity relate, among other things, to observing a variety of identities in design and its studies, and to fulfilling the equality principle in organizations. Diversity efforts and the challenges that lie therein have been studied by cultural scholar Sara Ahmed (2012), among others.

shirts) and to stick to skirts.[82] In other words, sexual minorities were forced actively to alter their bodies and presence using clothes to correspond to heteronormative gender assumptions in order to stay safe.

It is particularly noteworthy that both the modern understanding of lesbian and gay sexuality and the idea of clothes as alterers of the self are linked to the emergence of looks- and image-centric modern consumer societies and to the rise of new sexological, scientific research on sexuality. Sexology shifted the idea of gender and sexuality to the spheres of medicine and psychiatry. As a consequence, homosexuality was not defined as an internal quality but as a characteristic that was visible from the outside – for instance in the form of clothing. At the turn of the twentieth century, these views were popularized particularly by the sexologists Richard von Krafft-Ebing[83] and Havelock Ellis[84]. Their arguments were built on the idea of appearance: that the clothed body would reveal a person's inner world. Clothes were thought to indicate sexuality. The budding mass fashion industry also made use of the rise of the women's rights movement to create new alternative identities for women. One of these was the 1920s' flapper or *garçonne*, a boyish girl who disrupted the prevailing understanding of acceptable femininity by wearing leg-revealing skirts, short hair and makeup, listening to jazz, smoking, being sexually liberated and riding bicycles or driving cars.

The connection of fashion with gender performativity and the public presentation of sexuality and other identity indicators is particularly visible in the political activity of the gay and lesbian liberation movement from the late 1960s onwards, and in 1980s' queer activism. Even earlier than that, clothes had become tools in the feminist movement's battle for bodily autonomy.[85] In the gay and lesbian liberation movement, exaggeratedly ordinary clothing played a role in trying to remove the stigma of criminality and sickness and emphasizing positive differentiation. The queer activism of the 1980s utilized T-shirts emblazoned with political slogans to counter the brand of disease associated with the AIDS epidemic.[86] In these contexts, the significance of clothes as elements of political activity was particularly marked. Ville Pölhö's collection builds on this tradtion, showing how history is always present and subject to new interpretations.

As we have seen, today's views regarding gender as a cultural construct have their roots in ordinary life and everyday style choices. The main agents in this development have been members of gender and sexual minorities, for whom negotiations with the prevailing dichotomous gender order are an everyday battle. The collision between the intimate self and the gender order materializes in seemingly trivial daily situations – dressing rooms or clothes stores, for example, where people end up being incorrectly gendered.[87] This is embodied in the concept of heteronormativity, which draws a boundary between so-called normal, acceptable sexuality and abnormal, unacceptable sexuality and evaluates people accordingly.

In the field of fashion, in both theory and practice, the perspective of gender and sexual minorities emphasizes the fact that the experiences of socially marginalized individuals and groups are highly significant, both in relation to theories on the subject and to design work itself. Crucially, the perspective shifts attention away from the body to the material tools and power structures that are used to build certain gender ideologies and to maintain them through discrimination, marginalization and othering.

FASHION AS A CHALLENGE AGAINST BODY NORMS

The interplay between clothes and the body moulds our understanding of gender and sexuality, as well as of how we read garment-body interactions as symbols of these. As the collections and design philosophies of the designers mentioned in this chapter have shown, the idea of performativity has been inspirational for fashion designers. The same applies to the fashion industry, which likes to cultivate the idea of performativity as an individual's personal choice. This is paradoxical because even Judith Butler was criticized in their time for apparently presenting gender as a free choice;[88] although Butler has rejected that idea, it has not stopped the fashion industry from doing just that.[89] The marketing researcher Katherine Sender has pointed out that apolitical gender representation is a highly profitable consumable.[90]

Several young designers have reacted to the fashion industry's false posturing. For example, the work of Henna Lampinen (b. 1991) is a combination of material-based research and experimental design, as well as a challenge against body norms from the perspective of fat studies and garment sizing standards. (Fig. 12–13) Body criticism research has proved how the invention of anatomical studies from the 1500s onwards has defined the body through two opposite conceptions: either as a holistic entity or as fragmented and dispersed.[91] The use of critical fat studies in fashion research emphasize the idea of a garment as a means for understanding, defining, controlling and challenging the body and its related sizing norms. Today the body is seen holistically as the seamless amalgamation of the mind and the physical body, whereas previously the physical body was seen as the sum of its anatomical parts, separate from the spiritual elements, which contributed to certain body parts being valued above others.[92]

82 Cole 2000: 59–69.

83 Krafft-Ebing 1965 [1886].

84 Ellis 1908.

85 Crane 2012.

86 Katz 2013: 219–232. It is worth noting that while the gay and lesbian liberation movement of the 1970s emphasized gay identity, queer activism tries to break down the idea of a single gay identity. The latter is also close to the 1990s' queer theory view of the changeability of identity.

87 Pulkkinen 2000: 48–49.

88 E.g. Disch 1999: 549; Lloyd 2007: 57–61.

89 Kotz 1992: 83.

90 Sender 2004.

91 Wegenstein 2006.

92 Wegenstein 2006.

FIG. 12 · Henna Lampinen's activist approach challenges us to consider how a fashion designer can counter the stigma related to fatness and create non-discriminatory fashion. She has said: "As a fat woman, I have never felt that my body was welcome in the sphere of fashion. I have experienced a disconnect between my body and my work as a designer. I have designed clothes for women's EU sizes 34-36 and thereby contributed to upholding narrow beauty ideals. With my work I want to bring new perspectives into what makes up beauty and fashion." Sketch: Henna Lampinen.

93 Chernin 1981;
Bartky 1990; Bordo 1993.

94 Harjunen 2009.

95 Hoskins 2014.

96 Downing Peters 2017.

97 Harjunen 2009.

The context for Henna Lampinen's work is body criticism on the one hand and research on the stigma related to fatness on the other – particularly how fashion as an entire cultural sector has almost completely ignored fat bodies. This problem is not limited to the fashion industry: prior to the late 1990s, fatness and fat bodies had rarely been researched outside of the field of medicine and fatness was seen as an illness that was possible to cure through weight loss. Thinness has long been prevalent as the ideal for fashion and it has been the driver for the kinds of bodies for which clothes are designed. Fashion as a culture that idolizes thinness has been criticized by feminist researchers such as Kim Chernin, Susan Bordo and Sandra Lee Bartky, who have also pointed out the direct links between this ideal and the increase in eating disorders such as anorexia and bulimia in the West.[93] The build-up

of knowledge on eating disorders and fatness has perhaps most powerfully been controlled by medical research, where the starting point lies in problem-solving: both of these issues are seen as individuals' problems – risks and illnesses whose causes must be rooted out and solved.

The broader framework for Lampinen's design work is formed by critical fat studies from the field of social science rather than medicine, which aim to dismantle the despotic hold that medicine has over fat bodies, while emphasizing body positivity. The researchers of this multidisciplinary field share a critical viewpoint over the medical paradigm of fatness, towards its problem- and weight-centric approach and its narrow definition of a healthy body and of the meaning of "normal body weight" or a normal body.[94] In her design work, Lampinen tackles the same questions as these researchers and asks how this thin-centric beauty ideal affects those whose bodies do not fulfil ideal measurements, and how she, in and through her design work, could make room for these stigmatized bodies. Lampinen strives to draw attention to the fashion industry's blind spots and to give a voice and visibility to fat bodies, which the fashion industry has done its best systematically to bypass.[95]

In this sense, Lampinen positions herself as part of the global movement of so-called *fatshion*, a loose alliance of fashion bloggers and other activists. The movement operates mostly online and also criticizes the fact that there are so few well-designed clothes available for fat and plus-sized bodies.[96] Lampinen's aim is to find practical solutions to this problem and thereby to make fashion more diverse and less discriminatory: body positive. Lampinen's work is pioneering and makes it particularly glaring how the structures and shapes of clothes manifest the stereotyped prejudices against fatness, and how these can be broken down by altering the design process. It may seem unbelievable that in our bountiful world of fashion, which offers every conceivable thing, fat people still find it hard to obtain well-designed and aesthetically pleasing clothes. Lampinen has also pointed out that when she has interviewed fat women for her design work, many interviewees were pleased to have someone asking their opinion. In other words, designers have not generally been particularly interested in fat people's experiences, let alone questioning the prevailing (medical) paradigm over normal body size. One reason for this is that fatness is not considered as a potential identity but as a temporary condition requiring treatment – regardless of the fact that it is often not at all temporary.[97]

INTERSECTIONALITY AS A CRITIQUE OF THE NORM OF WHITENESS IN FASHION

Henna Lampinen's work allows room for considering how fashion wields power over individuals and the

FIG. 13 · Henna Lampinen's work is a combination of material-based research, experimental design and challenging of body norms. Lampinen's work makes it glaring how the structures and shapes of clothes manifest the stereotyped prejudices against fatness, and how these can be broken down by altering the design process. Screenshot from the video *They Call It a One Brief Transition* (2020). Video: Aake Kivalo.

FIG. 14 · In his collection *Possibilities of Potential Selves* (2020), Ervin Latimer, who identifies as a "brown homosexual designer", strives to break down the norm of whiteness among designers and fashion models. The collection plays with the idea of gender and challenges views on the kinds of clothes that should be worn by men, women and other genders. He also takes a stand on body standards by making garments attachable by cords, by which they can be adjusted to the wearer's shape. He employs models of various sizes and skin tones. Photo: Hayley Lê.

98 Ks. E.g. Muñoz 1999.

99 Hill Collins and Bilge 2016.

100 McIntosh 1989.

101 Crenshaw 1991.

102 Hill Collins 1998.

103 Yuval-Davis 2006, Carbin and Edenheim 2013.

104 Davis 2020.

105 Hall 1996, 2000; Gaugele and Titton 2019.

106 E.g. Hoskins 2014.

107 Wilson 2003 [1985]: 13.

108 Bonnett 1996.

109 hooks 1990; Dyer 1997.

embodied forms that intimacy receives in public. Besides critiques of body norms, fashion in the 2010s saw an increasing amount of discourse on race, whiteness and white privilege – and on fashion as a major arena that is thoroughly white. Judith Butler and other proponents of the performativity theory in critical gender studies have been reprehended for not taking into account race and ethnicity, turning performativity into a theory concerning exclusively white subjects.[98] The new concepts through which these issues are considered are intersectionality and white privilege. Intersectionality refers to how a person's social status is affected not only by gender, sexuality and body size but by myriad other factors, such as race, class, nationality, functional ability, ethnicity, location or age.[99] White privilege, on the other hand, refers to the unquestioned status of whiteness as the measure of a person. The concept's originator, Peggy McIntosh, summarizes it as follows: "I have come to see white privilege as an invisible package of unearned assets that I can count on cashing in each day, but about which I was 'meant' to remain oblivious." She is referring to the benefits bestowed by having a light skin colour in everyday situations, from job interviews to just walking down the street.[100] Intersectionality, meanwhile, means that there is no single factor that determines a person's position and experience in society: the fact is that they are affected by diverse issues that interact and whiteness alone is not always enough, it intersect in different ways.

As an analytical concept, intersectionality is an attempt to understand and explain the complexity of subjectivity in the world, in people and in human experience. The core idea behind intersectionality is that in a specific society at a specific time, the hierarchies of race, class and gender are not separate or mutually exclusive entities, but are built up in relation to each other and influence how subjectivity is constructed and experienced.

One of the central issues in the rise of intersectional feminism is race, as Kimberlé Crenshaw first pointed out.[101] While Judith Butler's criticism was directed against contemporary feminists, who had excluded non-heterosexual women and their experiences from feminist theory and the movement, Crenshaw's focus was on white middle-class feminists, who had excluded Black women. Additionally, Crenshaw noted that the anti-racism movement was male-dominated and excluded Black women and lesbians. The feminist theorist Patricia Hill Collins was the first to take Crenshaw's intersectionality further, especially in her research on nationality and family.[102] Both Crenshaw and Collins have been influenced by the criticisms voiced by American Black feminists, and have used intersectionality as a metaphor for the various interactions between power structures and their influence on subjectivity.

In European feminism, one of the main proponents of the intersectionality theory has been the British researcher Nira Yuval-Davis, who has suggested concrete actions for intersectional policymaking, as well as warning researchers and activists against automatically assuming the social categories generated by the prevailing power system as starting points for individuals' identities. It is easy to replicate these power systems, for example by assuming that persons categorized under the same race share identical political beliefs.[103] Later European feminist research has emphasized, instead of race, the significance of factors such as immigration and religion over an individual's social status. Some American feminist researchers have criticized this, accusing their European counterparts of "hijacking" intersectionality from the Black feminist political movements.[104]

The question is not just about intersectionality but recognizing and reacting to the broader colonialist discourse that has strongly influenced fashion.[105] Some young designers are striving to rethink fashion from this perspective. Attention is being paid especially to the whiteness and Eurocentrism of fashion, and how these could be dismantled. Fashion has been recognized as a social and cultural institution that forms a part of colonialism and of the history and practice of othering and abusing cultures and peoples.[106] Fashion certainly has played a central role in implanting European habits and identities among colonial cultures in the form of European dress codes. It was common, for example, to define people of colour and indigenous peoples as backward and degenerate, and to purportedly "civilize" them through forceful conversion to Christianity and Western clothing. Thereby fashion was a major element of the violent civilizing mission.[107] Although the colonialist period is over and most colonies have become independent, cultural colonization continues. Inequality, polarization and various forms of discrimination, such as racism, are visible in the world of fashion, for instance in the overwhelming whiteness of designers, fashion houses and models and the superficial appropriation of non-Western styles into fashion trends.

Whiteness studies try to dismantle the conception of a normative person determined by their skin tone, a skin tone assumed to be neutral, against which other skin tones and ethnicities are compared.[108] Whiteness studies and the research of whiteness as identity are dated to the late 1980s and 1990s in the US and UK. They represent a turning point in research, whose attention had previously been directed at non-white bodies.[109] By turning their gaze to whiteness, these researchers tried in various ways to prove that upholding whiteness as the yardstick for humanity was a racist standpoint. Their objective was the "denaturalization" of whiteness. The feminist sociologist Ruth Frankenberg explained that

"naming whiteness displaces it from its unnamed status that is itself an effect of its dominance."[110]

Young Designer of the Year 2020 in Finland, Ervin Latimer (b. 1988), who identifies as a "brown homosexual designer", explores fashion's blind spots from these perspectives. At the heart of his work lies questioning the still-prevalent white norm of fashion and considering how race intermeshes with gender and sexuality. In his master's thesis in fashion design, Latimer brought up points of view criticizing the whiteness of Butler's performativity theory[111] and noted that the theory itself was greatly influenced by people of colour, particularly the Black and Latino ball culture of Harlem, New York.[112] For his designs, Latimer seeks inspiration particularly in the DIY drag culture of Black gay men and the history of cross-dressing, which is concretized in garments as the presence of elements from both men's and women's fashions. In the collection that won him the Young Designer of the Year award, he created an outfit that combined floral patterns, a dress and a pinstripe suit, for example, drawing from stereotypically feminine and masculine materials and clothing items and creating his own category of gender that is neither but becomes a third possibility, as it were. Additionally, the collection includes leather garments that take the mind back to Tom of Finland's leather-clad BDSM gays and the militant civil rights activist fraction The Black Panthers. At the same time, the designer wants to alter the continuing ideal of whiteness and thinness of the modelling world by displaying his garments on bodies of various colours, genders and sizes – as the picture of the collection indicates. (Fig. 14)

Latimer's work process activates a question on the conditions of humanity, i.e. how we conceive "human" in different ways depending on gender, sexuality and race and how well we understand these.[113] His aim is to contribute to this understanding through designing. For Latimer, fashion manifests itself as a conceptual/material culture in which fabrics, colours and garments are not just passive but active and lively, significant, actively meaning-generating factors. Latimer has described himself as a storyteller for whom the story behind a garment is as important as the garment itself. His stories are framed by the discourses of brownness and queerness.[114]

It has often been suggested in fashion studies that without a body, garments are dead.[115] Although a body and its movement give life to a garment, many young designers are challenging this idea. They prove in many ways that clothes have meanings and generate them even without a body.[116] This does not exclude the idea of fashion primarily as a culture in which garments and bodies become interwoven; quite the opposite, in fact. As the examples in this chapter show, design work often springs from an individual or a group of individuals whose personal and embodied experiences have a significant impact on the ideas and conceptualization behind a collection. Therefore, each garment carries within it an understanding of the body. Dress interacts with the body, "outlining, emphasizing, obscuring or extending the body" and our understanding of its actual or potential characteristics.[117] For many young Finnish designers, this is the idea at the very heart of design.

110 Frankenberg 1993: 234.

111 Latimer especially made use of José Esteban Muñoz's (1999) research on brownness as a collective political identity.

112 Latimer 2020.

113 Butler 2004.

114 Personal communication on 30/9/2021.

115 E.g. Wilson 2003 [1985]; Steele 1998: 334.

116 See also Smelik 2018.

117 Entwistle 2002: 133.

Designer's Embodied Knowledge

and

Personal Experiences as Starting Points for Design

Fashion design is intimate work in which the designer's persona plays a major role. Intimate personal experiences are a resource for designers as they draw inspiration from their own life events and topics of interest. Additionally, the work of a designer is holistic and psychophysical, because clothes are always designed by a body, for a body. Designers use their embodied and tacit knowledge in their work, both aesthetically and functionally. Handcrafting, intuition and embodiment become emphasized.

On the other hand, today's designers work in interaction with their clients and teams, with surrounding debates, production methods, materials and algorithms. With the automation of clothing design and production facilitated by modern technology, embodiment is manifesting in a new way, because algorithmic design means that the designers transfer their tacit knowledge to a machine, thereby surrendering the design process partly or entirely to a computer – or more accurately to artificial intelligence and diverse algorithms. The computer becomes the designer or design assistant.

FASHION DESIGN AS A PROFESSION AND EMBODIED ACTION

The fashion designer's profession was created as a consequence of extensive social changes and industrialization. In the period following the French Revolution, Europe's middle class grew, trade was freed and the professional guild system was dismantled.[118] If previously fashion had mostly been attainable for royalty and nobility, now other wealthy people were able to invest in their attire and prove their status through "conspicuous consumption".[119] In parallel, as textile manufacture became industrialized and cotton production grew, opportunities for fashion consumption opened to the less wealthy.[120] Urbanization brought jobs and new professions, increasing working people's interest in fashion, as well as practical needs for proper attire. Industrialization was not a one-way development; industry was built to match new demand.[121] Industrialization made it possible to make more and ever cheaper products, which was been said to democratize fashion, especially by dissolving class differences in people's appearance.[122] However, the clothing industry developed slowly in comparison with others. Well into the twentieth century clothes were mostly handmade, one whole garment at a time, both in fine couture salons and in mass fashion (cottage) industries.[123] Early industrialization marked the birth of the "sweatshop", which refers to the poor working conditions of the cheap labour that is still typically used by the fashion industry.

The social elites wanted to distance themselves from "vulgar" mass-produced clothing to stand out from the lower classes,[124] which led to the hierarchy between high fashion and mass fashion that still stands to some extent.[125] Artistic fashion, *haute couture*, is seen as the highest form of fashion. It refers to high-quality, artistically distinguished women's attire, in which garments and accessories are mostly made by hand, where the authority and signature of the couturier carry great consequence.[126] The first fashion designer and founder of haute couture is considered to have been Charles Frederick Worth (1825–1895). After him, many fashion houses opened in Paris, and the city reinforced its status as a centre of fashion copied by the rest of the Western world. The growing ready-to-wear fashion industry also needed means for distinguishing one manufacturer from the next: the answer was, again, a fashion designer who did not just fulfil customers' wishes like a tailor or dressmaker, but enjoyed renown as an artist.[127]

The concept of artisthood and authorship is in itself a modern product of the industrializing society, which blossomed in the nineteenth century's romanticized figure of the artist.[128] It involves the idea of the artist as an original, independent, creative and heroic (male) genius, to whom specific works can be attributed.[129] The concept distanced the artist/author from the actual manufacturing of the product, creating another hierarchy between *art* and *craft*.[130] This is still visible in the field of fashion, although a designer's work comprises a lot of technical processes and elements related to crafting and manual work.[131]

Couture is usually linked to the elite and to a designer's authorship. Small-scale local couture activity may be perceived completely differently from a customer's perspective, and the French word in itself means sewing and dressmaking.[132] The designer works with the client to find aesthetic solutions sensitive to the body, fabric and shape and to sociocultural demands. Fashion is therefore historically a profession based on handcrafting and intimate negotiations between the designer and the client. Although this intimate relationship has become significantly distanced or forgotten in our age of globalization and dominance of mass-produced fashion, the history of fashion still lives on in clothing design.

There are many kinds of designership, however, and one designer may fulfil various roles at the same time. Some designers work in industry or for large fashion houses, focusing anonymously on their small area of responsibility, such as design of knitwear or outerwear for men.[133] Having achieved some success, a designer may be promoted to creative director, which gives them significantly more influence. Other designers work independently as small-scale entrepreneurs, which gives more room for creativity but at the same time forces them to shoulder a broader variety of tasks, including anything from marketing to sewing. Some of these designers include patternmaking among their core competences, while others will emphasize the handcrafted look of

118 Konttinen 1993; Kawamura 2004: 27–9.

119 Veblen 1994 [1899].

120 Lipovetsky 1994; Breward 1995: 127–130.

121 Breward 1995; Tortora 2015: 99.

122 Crane 2012.

123 Aakko 2019; Leopold 1992.

124 Wilson 2013 [1985]: 32.

125 Bourdieu 1984; Almila 2016.

126 Koskennurmi-Sivonen 2002; Sadek and de Laubier 2015.

127 Kawamura 2018: 57.

128 Woodmansee 1994; Teilmann-Lock 2012.

129 Woodmansee 1994; Bennett 2005; Foucault 1998 [1969].

130 Shiner 2001.

131 McRobbie 1998; Almila 2016; Chun 2021a.

132 Chun 2021a.

133 Renfrew and Renfrew 2009.

TACIT KNOWLEDGE

Tacit knowledge refers to non-verbal, embodied, intuitive knowledge, as well as to information and skills obtained via practical experience, such as riding a bicycle, playing an instrument or sewing a garment. Tacit knowledge is hard to explain or teach verbally. The term was originally coined by the Hungarian philosopher Michael Polanyi (1891–1976). In his books *Personal Knowledge* (1958), *The Logic of Tacit Inference* (1964) and *The Tacit Dimension* (1966) he explains that we usually know more than we can express and that this knowledge increases gradually through repetition, practice and imitation. The concept challenges the idea of knowledge being objective or universal, and emphasizes the human way of learning in interaction with our environment. In Finland, tacit knowledge has been discussed, among others, by Hannele Koivunen in *Hiljainen tieto* ("silent knowledge", 1997), where she includes manual skills within the scope of tacit knowledge. Tacit knowledge is also a central concept in the practice-based and artistic research carried out by designers and artists. In it, new knowledge is generated by creative work and its outcomes. Exponents of practice-based research include Donald A. Schön (1991 [1983]), Christopher Frayling (1993), Linda Candy (2006) and Juha Varto (2017).

HAUTE COUTURE

Haute couture is a legally protected title that may only be used by specific fashion houses, approved annually according to strict criteria. The entitlement is bestowed by a commission working under the *Chambre Syndicale de la Haute Couture* and the French Ministry of Industry. Membership requires fine handcrafting, high quality, innovativeness and the manufacture of unique outfits tailored to individual clients. The name of the alliance has changed more than once since its establishment in 1868: having started off as *Chambre Syndicale de la Couture, des Confectionneurs et des Tailleurs pour Dame*, it is now officially called *La Fédération de la Haute Couture et de la Mode*. At the time of writing (2021), there were 17 haute couture member organizations, some of which were widely known French fashion houses. Other "high" fashion that is made to order and based on handcrafting is known as plain *couture*, and the aforementioned Finnish salons used to fall under this classification.

PRÊT-À-PORTER

Prêt-à-porter is the French term for ready-to-wear fashion, which appeared in fashion houses alongside haute couture over the twentieth century. Ready-to-wear production helped to secure the fashion houses' profitability, as well as their expansion beyond the French market. Today the term is associated with more refined and luxurious clothing production, which is distinguished by its design, quality and status from the more ordinary mass production of the clothing industry. "High" fashion has always tried to distinguish itself from industrial fashion, and as ready-to-wear clothing became more common in the 1950s, fashion houses used their *prêt-à-porter* collections to try to stand out from mass fashion while still serving the needs of the globalizing world and their younger customers, as well as making room for a larger group of designer fashion companies. These days, most luxury fashion consists of ready-to-wear (RTW).

their garments as manifestations of slow fashion.[134] The Finnish designer Heidi Karjalainen has stated that in clothing design, "[a]rtistic starting points are based particularly on developing the designer's creative expression, while orders and commissions demand an understanding of the functionality of the garment's practical use."[135]

Location and context are also determining factors related to the traditions and values of design: Italian fashion, for example, focuses on wearability, thanks to the country's history in textile industry and tailoring, whereas British fashion design has, since the 1960s, distinguished itself from the French tradition with a more conceptual and pop-culture-inspired approach.[136] In recent years, Finnish designers have worked to put local fashion on the world map and have rediscovered their profession by emphasizing links with the design field, the coexistence of artistry and craftsmanship in small businesses, an understanding of materials and the strength of design communities.[137] Finland additionally has long traditions in functional design, of clothing and otherwise.[138]

The roots of Finnish fashion design lie in salons that used to produce small collections and make garments to order.[139] The clients were typically upper-middle-class and middle-class women who were increasingly involved in the labour market. These salons were the Finnish version of Parisian haute couture, from which they usually drew inspiration right down to the salons' French names and the designers' distinctive, exclusive and even authoritarian image.

Some of the Finnish fashion designers operating between 1930 and 1950 are said to have contributed to political discussions on women's rights with their surrealism-inspired work.[140] The golden age of Finnish salons paralleled that of haute couture: the period between the late 1800s and the mid-twentieth century; the time before *prêt-à-porter* or ready-to-wear clothing began to supersede tailored fashion. Finland has also had a few small-scale clothing factories specializing mostly in men's suits, shirts and overcoats, women's blouses, skirts and dresses, knitwear, down coats, lingerie and nightwear, since the early nineteenth century.[141]

Until affordable ready-made clothing became more widely available during the 1970s, most clothes were made at home or commissioned from dressmakers. The fact that home sewing comprises invisible, unpaid fashion work carried out by women contributed to giving the fashion sector its culturally inferior to other fields of design.[142] Furthermore, clothing manufacture being so gendered and housework-like, and industrial production making use of untrained labour are said to have led to the global and local inequality between creative design work and physical handcrafting.[143]

Salons and home sewing dominated Finnish fashion production until it began to industrialize with larger-scale serial production from the 1950s. Armi Ratia founded Marimekko in 1951 as one of the first Finnish textile and fashion companies whose clothing production was based on industrialized manufacture rather than studio sewing or small-scale factory operations. In fact, the founding of Marimekko can be considered a kind of watershed moment in the shift from handcrafts to industrial mass-production of clothing in Finland. The last Finnish salons closed down in the mid-1970s.[144]

Finnish clothing designers became organized under Ornamo Art and Design Finland in 1965.[145] This attempt to raise the profession's profile within the design sector shows that clothing design was still not seen as equal to other (male-dominated) fields of design. Although the hierarchy has become more blurred, vestiges still remain. Efforts to raise the esteem of clothing design included new higher education qualifications for designers, which were established in Britain in the 1930s[146] and Finland in the 1970s.[147] Today's Finnish fashion design field comprises a wide variety of operators: authors of artistic made-to-order outfits and small collections, in-house designers who create fashion and functional wear for industry, freelance designers and designers working for international fashion houses.[148]

One of the brightest stars of Finnish salon-style design is Teemu Muurimäki (b. 1974), a pioneer of Finnish high fashion and a veteran of couture. Muurimäki graduated as a clothing designer from what used to be the University of Art and Design Helsinki before Aalto University in 2001, and has worked for several European fashion brands, including Bottega Veneta, Giorgio Armani, Dolce & Gabbana and Marimekko. He is well known as a designer of party and evening wear and a costume designer for performing arts. Muurimäki's clients include many Finnish politicians and celebrities, who order outfits for major public events such as the Independence Day reception at the Presidential Palace and entertainment-sector galas. His talent as a costumier is also visible in the dance performances of the Tero Saarinen Company, among others.

A unique gala dress is always crafted by hand, in intimate dialogue with the client. The made-to-order gown worn by singer Anna Puu at the 2018 Independence Day reception is a fine example of this kind of intimacy. The main idea behind the outfit is a combination of soft red marocain silk and a metal corset, which is intended to reflect the wearer's breadth as a performing artist. The vision came from Anna Puu and her stylist Vesa Silver, and was interpreted by Teemu Muurimäki in dialogue with them. The creation of the metal corset took several weeks as a joint effort between the wearer, the designer, a jewellery designer and a metalworker.

134 Aakko 2019; Clark 2008.

135 Karjalainen 2020: 16.

136 Volonté 2012; McRobbie 1998.

137 Chun and Gurova 2018.

138 See Chapter 5; Lappalainen and Almay 1996.

139 Koskennurmi-Sivonen 1998; Sandvik 2016.

140 Sandvik 2016.

141 Lappalainen and Almay 1996.

142 Burman 1999.

143 McRobbie 1998; Almila 2016; Chun 2021a.

144 Koskennurmi-Sivonen (2002) mentions several salons: Atelier Hjördis Melén, Ika, La Robe, Salon Ståhlberg, Atelier Söderlind, Atelier Nina Bergman, Salon Kaarlo Forsman, Atelier Riitta Immonen, Atelier Irja Palonen, Taidekutomo, Atelier Annette, Salon Oljemark, the Stockmann salon and Salon Mannequin in Turku.

145 Wiberg 1996: 128–129.

146 McRobbie 1998.

147 Aalto University's predecessor, the University of Art and Design in Helsinki, became a university in 1973. It had already taught fashion design prior to that, however: the model and fashion drawing department was established in 1947 under the leadership of Ritva Karpio. Operating in what is today the Ateneum Art Museum, the department had Arttu Brummer as its artistic director. In 1949 the department was renamed Model and Fashion Design and in the 1960s it became the Faculty of Fashion Design. Lappalainen and Almay 1996: 215.

148 Kauppi 2021.

FIG. 15 · *Unikko Dress* (2013). Teemu Muurimäki transformed the everyday Unikko pattern, familiar from home textiles, into a festive evening dress. The floral pattern, which was digitally printed onto silk organza, becomes fragmented in the vertical pleating of the hem and opens up into the poppy patterns. The pattern is broken down into petals on the collar and belt. Photo: Juliana Harkki.

Collaboration is extensively present in all of Muurimäki's work and his garments are handmade from start to finish. They are manufactured by a team involving, besides the designer, a patternmaker, a dressmaker and other professionals as needed.

Another example of this kind of collaboration was the gold dress worn by actor Laura Birn at the Golden Globe Awards red carpet in Hollywood and the Finnish Jussi Gala in 2019. Inspired by classic Hollywood glamour, the dress was made in partnership with the Kyoto-based silk weaver Nishijin Okamoto. The material is a golden silk jacquard with the pattern *sangai-bishi* ("triple rhombus"). In this case, the fabric significantly influenced the creation of the dress and the collaboration reached far across the world.

Muurimäki has also teamed up with Finnish companies. *The Unikko Dress* (2013) (Fig. 15), made in the Marimekko sewing studio, was created in dialogue with the Finnish design giant. Based on the iconic and bold Unikko pattern designed by Maija Isola, Muurimäki created a collection of unique, modern evening dresses to mark Marimekko's sixtieth anniversary. Handcrafting, interaction and embodiment are emphasized in all of Muurimäki's work. His work is characterized by a close relationship with the client. He is also one of the few true representatives of slow fashion.[149] The creation of one evening dress, including all the different stages, can take several weeks and dozens or hundreds of work hours.

The fashion researchers Jane Lamb and Jo Kallal have proposed the "FEA model" to describe a clothing designer's processes,[150] in which functional, expressive and aesthetic elements form a whole but also compete against each other. Other challenges faced by a designer include production and financial limitations, as well as a time dimension: finding a balance between timelessness and novelty. Lamb and Kallal also describe a linear process, which begins with identifying the problem at hand and coming up with preliminary ideas, progressing through product design, prototyping and evaluation to fulfilment. A successful balance guarantees a "space of acceptable garments", in which familiarity and novelty meet.[151] There are always external and internal limitations to design: external constraints include the garment's purpose of use, as well as production-related resources (budget, schedule, production environment, technology, materials), compared to internal ones like the designer's

working capacity, artistic and visual competence, internalized trends and fashions, handcrafting skills and personal design philosophy.[152]

Natalie Nixon and Johanna Blakley developed a concept similar to design thinking[153], which they entitled *fashion thinking*.[154] The concept comprises temporal and spatial dimensions, which interact with each other, tackling the past, present and future. Abstract thinking and concrete action fuse together, as do technical skills and visual memory.[155] Our clothing memory or personal "clothing archive" is not limited to garments we have seen but also includes ones experienced haptically, and this implicitly exists as a basis for new creations.[156]

Clothing designers also seek intimate bodily and visual experiences from outside clothing archetypes, and may be inspired by highly personal issues. The Finnish designer Venla Elonsalo (b. 1998), for example, delved into the world of soft toys, which had been emotionally critical for her in childhood, even learning about toy manufacturing techniques. She then combined fashion thinking, wearability and technically demanding soft toy fabrication with costume-making. The aim of her collection *Wearable Soft Toys* (2021) was to create not only

149 Clark 2008.

150 Lamb and Kallal 1992.

151 Eckert and Stacey 2001: 2, 15.

152 Lawson 2005: 92–94; Karjalainen 2020: 18–21.

153 Like Nixon and Blakley (2012: 155–156) write, design thinking refers to the creative and analytical ways and user-centred design methods to solve problems within and beyond design practice.

154 Nixon and Blakley 2012.

155 Finn 2014; Chun 2021a; Chun 2021b.

156 Eckert and Stacey 2001: 4; Ræbild 2015: 185.

FIG. 16 · Venla Elonsalo's sketch of the design phase of the collection *Wearable Soft Toys* (2021), which is a combination of clothes and soft toy elements. The main themes of the collection are playfulness, closeness and the emotional security provided by soft toys. The collection's outfits are based on figures of a tiger, elephant, bear, panther, sheep and giraffe. Photo: Venla Elonsalo.

157 Elonsalo 2021: 39.

158 McKeIvey and MunsIow 2012.

159 McKeIvey and Munslow 2012; Sinha 2002; Watkins and Dunne 2015.

160 Dieffenbacher 2020; Karjalainen 2020; Elonsalo 2020.

161 Vinken 2005.

162 Rissanen 2007; Rissanen and McQuillan 2016.

163 McKeIvey and Muslow 2012; Karjalainen 2020; Ræbild 2015.

164 Kawamura 2018.

165 According to Merriam-Webster, "intimate" means something "of a very personal or private nature", "marked by very close association, contact, or familiarity" or "belonging to or characterizing one's deepest nature" (merriam-webster.com).

166 Choufan 2021.

167 Lakoff and Johnson 1999.

168 Valle-Noronha 2019.

169 Ræbild 2015.

170 Ibid.

aesthetically pleasing outfits but also garments that gave their wearers a sense of security, akin to a favourite garment or toy.

Elonsalo's collection was a combination of clothes and soft toy elements, with outfits based on a tiger, elephant, bear, panther, sheep and giraffe (Fig. 16). In creating the garments, Elonsalo used 3D modelling, digital patternmaking software and traditional teddy-bear production methods – including glass eyes. The collection was inspired by the designer's childhood collection of more than two hundred soft toys, while the shapes of the garments were suggested by middle-class children's wear from the early 1900s. One of the central elements of the collection are considerations of the emotional ties related to soft toys, which form a crucial part of a child's world and act as intercessors between the child and the rest of the world. Two of the collection's fundamental themes are playfulness and intimacy. Elonsalo says that play and creativity go hand in hand, but as clothing design leaves little room for play, she tries to find a balance between progressing according to plan and maintaining playfulness.[157]

Most design work begins with a commission and background research.[158] The client may be a company, the creative director of a fashion house, a product manager, a fashion school lecturer or the designer themselves. The assignment may have very clear delimitations or give the designer free rein, depending on the context. In a commercial and functional work environment, the background work includes trend observations (or reading of trend reports), research on markets, materials and the company's archives, analysing sales and target groups and, in some cases, consumer surveys.[159] An independent designer's background work may spring from the designer's personal history and identity, their themes and philosophies of interest, concepts, materials and aesthetic elements.[160] Background research is used to rationalize design choices and the chosen target group, and/or to have an idea of ongoing trends.[161] If the design is for a unique garment, background research on the individual wearer is a crucial part of the process. On the other hand, the background work may begin directly from the material, patternmaking or draping a garment on a mannequin.[162]

Generally, background work leads to a mood board – a collage-like collection of impressions of the themes to be covered by the collection. It includes a summary of images, colour palettes, fabric choices, reference pictures and sketches. If a designer is not personally making the garment, they will usually draw more detailed product pictures (digitally or by hand), write instructions for patternmakers and manufacturers, and create a so-called tech pack, which is a communication tool containing data on the garment's shapes and details. Specific elements such as fabric and thread colours and seam positioning are usually determined based on the designer's experience, aesthetic preferences and intuition. A garment will change through the process; fittings at various stages are an essential part of a designer's work and design process in every context.[163] Besides using live fitting models, who are not available very often, designers will tend to try clothes on themselves.

DESIGN WORK AS AN EMBODIED PROCESS

The designer's profession places an emphasis on originality, creativity and even the designer's personality. The designer as author plays an important role in fashion, because they provide garments with a symbolic meaning.[164] The myth of authorship developed in fact similarly and at the same time as in other fields of art. Despite the designer's symbolic meaning and status as an artist, clothing and fashion design also involve bodily culture and physical work. A garment is a concrete object with which we are in contact from birth. It is the intimate space between our body and the world that is closest to the skin:[165] intimate both concretely and physically, as well as socially and emotionally.[166] A garment defines the boundaries of our body and is simultaneously a cultural communication tool and a building block of identity, as we suggested in the previous chapter. Because getting dressed is an essential means of protecting our body against the elements, clothes form a part of our daily sensory-motor experience from infancy: they affect a child's early bodily experiences and impressions, and abstract the physical experience[167] through experiences of tightness or softness, for example.

A garment may also act as a metaphor that mediates other experiences, just as a film or book can express something that is hard to verbalize. Clothes are a materialization of a culture, time and mindset. The creation of metaphors and the synthesizing of the empirical world into a garment are essential aspects of a designer's professional skill. It requires an understanding of what a garment means to people and how it feels on the body. It is the designer's task to create an intimate relationship between a garment and its wearer.[168] The pillars of design are intimate, personal, experience-based tacit knowledge, abstract thinking, and concrete handiwork.

The design process often starts with the body: the designer's own and the wearer's.[169] Information transmitted by the body is utilized throughout the process – in coming up with ideas and concepts, sketching, patternmaking, materials research and the fitting of prototypes and sample specimens. Some designers draw directly onto the body or explore motion and fabric behaviour using the body.[170] Fashion researcher Joanne Entwistle has

FIG. 17 · Bear and elephant outfits from the Venla Elonsalo collection *Wearable Soft Toys* (2021). Elonsalo used 3D-modelling, digital pattern design software and traditional teddy bear manufacturing methods in the production of the outfits. The collection was selected for the final of the Hyères International Festival of Fashion, Photography and Fashion Accessories competition in Spring 2021. Photo: Ninni West.

171 Entwistle 2000a, b.

172 Määttänen 2009: 88-89.

173 Bourdieu 1984, cited in Entwistle 2000a: 340.

174 Rocamora 2016: 240.

175 Entwistle 2000a: 344.

176 Merleau-Ponty 1964; Bourdieu 1989.

177 Csordas 1996: 6; 1993; Bourdieu 1989; Entwistle 2000a: 333.

178 Entwistle 2000a: 336; Goffman 1971.

179 Merleau-Ponty 1964: 5; Entwistle 2000a: 334.

180 Bennett 2010.

181 Smelik 2018; Haraway 2016; Braidotti 2013.

182 Edelkoort 2015.

183 Smelik 2018: 20.

184 Smelik 2018: 34-35; See also Tiainen, Kontturi and Hongisto 2015.

185 E.g. Valle-Noronha 2019; van Dongen 2019.

186 Aktaş and Mäkelä 2019; Groth 2017.

187 Entwistle 2000a: 334.

pointed out that although fashion is not necessarily limited to clothes, it most commonly materializes as clothes on the surface of the body. In this sense she considers fashion, and consequently apparel, as "situated embodied practice" or "situated bodily practice", because a body is always part of a social world that exists in a specific time and place.[171] Entwistle sees the body as an active operator, restricted and constructed by the routines and norms that apply to it.

This has links to pragmatist views of habits as meanings built through repetition and bodily experience.[172] Our bodies' earlier experiences influence the meanings we bestow upon clothes and how, based on these meanings, we foresee future dressing situations. This foresight is evident on the body: if we have found a garment, shape or fabric pleasant in the past, for example, we expect the same feeling to arise from similar clothes or materials later on. And conversely, an unpleasant feeling remains with us if our prior experience with a garment was for any reason disagreeable. Bodily experiences and the knowledge we carry within our bodies is not necessarily verbalized or consciously acknowledged, but may materialize as vague feelings.

Because clothes are a form of social interaction with others, Entwistle considers the sociologist Pierre Bourdieu's concept of *habitus* as the best framework for understanding the relationship between attire and the body, as an embodiment that is both socially constructed and obtained by living: a location of the self.[173] The body is both a personal starting point and a social construct. The habitus is a logic of practice melded into the body, built up of cultural, embodied capital.[174] Our tastes and aesthetic views come both from the outside and the inside, and thereby attire becomes the sum of social factors, representations, hierarchies, discourses, personal actions and our bodily experience of getting dressed.[175] The garment and the body interact and build each other, just as the dressed body interacts with its physical and social environment.

There has been a shift in the phenomenology and theory of practice that strongly influence fashion studies[176] from a semiotic, structuralist and textual context towards the idea of embodiment, where a person's culture and self are simultaneously bodily and experiential and are moulded through social practice.[177] Bodily subjectivity is experienced in the flow of daily life, with the body as personal and social capital.[178] We build our understanding of reality through the body's physical, situational and spatial trinity.[179] The movement of our bodies through space is important in terms of our perception of the world and our relationship with other people, their bodies and objects. Our bodies are not just tools but expressions: we see and become seen through our bodies.

This theoretical shift towards embodiment is also linked to an emphasis on non-human materiality. The so-called new materialism has gained a foothold in cultural, design and fashion studies in recent years. It sees matter as *vibrant*[180] and as an equal agent with humans.[181] Fashion researcher, professor Anneke Smelik combines this new materialist understanding of fashion with Li Edelkoort's famous Anti_Fashion Manifesto[182], which provocatively predicts "the end of fashion as we know it" and has been read by many as a call for appreciation of artisanship and materials and a solution to our ecologically and socially unsustainable fashion industry.[183] New materialist thinking is not, however, limited to questions of sustainability and material-based design. It challenges human-centricity: the idea that humans are the only beings to give meanings and change their actions. In line with new materialism, Smelik considers tools, technologies and our entire surrounding world to have agency. Fashion changes through the interaction of these elements, not just according to human decisions.[184] Researcher-designers who are inspired by new materialism emphasize the agency of clothes and materials, in relation to both a garment's wearer and its designer.[185] In a way, the designer fuses into and interacts with their materials and tools, which melds manual work and thinking into a single action.[186]

With regard to clothing, the idea of bodily subjectivity leads us to consider the ways in which a garment works on the body, building and transmitting the experience of the self and determining our orientation towards the world and other people. Clothes may force us to consider factors such as our vulnerability (by being revealing) or raise our self-esteem (by emphasizing certain body parts) or cause discomfort (by being too tight or containing unpleasant materials). A garment has a place in space and time: getting dressed always involves preparing and adjusting to a specific situation and its prevailing norms.[187]

A clothing designer may comply with these norms or challenge the limitations of the garment and the body. The Finnish designer Leevi Ikäheimo (b. 1997), for example, critically analysed heteronormative masculinity and its muscular body in his collection *No Pain No Glamour* (2021). Ikäheimo's collection is, in many ways, intimate and bodily. Firstly, for his concept, he drew ideas from his own value set, emotions and personal experiences of society's response to diverse (male) bodies. In the satirical and naivist collection, Ikäheimo explored the ideals of masculinity and how they can be challenged. Beside the actual body stands a fictitious, hoped-for body that may represent the ideal to be attained – in this case, a muscular male figure. Ikäheimo's collection was inspired by bodybuilding, human anatomy charts and the hyper-masculine action figures sold to boys

NEW MATERIALISM

New materialism (or neomaterialism) is a theoretical and methodological tendency that argues that matter is "vibrant" and an equal participator with humans in the world. In the spirit of posthumanism, it questions anthropocentrism and emphasizes bodily experiences and interaction with the material world. New materialism has been applied to feminist theory, environmental studies, bioethics, artistic research and research on architecture, design and fashion, among others. Its main theorists are Karen Barad (2007), Jane Bennett (2010), Manuel DeLanda (2015) and the posthumanist Rosi Braidotti (2013). From the perspective of artistic work and design processes, new materialism has been explored by Katve-Kaisa Kontturi (2018), Estelle Barrett and Barbara Bolt (2013), and Neil Leach (2015), among others. Within fashion studies, it has been considered by Anneke Smelik (2018), as well as a number of researcher-designers who carry out artistic, practice-based research.

ALGORITHMIC CLOTHING DESIGN

Algorithmic clothing design is a loose term for design methods in which specific instruction sets (groups of commands in machine language) are used for analysing user data, creating materials for inspiration, building complex, mathematically constructed shapes, and developing new products. The basis for algorithmic design is that it is broken down into work stages, i.e. it focuses on creating "recipes" instead of products. Algorithmic design may consist of ordinary computerized modelling, for which the designer sets strict conditions. It may also be a tool that, using machine learning, creates countless variations within a set of conditions or learns through repetition and feedback to build better solutions. In commercial environments, algorithmic design is used because it is thought to be able better to respond to consumers' wishes and needs, and thereby to reduce wastage. Artistic algorithmic design, in turn, attempts to solve mathematical problems that are difficult for the human brain, and to create novel shapes.

FIG. 18 · Leevi Ikäheimo's collection *No Pain, No Glamour* (2021) consists of autoethnographic research on the norms of heteronormative masculinity. The collection was inspired by bodybuilding, anatomical muscle charts, hypermasculine toy figures for boys, Robert Lostutter's works and rave culture's DIY aesthetic. Ikäheimo plays with the textures and three-dimensionality of materials. Photo: Sofia Okkonen.

in the 1990s. Additionally, the collection's visual image was influenced by works of the artist Robert Lostutter, as well as dress styles pertaining to early-2000s' rave and techno subcultures. A theme that carries through the collection is the exaggerated size and vanity of the bodybuilder's figure, materialized in garments.

Ikäheimo's interest in bodybuilding is evident in his way of drafting and shaping garments. The body is at the centre of the garments' structure: one outfit consists of pieces mimicking the anatomical muscle chart used in medicine. The jumpsuit-like outfit, made of recycled cashmere-merino wool, may replicate the anatomy in its shapes, but the choice of soft wool as the fabric juxtaposes the softness of the body with the stereotypical hardness of muscle. (Fig. 18, right) The muscles are created using childish, brightly coloured pieces, positioned following the muscle chart as if an anatomy lesson were taped onto a doll. The garment becomes a wearable, soft muscle suit. As such, it laughs at the unattainable ideals set for the male body. A knitted outfit made from recycled polyester, in turn, is a humorous study of artificial muscle hypertrophy. A 3D-scanned UV chart of a muscular body has been printed onto the fabric using sublimation printing technology. Inspired by techno music, Ikäheimo plays with surface textures to question the view of masculinity as hard and unfeeling. (Fig. 18, left)

In his work, Ikäheimo also ponders the power that clothes have over people's bodies, posture, being and energy.[188] He processes his personal experiences and feelings related to the clothes that the surrounding society tries to impose on men and their bodies. For Ikäheimo, fashion design is a way of presenting his own value set and visual identity, which is why he wanted to design a menswear collection that emphasizes humour, frankness and a certain kind of optimism. He also approached his collection through the themes of abundance, extravagance, vanity and profusion that were not only close to his heart but also familiar from the contexts of both fashion and bodybuilding. Some of Ikäheimo's kindred spirits in fashion include Walter van Beirendonck, Jean-Paul Gaultier and Bernhard Willhelm, whose work features a similar exuberance and an attempt to satirize the norms of manhood.

Ikäheimo's working process consists of slow, even meditative handwork. He may spend hours by a knitting machine, which he says sinks him into a sort of therapeutic flow state, as long as he is well prepared for the next work stages.[189] In other words, he uses his tacit embodied knowledge on both a cultural and a procedural, handcrafting level.

In her PhD thesis, Ulla Ræbild investigated clothing design methods by observing and interviewing designers in situ in their studios, also using video

recordings for analysis. The reasoning behind her research method relates specifically to the bodily dimension of the work and to the importance of tacit knowledge, because designers develop their methods by doing and are not necessarily able to verbalize their work and processes. This also makes it challenging to teach design methods to students. The video material has shown that designers use their own and others' bodies as aids in designing and teaching design. For example, a designer might first study a two-dimensional drawing and a two- and three-dimensional pattern, and then assess the end result against their own body or someone else's body.[190] Therefore, a garment develops from the drawing onward with the help of the designer's and their models' bodies.

The designer's body and their lifelong experiences of wearing clothes are presumably present in the background already at the sketching stage, as is the three-dimensional existence of the wearer's body. Ræbild describes how designers evaluate the functionality, proportions and fit of a garment and, if the final materials were used in the prototypes, also the drape, feel, colour and structure of the material through fittings.[191] Working with materials, designers handle the materials and come up with ideas using their haptic skills. They evaluate the garment's physical and visual characteristics simultaneously; they also use their own bodies

188 Interview with Leevi Ikäheimo, Aalto University 2021.

189 Ibid.

190 Ræbild 2015: 117.

191 Ræbild 2015: 116–118; 131–134.

FIG. 19 · The starting point for Jarno Kettunen's collection *Notes of sleeping: how does it feel like to fall asleep?* (2020) was the twilight zone between sleep and wakefulness. The collection mixes intimate, private pyjamas and men's suits, which are more associated with public life. The main goal of the collection is to express the simultaneous presence of two worlds through the means of experimental fashion design. The design work resulted in clothes and a video performance, where sketches for clothes are created and which draws from the tradition of surrealism. The outfit in the photo is called 3 am. Photo: Jarno Kettunen.

192 Ræbild 2015: 120.

193 Ræbild 2015: 178.

194 Määttänen 2012: 101–103.

195 Ibid.

196 Schön 1991 [1983].

197 Schön 1991: 51; Polanyi 1998 [1969]: 54, 55.

198 Schön 1991: 298–9.

199 Varto 2017.

200 Karjalainen 2020.

201 The term inventory used by Karjalainen is similar in meaning to tacit knowledge but also encompasses explicit, i.e. verbalized knowledge and competence of the designer.

202 Karjalainen 2020: 44.

as "paper", explaining things to students or work teams through indicative drawing on their bodies to communicate thoughts about various elements of the garments.[192] Designers unconsciously use their bodies to obtain tacit knowledge, which is generated through interaction with garments, bodies and the world at large.[193] A fashion designer may justify many of their decisions through factors such as sales, others' opinions, trend reports or history books, but aesthetic choices – such as the positioning of a seam or the choice of a specific thread – are hard to explain in these terms. The right choice just feels right.

The Finnish designer Jarno Kettunen (b. 1994) has examined his own subconscious design processes using video recordings. He approaches embodiment and the subconscious by drawing from the tradition of surrealist art. Kettunen's work combines blindfolded intuitive sketching done in the twilight zone between sleep and wakefulness, and the garments created based on the drafts thus created. Kettunen's design work has resulted in garments and in a video performance exploring the boundaries between being asleep and awake. The purpose of the collection was to manifest the simultaneous presence of two worlds through clothing design and experimental fashion design that is akin to conceptual art. Kettunen's collection also included a video demonstrating the design process: the designer sleeps and, having set a timer to wake himself up at certain points, wakes to sketch his experiences, blindfolded, onto a piece of plastic hung on the wall. (Fig. 19)

Kettunen uses his sketches to create garments that also stand out because their sizing ranges between XL and 5XL. These large garments are inspired by the history of conceptual fashion and challenge the standardized relationship between garment and body. The same garment may be worn by bodies of different sizes, rather than thin bodies exclusively and thus Kettunen directs attention to the bodily dimensions of clothes. The garments are adjustable in size and do not define the wearer's body limits in the same way as garments made in standard sizes. The material used by Kettunen is a striped cotton known to most from men's shirts and pyjamas. In this way, the garments blend together two opposing worlds of apparel: pyjamas, which come from the intimate world of sleep, and men's suits (alluded to by the shirt fabric), which stand for public life. This is disruptive for viewers who have set habits and cannot place the garment in either category.

Behind a designer's tacit knowledge lie actions turned into habits that can be used to anticipate coming steps. According to the early pragmatist John Dewey, we perceive the world as opportunities for action, whose consequences we evaluate – subconsciously to some extent.[194] Our consciousness formulates emotions related to these opportunities, which are also a central characteristic of aesthetic experience. According to Dewey, we should not separate between the sensory, the intellectual and the emotional. It is important in artistic work to consciously utilize our unconscious meaning structures. An artwork is an experience produced by an artistic object and the artist will know that the object is finished when it generates the desired experience. From Dewey's and the pragmatists' point of view, what knowledge and art have in common is that the objects under scrutiny consist of relations, interactions, which means that simple descriptions of them are insufficient. Besides an empirical observation, an experience comprises anticipating the future.[195]

Donald A. Schön, inspired by Dewey's thinking, has observed professionals and experts who engage in so-called reflective practice[196], which refers to considering and analysing one's own and others' work methods during and after doing the work. When confronted with complex, conflicting, unexpected or unique challenges, professionals trust their intuitive improvisation skills and the tacit knowledge that has evolved through practice.[197] This requires displaying their hidden professional knowledge to clients or a broader public for judgement, which means that a reflective professional cannot be afraid to make their limitations transparent.[198] The practice proposed by Schön has become more common in design research, as well as in artistic research, where the design and artistic work in themselves comprise research, as by observing and analysing the author/researcher generates theoretical knowledge.[199]

The Finnish designer Heidi Karjalainen (b. 1986) reflects on her own actions through practice. She analyses her design techniques and designership in her master's thesis, wherein she also discusses her design theory.[200] According to Karjalainen, design work brings together rational boundaries and intuitive creativity. Creativity requires an appropriate context and clear routines for action. This allows the creator to focus on honing their skills, applying creativity to their design work and avoiding disorderliness. Karjalainen visualizes design work as a repeating cycle of design work and building up the clothing designer's tools (*inventory*)[201] based on the designer's cumulative experience and practices.

Additionally, Karjalainen says that her designership is built upon a feminist value base. This affects her work and design methods and acts as a general foundation for her design philosophy. Karjalainen analyses her design theory in terms of the designer's *declarations of intent* and a strategy entitled "choose, fill and use". These set the rules and general conditions for the collection, ranging from colours and materials to garment shapes and dimensions, ultimately encompassing the entire work process.[202] The first stage of the strategy ("choose") relates to selecting a frame of reference; the second ("fill")
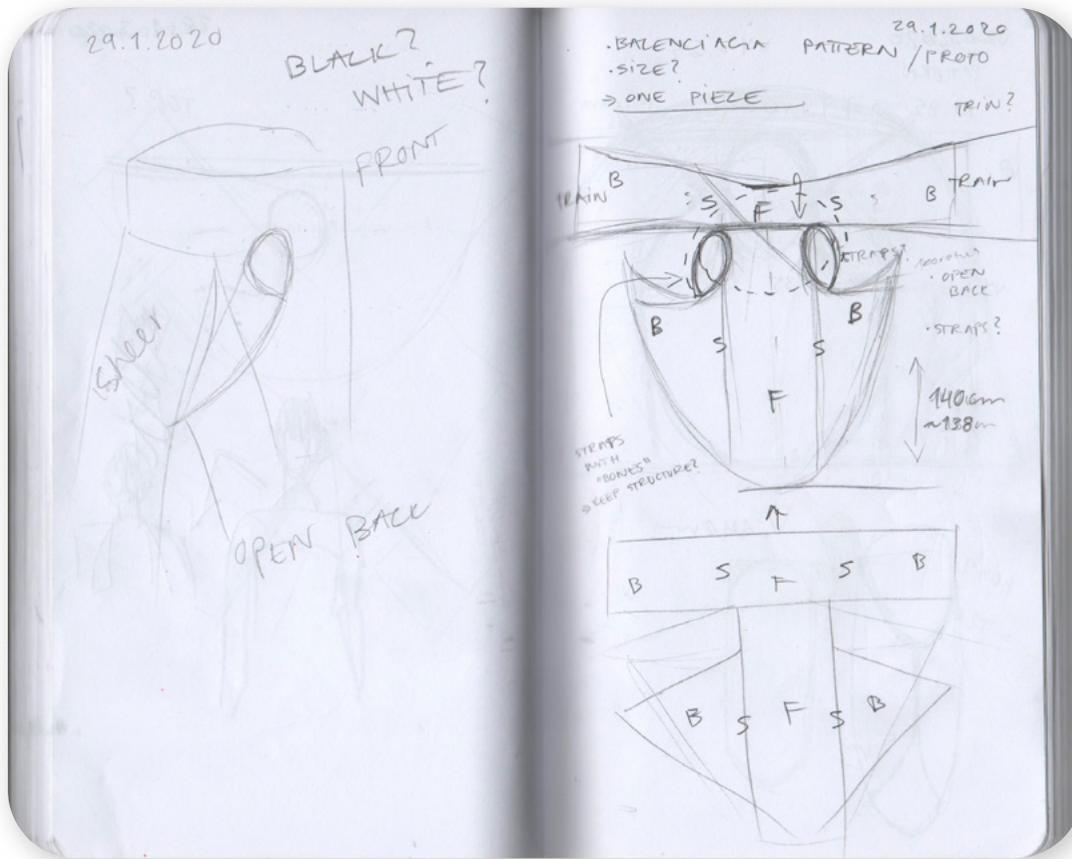
FIG. 20 · In her sketch, Heidi Karjalainen examines the structure of the garment from the viewpoint of Zero Waste fashion. The approach is characterized by designing the pattern in a way that uses the entire width of the fabric. This minimizes the amount of cutting waste. Photo: Heidi Karjalainen.
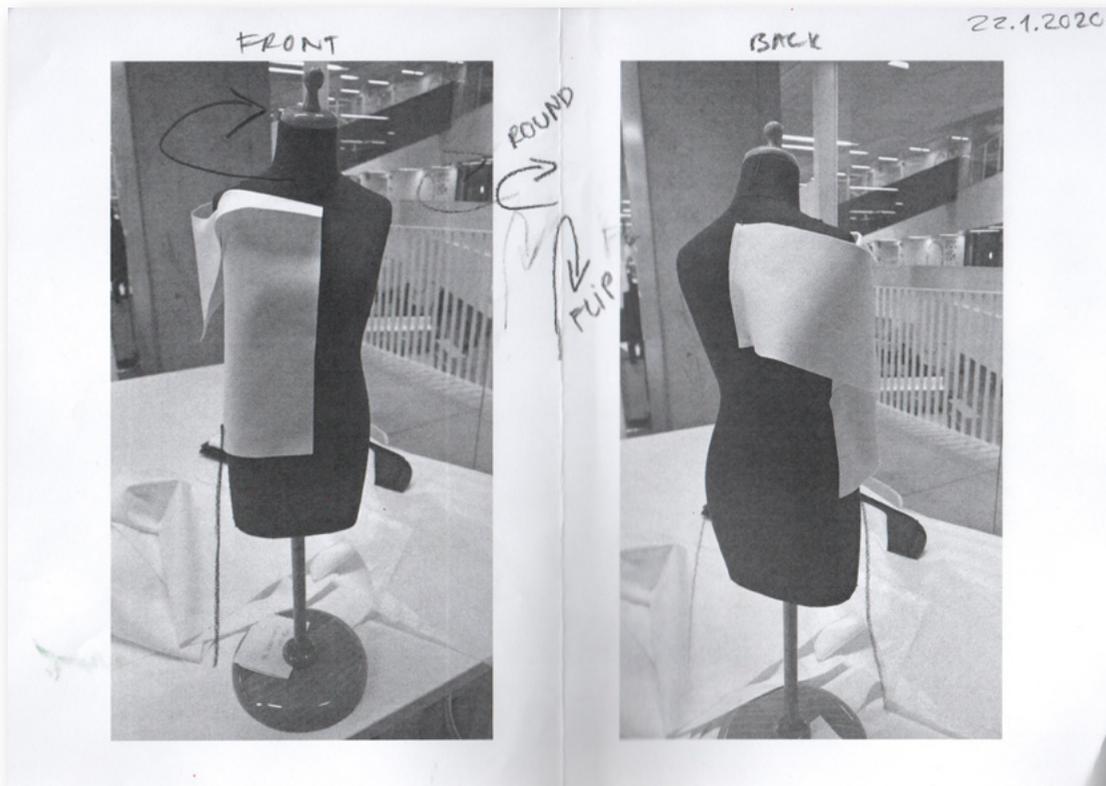
FIG. 21 · Heidi Karjalainen prototyping on a 1/2-sized mannequin as part of the design process. The dress in progress is supposed to consist of one square piece of fabric, which, when wrapped around the body, forms a three-dimensional garment. Photo: Heidi Karjalainen.

FIG. 22 · Heidi Karjalainen's *Zero Waste Dress vol. 2* (silk organza). In her work, Karjalainen explores ecological design methods and the designer's opportunities for questioning and altering norms related to femininity and desirability. Her choices of models also challenge conceptions of who is a suitable wearer of a party dress. Photo: Janne Punkari.

to collecting materials and defining content; the third ("use") to utilizing the chosen elements in designing a collection. Karjalainen strives to set formal and hierarchical conditions – shapes, dimensions, composition and colours – for her collections that fit within the context of fashion. During the process, the designer conducts critical self-reflection, developing her personal design theory.[203] Karjalainen borrows from Jay Kappraff's thoughts on good design, which involves repetition (familiarity, continuity), harmony (coherence between the parts), variation (novelty, originality) and proportionality to the human scale.[204]

Heidi Karjalainen's work can be seen as following the tradition of practice-based or practice-led design research, wherein the design itself is research and the designer strives to itemize their process analytically, in depth.[205] Linda Candy has written about the difference between practice-based and practice-led research.[206] If the outcome of creative work forms the basis for researching new knowledge, this is practice-based research; if, instead, the research leads to new methods, it is practice-led. Karjalainen's work especially comprises the latter. The garments she designs form a part of research that creates new design methods, combining ecology and feminist thinking. The designer is working to develop pattern-cutting methods that produce as little waste as possible, i.e. strives towards *zero waste design*, with the aim of environmental sustainability.[207] An essential aspect of the design process is to employ all of the usable fabric, i.e. designing garments such that they utilize the whole width of the fabric. This minimizes the amount of cutting waste in design, patternmaking and cutting. Figures 20 and 21 display the design and research process leading to evening gowns.

Karjalainen's evening dresses are made out a single continuous piece of fabric. Figure 22 shows one of Karjalainen's two zero-waste gowns, patterned using square pieces of fabric. As it drapes over the body, the two-dimensional rectangle becomes a three-dimensional garment. The natural drape of the fabric manifests the shape of the garment. Additionally, the collection in question has a different kind of politics: Karjalainen draws inspiration from feminism and its critique of the male gaze,[208] which she considers to have determined the properties of women's clothing – cuts, materials, colours, slits and so on. The development of new design methods is therefore impacted not only by zero waste design but also the feminist perspective, which affects the shape of the garments. Karjalainen has not wanted to emphasize the bust, as stereotypical evening dresses do. Also the visual materials related to the outfits, such as the photograph form a part of the research process, which strives to redefine femininity.

Karjalainen wants to bring her personal political values into her design principles, because in her view fashion design is always a message about the designer. The world of fashion is still far from reaching gender equality: it is only recently that women have risen to the helm of the largest fashion houses. Karjalainen uses design to challenge the tradition of pleasing the male gaze, for example, by accentuating elements that do not represent normative desirability. In her work, she wants to observe the bodily dimensions of the garment's wearer while erasing the design principles related to the stereotypical feminine ideal, but without compromising on fit and drape.

The above examples demonstrate that the professional identity of clothing and fashion designers has taken a political turn. Young designers, in particular, are not just trying to create collections according to the latest trends but understand their status as critical creative thinkers with an opportunity crucially to influence how garments and humans are understood. Additionally, their designership is affected by different kinds of changes – ones related to the digitalization of culture and society and thereby also design.

New technologies are becoming – have already become – increasingly important in the design process, clothes production, fashion distribution and attire in itself. New technologies also inspire people to ask questions about the essence of designership. The designer's role is becoming more complex: they are expected not only to create designs but also to obtain basic IT skills, develop a novel language with engineers and learn to use diverse software.[209] As they become digitized, work processes demand closer attention. Paradoxically, technology also underscores the significance of embodiment.

ALGORITHMIC DESIGN: DESIGN WITHOUT A BODY

Clothing design is a profession believed to pertain to skilled and highly trained individuals. The development of "smart" technologies, however, has led the fashion industry to seek alternatives to human designership, automating some of its functions.[210] We are living through the so-called fourth industrial revolution, known in the field as Fashion 4.0, which is characterized by the use of smart technologies and the formation of complex, networked cyber-physical systems.[211] Artificial intelligence has been presented as an aid for clothing design, production and sales, delivery chain management and trend forecasting.[212] In design work, AI is used in computer-aided design (CAD) software, issues related to shapes, textures and colours, patternmaking, surface pattern design, creation of shapes that are impossible for humans, and testing and evaluation of garments. These crop up at various stages of design, from background research and sketching to technical design.[213] The most commonly used AI techniques in clothing

203 Ibid. 46–47; cf. Schön 1991 [1983].

204 Karjalainen 2020: 20.

205 Chun 2021a; Finn 2014; Valle-Noronha 2019; Frayling 1993. A research review by Julia Valle and Namkyu Chun (2018) provides a summary of practice-led research.

206 Candy 2006.

207 Cf. Rissanen and McQuillan 2016.

208 Mulvey 1975.

209 Sun and Zhao 2018: 362.

210 E.g. Knight 2017; Bertola and Teunissen 2018.

211 Bertola and Teunissen 2018.

212 Guo et al. 2011; Thomassey and Zeng 2018.

213 Guo et al. 2011: 1871.

FIG. 23 · The installation *Syntax of Clothing* (2021), which was exhibited in Design Museum Helsinki's *Intimacy* exhibition (2021–2022), comprises three computationally designed outfits and foam plastic sculptures, cut with a laser cutter that Matti Liimatainen built. The pieces of clothing are assembled by hand using a special loop-and-hole seam structure developed by Liimatainen, from which the brand's name Self-Assembly derives. Photo: Paavo Lehtonen.
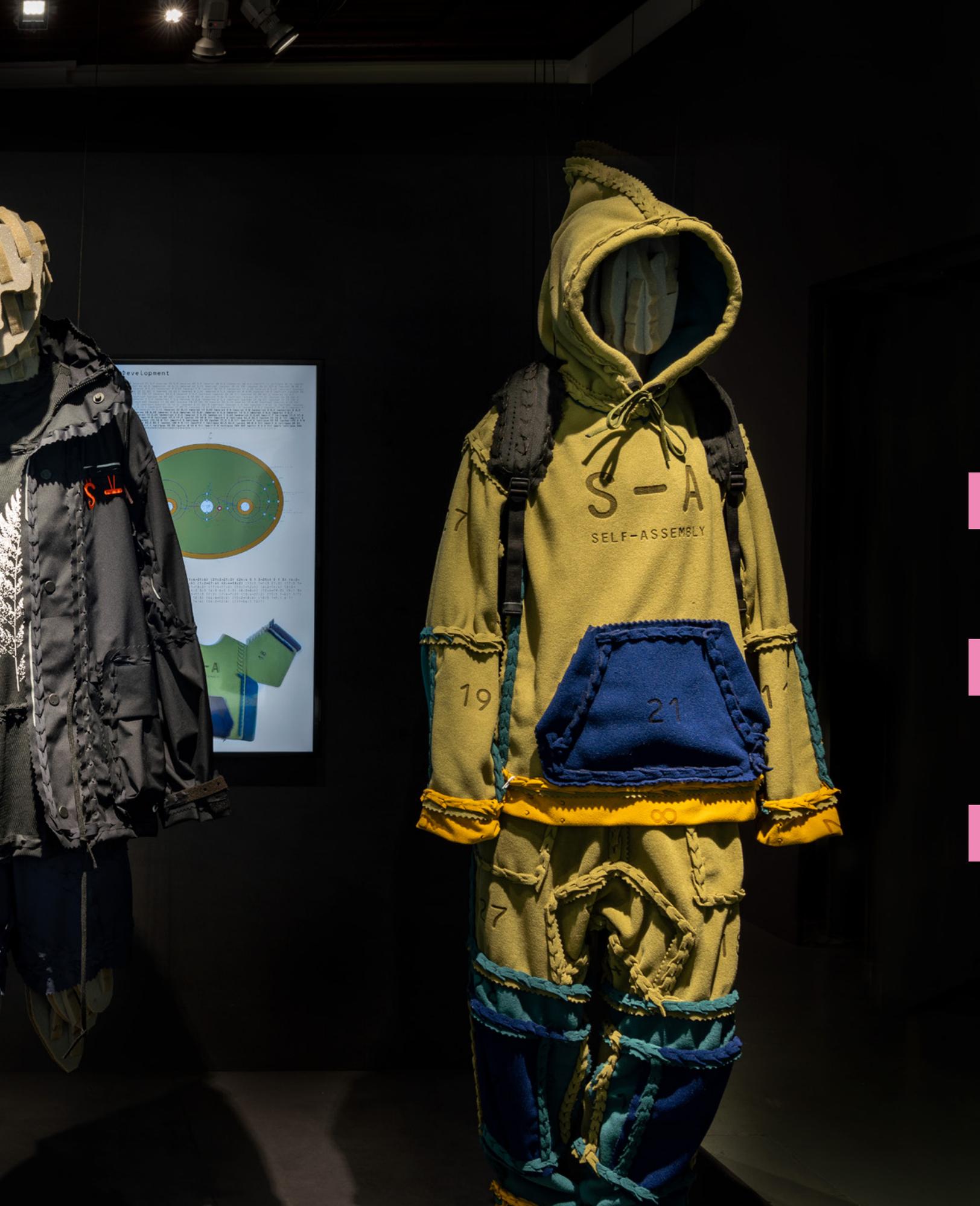
214 Luce 2019; Goodfellow et al. 2014; Kato et al. 2019.

215 Inui 1996; Kim and Cho 2000; Khajeh, Payvandy and Derakshan 2016.

216 Agkathidis 2015; Gross, Bohnacker, Laub and Lazzeroni 2018; Tanska and Österlund 2014; Särmäkari and Vänskä 2021.

217 In smaller companies, however, the creative director, designer and patternmaker may be the same person(s).

218 Matti Liimatainen's ITSE concept design 2019.

218 Matti Liimatainen's ITSE concept design 2019.

219 Cf. Cross 2001.

220 Sibley et al. 2016; Särmäkari and Vänskä 2021.

design are neural networks[214], genetic algorithms[215], fuzzy logic and expert systems, as well as hybrids of these and other models.

Currently, algorithmic design is based on the idea that a person's creative activity is separate from the body and that designers can verbally develop good models for designing successful clothes. In other words, the design process is largely separate from the body and embodied experience, which has also distanced the idea of garments as aesthetic, cultural, social and bodily experiences. Behind every successful garment, however, is the body, which is in continuous interaction with the surrounding world. The question is, how can a designer using AI succeed as a designer, if they purely work with code rather than bodies? How is it possible to translate a designer's tacit knowledge into machine language, when tacit knowledge is defined as information that is hard to verbalize?

One answer is provided by Matti Liimatainen (b. 1983) who has investigated algorithmic and generative design, i.e. how a machine can be taught to become a fashion designer, as part of his business, which is entitled Self-Assembly (est. 2017).[216] Liimatainen develops his algorithms and mechanizes the language of fashion himself, using existing AI systems for reference. His work amalgamates clothing design with mathematics and computer science. The crucial question for Self-Assembly is how a designer's tacit, embodied and intimate knowledge can be taught to algorithms. It requires a certain analytical distancing from the design process itself, because he must consider what stages design involves and how they translate into machine language.

Liimatainen, who has made a long career in the fashion industry and was, at the time of writing, finishing his doctoral thesis at Aalto University, calls the language shared by the human designer and the computer the "syntax of clothing". (Fig. 24) Liimatainen has, for example, developed a six-stage clothing design and production system, comprising: a *brief* given to the machine; *design*; an *interpreter*; *description*; *fabrication*; and *use*. These stages mirror similar events in traditional design work: the brief, for example, corresponds to the tasks of the product manager or creative director who set the framework for the collection, whereas the design and interpreter are reminiscent of the efforts of the designer, who focuses on the shapes and other concrete characteristics of the garments.[217] The outcome is a digitized design process, whose end result is still a physical garment. Operationally, Self-Assembly is present in two environments simultaneously: the physical, bodily world and the digital world.

From the perspective of intimacy as a theme, Self-Assembly's work has many points of interest. Firstly, the company's purpose in developing the automation of design work is not to replace designers or other professionals in the fashion and clothing sector, but to outsource the most time-consuming and routine phases of the process so that professionals can focus on the design process proper, for example the structure and finishing of the garment. Self-Assembly offers ready-cut clothes that the wearer must assemble at home, creating user involvement. (Fig. 23) To allow for this, Liimatainen has developed a loop-and-hole seam with which the garments can be assembled without sewing. Some garments must be assembled in specific ways, whereas other parts can be used to make diverse garments or accessories such as bags. The idea behind the method is to allow the wearer to participate in designing and making their own products.[218]

It remains to be seen whether Self-Assembly manages to create a complete design automation, or whether their research and development efforts result in a list of elements of design which cannot be automated. Whatever the outcome, it will increase our understanding of the content of design.[219] At the moment, machines can only complete a small proportion of a clothing designer's job.[220] In this sense, they still work mostly as an inspiration, and in Liimatainen's case as an optimizer of aesthetic and functional elements within the boundaries set by the designer.

Therefore, designers should not yet give up on their use of the body's non-verbal meanings in designing collections. Quite the opposite, in fact: the significance of embodiment only grows as the design process becomes automated. Automation also provides information on the embodiment of a machine: how it manifests its developer's embodied knowledge. It could potentially become the machine's own embodiment if and when the machine learns more of the tacit knowledge translated into machine language by the designer.
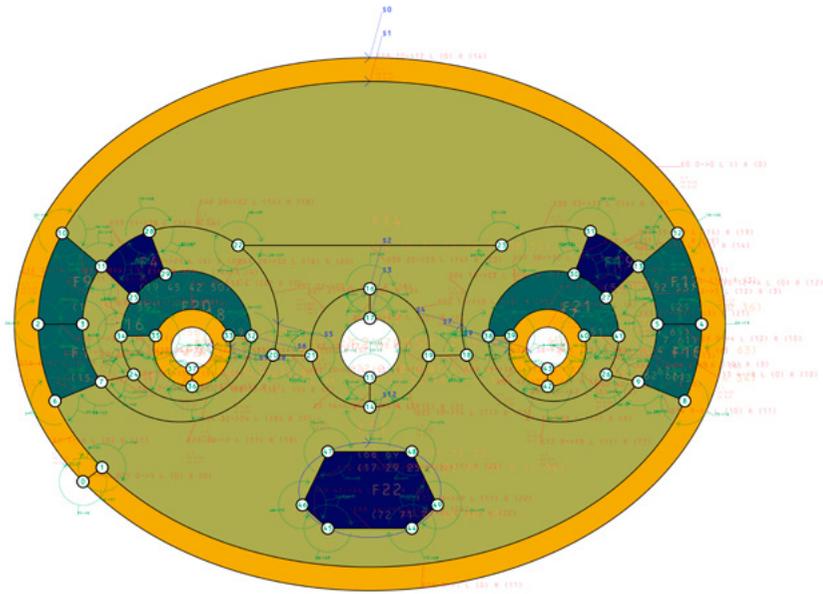
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(24:5 6 1 2 3 4→SA:11 12 7 8 9 10) (21:6→21:6) (21:2→21:2) (24:4 5 1 3→21:4 5 1 3) (4:2→
SA:5) (5:4→SA:4) (27:1→SA:5) (18:5→SA:4) (1:2→27:4) (2:4→18:2) (15:5 1→1:3 27:3) (17:5 1→
18:3 2:3) (19:1→27:3) (15:2→19:4) (11:1→18:3) (17:4→11:2) (14:1→12:4) (6:2→14:4) (3:3→
14:2) (3:2→4:4) (6:4→5:2) (8:1 3→SA:5 4:3 3:3 14:3 6:3 5:3) (8:2→8:4) (15:4→19:2) (9:1 3→
15:3 19:3) (9:4→9:2) (17:2→11:4) (7:1 3→11:3 17:3) (7:4→7:2) (13:4→27:2) (13:5 1→4:1 3:1)
(13:2→1:4) (19:1 15:5→13:3) (27:5→14:2 12:3) (SA:6→12:2) (10:2→18:4) (10:5 1→5:1 6 1)
(10:4→2:2) (17:1 11:1→10:3) (18:1→12:4 14:4) (SA:2→12:6) (C:1→SA:1 12:1)
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FIG. 24 · *Syntax of Clothing* (2021) by Matti Liimatainen/Self-Assembly explores the idea of a shared syntax or grammar used by a machine and a human designer. The garments' design and production process is presented as a four-stage video series encompassing design, development, fabrication and use. The graph developed by Liimatainen, shown in the picture, is a central unit that contains all the possible data of the garment and is interoperable with any program. Screenshot from Matti Liimatainen's video.

Mediatization, Digitalization and Virtualization of Fashion

How is fashion communicated? What do we mean by the *mediatization* of fashion? How does digitalization contribute to the idea of fashion as the culture of the intimate? Traditionally, fashion is understood as a phenomenon linked to modern urbanity.[221] In the urban environment, especially as clothes on the body, fashion has served a means to transmit and communicate information on social distinction and class, gender, identity, sexuality, ethnicity, religion, age and profession among others. What all these definitions share is the idea of fashion as communication[222] which abstracts fashion and moves it a notch away from the body.

The media scholar Marshall McLuhan understood clothes as an important tool, "an extension of our skin" that can be seen, among other things, as a means of passing on information on ourselves.[223] It is an accepted idea among fashion scholars that clothes form a sort of visual-material language that can build and transmit meanings. The meanings coded into clothes have no grammar in the traditional sense but clothes are still thoroughly coded and can be read in similar fashion to those of other cultural products. The "syntax" of clothes, of which Matti Liimatainen also spoke in the previous chapter, consists of certain key elements: the materials and their structures, colours and patterns, the garment's size, cut and shape, the volume, the silhouette and the purpose for which the clothes are intended. Ultimately, once clothes are worn, an overall interpretation can be formed through the synergy of the garments with the body. They both contribute to the creation and distribution of meanings.

But fashion does not consist purely of clothes worn on a body. Fashion is also a more abstract structure or system (with the ability to turn anything into fashion).[224] The fashion system covers a broad network of gatekeepers, human and nonhuman, whose shared objective is to transmit the "myth of fashion" to the masses.[225] One of the main gatekeepers has traditionally been the fashion media and those involved with it: fashion editors, marketers and advertisers. Today, these are joined by a set of new players: bloggers, vloggers, fashion influencers and diverse celebrities. Like fashion's institutionalized transmitters, they hold a position of power from which they speak and communicate about fashion. In fact, they do more than this: they also define what makes up fashion. In this sense, fashion is a phenomenon that is collectively produced, in traditional fashion media but also in online environments.

In itself, therefore, fashion is a medium and a form of communication, at the heart of which lie the creation and sharing of both intimate/personal and socially broader meanings and experiences. The visual representations in fashion magazines and especially digital media technology and social media have further emphasized the communicative nature of fashion. At the same time, they have flattened it into two dimensions. Photography heightens the "photogenic properties" of garments and bodies, which have, according to some researchers, surpassed material and haptic (touch-based) characteristics in importance.[226] This has played a role in distancing fashion from embodied experience, giving a primary role to the gaze and its related visuality. In the world of imagery and digital tools, designers must take account of the power photography wields as a part of the design process – how a finished garment looks in photographs on the one hand, and how clothes should be designed to look good in pictures on the other. It has been claimed that the pictorialization of fashion has altered the design process, because in pictures garments and models are usually only shown from a single point of view: the front.[227] What a garment looks like from the side or the back, let alone from the inside, or how it feels on the body, is less significant.

In the visually oriented world, fashion is most often experienced visually, as pictorial representations. Visual experiences are led by the sense of sight and the meanings related to it. The history of fashion is the history of pictures because not many garments have survived. The lives and identities of people from bygone centuries are explored by analysing clothes in paintings, photographs and the press. Digitalization has afforded images an even greater significance, as designers seek inspiration in online pictures, consumers make purchasing decisions on clothes in online stores based on images, fashion shows have become virtually transmitted and fashion as culture is constructed in the image-driven world of social media. Clothes can even be acquired as solely digital objects that do not even physically exist, as is the case with The Fabricant we will discuss. These phenomena have had an impact on design but they have also inspired designers to ponder the relationships between image and garment, virtual and physical, authentic and inauthentic, private and public, and the static and kinetic body in new ways.

VISUALIZED FASHION

Visuality is not just important to fashion, it is an indelible part of our everyday lives: media imagery, press photographs, films, advertising, TV, videos, or social media structure contemporary lives whether we want them to or not. The world manifests itself through visual representations. Fashion forms a part of visual culture and thereby of the broader revolution experienced in culture that has been described as a pictorial or "visual turn".[228] The idea of the *turn* comes from Richard Rorty, who defines the history of philosophy according to a series of turns. In his own time, he called the latest turn in philosophy and its impact on the other

221 E.g. Breward and Gilbert 2006.

222 Barnard 1996.

223 McLuhan 2003: 163.

224 Barthes 1990 [1967], Kawamura 2018.

225 Barthes 1990 [1967].

226 Rocamora 2017: 506.

227 Ibid.

228 Mitchell 1994: 11–15.

FIG. 25 · Screenshot from Jarno Kettunen's collection in the *Näytös* 2018 show. For many students, *Näytös* has been the gateway to international fashion houses like Givenchy, Celine and Saint Laurent. In the 2010s, *Näytös* grew into Finland's most prominent and internationally esteemed fashion event and the climax of the Fashion in Helsinki event. Tickets are sold out in an instant. In recent years, the show has been broadcast on the national broadcaster's streaming service, Yle Areena. Due to the Covid pandemic, *Näytös* 2021 was fully online. Screenshot from a video. Video: Aalto Studios.

FIG. 26–27 · *Taped on the Skin* (2018) is a study of sensuality and its links to sexuality, femininity and materiality, which Emilia Kuurila explores through clothes and Sofia Okkonen through photographs. Emilia Kuurila's collection made it to the final of the Hyères International Festival of Fashion, Photography and Fashion Accessories contest in 2019. Sofia Okkonen, in turn, made it to the final in 2017. Photos: Sofia Okkonen.

229 Rorty 1979.

230 Evans 2003; Ferrero-Regis and Lindquist 2021.

231 E.g. Jobling 1999; Gough-Yates 2003; Church-Gibson 2012; Bendoni 2017.

232 E.g. Smelik 2018.

233 Pastoreau 2017.

humanities a "linguistic turn".[229] The borrowing of methodology from linguistics, semiotics and rhetoric has since become common in fashion analysis by scholars and designers alike. Starting with Roland Barthes, who examined French fashion magazines particularly from the perspective of their texts, fashion has been seen in the form of (visual) texts and discourses, as a culture that produces and transmits meanings similarly to text and can be analysed using tools offered by psychoanalytical, semiotic or deconstructive approaches.

To some extent, the central role of textual and visual analysis derives from the fact that the fashion system was for a long time closed and access to it was available through writing and photography. Collections were closely guarded, fashion shows were only open to buyers and suppliers, and the launch of new seasons was regulated so that they could only be written about and visualized once the clothes had been made and supplied to stores. In modern fashion history, runway shows were some of the crucial arenas for presenting new seasons to purchasing agents. These days, fashion shows are important vehicles for transmitting visual information on collections to the broader public. They are held in all the traditional fashion cities, following a set annual calendar, either live or virtually.[230] In the contemporary Finnish fashion field, one of the most important fashion shows that presents new Finnish fashion is Aalto University's *Näytös*, held each spring. (Fig. 25) It is the showcase for students from the Fashion BA major and the master's degree in Fashion, Clothing and Textile Design. It is a carefully curated display that presents the students' abilities in the form of diploma work collections, some of which are included in this book. The purpose of the show is to visualize conceptual thinking and technical competence – concept development, background research, patternmaking, materials knowledge and clothes fabrication – of the designer and in Aalto's case, the designer graduates. Besides providing visual pleasure for the viewers, the *Näytös* show helps to prepare designers for the world of fashion, where runway shows are important professional showcases. Previously they were intended for selling new collections, but in the mediatized environment, they help to visualize the fashion houses' and designer's messages and collection concepts. Fashion shows are also concrete manifestations of the hierarchies present in the fashion world: the most prominent fashion personas from editors and celebrities to fashion influencers are given front-row seats.

Alongside the runway show, fashion photography and the magazines that publish them are important tools in letting the public into the fashion world. The 1980s was the golden era of the glossy high fashion magazine, dripping with glamour, and forming their own fashion cultures, as the revered *Vogue* was joined by a whole host of style magazines wooing a younger readership by combining fashion with attractive pictures, music,

topical social issues and innovative graphic design.[231] In the twenty-first century, the visualization trend emphasizing the spectacular has only been fuelled, not least by the fact that social media have forced the previously closed fashion system to open up.

Fashion having become a culture of the visual has also distanced fashion and clothing from the body.[232] It is now experienced more through sight than touch, which has also changed the meaning of the intimate: it is now seen rather than felt. Fashion is not just a form of embodied culture but a phenomenon that expresses and materializes desires, feelings, affects and other sensations, through sight. These developments are reflected in the collection *Taped on the Skin* (2018) by Emilia Kuurila (b. 1989) and its related photographs, which are taken by the photographer Sofia Okkonen (b. 1987) (Fig. 26–27). In the collection's background research, Kuurila particularly explored the concept of sensuality and its close links to sexuality, femininity, eroticism and embodiment. She was particularly interested in how sensuality, eminently a bodily phenomenon, and quite hard to put into words, could be portrayed, investigated and interpreted through clothes. The main theme behind Kuurila's collection became the idea of wet garments that stick to the skin.

Kuurila strove to work on the materials in such a way as to give the impression of the body being present in the clothes even when it was absent – thus aiming to transcend the idea of fashion as image. The bodily presence and wet-garment impression was created using fabric pleating, while shiny fabrics were chosen to emphasize the idea of wetness. The fabric printing and pleating technique, which was carried out manually, brings the garments close to the skin, emphasizing the intimate connection between clothes and the body, as well as the idea of how the moving body alters and reshapes the garment. Kuurila also used strong shades of blue, red and orange to increase the feeling of sensuality. Strong colours have a tendency to evoke feelings and sensations – red, in particular, is historically the colour of passion and desire.[233] As a whole, the collection combined typical archetypes from menswear and womenswear with materials usually only seen in women's (sensuous) fashion, thereby also challenging the stereotypical, gendered meanings associated with the concept of sensuality.

Even though fashion has distanced fashion from the body, fashion simultaneously resorts to photography to accentuate meanings of otherwise unattainable bodily sensations. This is explored in the photographs by Sofia Okkonen. In fact, the photographs form a crucial part of Kuurila's collection in mediating her vision of the sensual body. They also stand as an example of how the development of photography and printing technology freed the fashion photograph from the shackles of objectivity and the boundaries

set by text, emphasizing artistic expression instead. As Okkonen's photographs demonstrate, fashion photographs are more than marketing: they create a visual world of feeling around the collections, in which clothes play a significant but non-exclusive role. Photographs merge fashion with the spirit of the times, the sensing and sensuous body, besides being a visual narrative of the collection.

Okkonen's photographs document but also formulate and communicate the collection's ideas regarding the body's intimate experiences of sensuousness. Their granularity and murkiness, their strong colours echoing the collection's colour palette and the close focus on details of the fabrics and the body (such as the veins in the palm of the hand), or on the boundary between the body and the soft fabric, underscore bodily presence and a subtle atmosphere. Although the photographer's gaze is directed at the body, it does not follow the conventions of the so-called voyeuristic male gaze,[234] which tends to eroticize and objectify the (female) body. Instead, sensuality is built with the help of select visual tools: granularity, low lighting, strong colours, and by focusing on the boundary where the body and the garment come together and are extensions of one another. The choice of this broader visual language builds on the idea of body peace, permitting the simultaneous representation of sensuality and confidentiality, desirability and safety. The photographs create a space that invite the viwer to feel, not only to see. The collaboration between Kuurila and Okkonen is a fine reflection of how important fashion photography is in communicating meanings, feelings and more abstract affects. The combination of an image and a garment underscores fashion as both multi-instrumental and multisensory; as an experience that is simultaneously public and deeply intimate. The multisensory nature of fashion is paradoxically emphasized when the concrete body is absent.

MEDIATIZATION OF FASHION

The increasing ubiquity of photography in the field of fashion is part of a broader trend described as the mediatization of fashion.[235] Etymologically, *media* and its singular *medium* come from the Latin word for *middle*. Today it refers to printed and electronic means of mass communication (press, radio, television, social media), as well as more specialist media such as fashion magazines, which reach a specific group of people. The media are in between, an intermediary, connecting people and sharing information. The media also play a central role in the economy – not just as an industry but also via major functions such as branding and advertising, which utilize the media.

Mediatization, in turn, refers to the growing role that the media play in all aspects of contemporary lives – from everyday tasks and social relations to politics, culture and the economy.[236] This is not a new idea, but in the twenty-first century it has become a key concept for media scholars to explore the changing societal role of the media.[237] Media are no longer seen as tools for sharing and obtaining information or entertainment, or a way of keeping in touch with friends, family and lovers. Mediatization is a theory which claims that the media are not just the channel of communication but tools that shape and frame the processes of the society where communication takes place. Furthermore, it also refers to the expansion of media's role in society: the logic of the media permeates other areas, transforming and shaping them. Mediatization also applies to fashion. Photography and especially the proliferation of digital media have fundamentally changed the way in which fashion is understood, expressed, experienced, or designed.

Contemporary fashion shows, for example, are designed on the terms of digital media: they have become spectacles that may not involve a traditional runway but may for instance be a cinematic, multiartistic narrative in which viewers may participate virtually.[238] Shows now consist of creating images for the Internet and social media; examples include the Chanel Spring 2014 show in which garments were presented in a supermarket-like environment wherein all the groceries were equipped with Chanel logos, or the same brand's Fall 2014 show, which brought a "feminist protest" demanding women's rights onto a stage depicting the boulevards of Paris.[239] Physical stores have been joined by online stores, from which garments may be purchased with a few clicks, based on pictures. In other words, fashion consumption has largely become a consumption of images.

The mediatization of fashion does not only refer to the fact that fashion is distributed through diverse media, such as fashion magazines, fashion photography, film or digital channels. Social media platforms and their influencers now also have the power to strongly influence our understanding of what fashion is, how and where it materializes, what it means and how it is understood. "Media" does not only refer to communication technologies but especially to socio-technological systems comprising people in interaction, shaping the very thing under discussion, as well as to technical infrastructures.[240] Mediatization of fashion means that fashion is more than a mediator between the garment and the body: it is an entire branch of the cultural industry that creates narratives and provides meanings for the world (of fashion) and its people.[241]

DIGITALIZED FASHION – POPULARIZED FASHION

Technological developments have always altered fashion. The clothing industry would never have been

234 Mulvey 1975.

235 Rocamora 2017.

236 Nowak-Teter 2019.

237 Ampuja, Koivisto and Väliverronen 2014.

238 E.g. Ferrero-Regis 2021; Halliday 2021.

239 Blanks 2014; Gibson 2014; Ferrero-Regis 2021.

240 Fuchs 2017: 39–40.

241 Colucci and Pedroni 2021.

FIG. 28 · A detail from Autuas Ukkonen's *Posh Lost* collection (2021). The word *poshlost* is Russian, meaning gross, pointless or vulgar, also coming close to the concept of kitsch. Ukkonen interprets the word through the English meanings of "posh" and "lost". The collection draws from the camp culture of sexual minorities and the story of the Russian-German Anna Delvey, a.k.a Anna Sorokina. Photo: Sofia Okkonen.

FIG. 29 · The *Posh Lost* collection (2021) by Autuas Ukkonen is a humorous exploration of the effects of social media on fashion design. The collection returns to the "waist up" style created by the Italian fashion artist Elsa Schiaparelli (1890–1973) in the 1930s, where the most flamboyant part of the outfit is above the waist. Social media has brought back the style. Photo: Sofia Okkonen.

242 Nobile et al. 2021.

243 Särmäkari 2021.

FIG. 30 · Aapo Nikkanen's installation *My Instagram Persona* (2021) in the exhibition *Intimacy*. In his work, Nikkanen considers the impact of social media on people's daily lives and interprets it within the context of fashion. Nikkanen, who resides in Paris, is an artist and one of the founding members of the Parisian art collective The Community. Photo: Paavo Lehtonen.

born without the first industrial revolution, which harnessed hydropower and steam for industrial manufacture; the second industrial revolution, which was accelerated by the invention of electrical power and led to the birth of mass fashion; or the third industrial revolution, which brought the use of information technology into fashion.[242] The ongoing, so-called fourth industrial revolution has boosted the digitalization of fashion and the clothing industry.[243] Digital technologies, such as the Internet since the 1990s, social media since the 2000s–2010s, diverse digital design tools, computerized (calculation) software, and objects connected via information networks have become critical technological tools that affect all aspects of fashion, from design to manufacture, distribution, marketing and consumption.

Today's digitalized fashion system is far removed from the old system in which certain gatekeepers had the power to regulate what was communicated about fashion, when, how and where. Web 2.0 enabled user-generated content via the blogosphere and social media, which have significantly influenced the fashion industry and fashion culture. Media technologies that mostly rely on visuality affect our conceptions of fashion, its creation and its distribution channels. Previously, most fashion-related information was only available to those professionally involved with the sector; now it is assumed that everyone has free access to fashion and that new products and trends are available immediately. The gaps between fashion producers, distributors and consumers have narrowed. Thus, mediatization, as part of the proliferation of

digital media, is also argued to have democratized fashion. The argument is that the development of the so-called new media from the inception of the Internet to the social media platforms and beyond have granted everyone the possibility to take part in the fashion discourse and in creating fashion phenomena as a social media content provider.[244]

Although it is an over-simplification to state that everyone has the possibility to shape what fashion is, a big step in bringing fashion into the mainstream was taken in the mid-1990s, when the designer Jean-Paul Gaultier opened the first-ever online fashion store and invited people to take a tour in it. This was a logical step: Gaultier was already known by the general public from his costume design in Peter Greenaway's movie *The Cook, the Thief, His Wife & Her Lover* (1989), clothing Madonna on her *Blond Ambition* tour (1990), and from hosting the surrealist programme *Eurotrash* (1993–2004) on UK's Channel 4. At this time two websites focusing on fashion news were launched: FashionNet.com, now known as Fashion Net, established in 1995[245] and the community forum TheFashionSpot.com, established in 2001.[246] Both Gaultier and these new sites emphasized communication between companies, designers and consumers.

While internet sites are built on one-sided communication, the social media platforms are characterized by a dialogical approach. They rely on user-made content, interaction, participation and community-building. Digital media and social media platforms have offered fashion houses a new way to interact with potential consumers. Additionally, they have given rise to new kinds of fashion communicators: fashion bloggers and now fashion influencers, who have personalized and intimatized fashion in novel ways. Bloggers and influencers have joined the fashion media as fashion gatekeepers, sitting in the front row of fashion shows and transmitting content directly to their followers.

The first-ever blog was published in January 1994 by a student named Justin Hall, but was not named as such until 1999, when programmer Peter Merholz shortened the term "weblog" (coined by weblogger Jorn Barger in 1997) to "blog".[247] The number of blogs grew to eight million by 2004, more than 181 million by the end of 2011 and an estimated 440+ million globally in 2017.[248] Fashion blogging was "born in a chaotic way and develops in the confrontation with journalism, corporate fashion, and audience."[249] The first fashion blogs – New York Fashion Blog, Gina Snowdoll, Primp! and SheSheMe – were launched in 2001.[250] By 2006 there were two million fashion-related blogs, and by 2010 there were that many just on a single blog platform, Blogger.[251] One of the first well-established bloggers in the world was Susanna Lau in the UK, founder of Style Bubble. She describes having escaped university lectures

to visit The Fashion Spot, where she "succumbed to having a second life on the Internet", chatting to and sharing parts of her life with people she had never met, long before Facebook and Twitter.[252] The trend was also felt in Finland, where fashion and lifestyle bloggers became news topics in 2007, whereas by 2011 fashion blogging had become an interesting part of fashion and its business.[253] Jenni Rotonen started her the fashion blog Pupulandia in 2007 and has since then evolved into one of the best-known Finnish fashion influencers.

Indeed, in the mid-2010s, with social media – especially Instagram – appearing beside the blogosphere, new fashion personalities and mediators emerged in the form of influencers. Influencers are personas with many followers on social media,[254] whose opinions and consumer behaviour they can affect through recommendations. The magnitude of their impact directly follows from who the influencer is, what they are known for and whom they know. Usually their content involves a glimpse into the author's everyday life in addition to the clothes themselves. Because the impression of closeness between the influencer and their followers is an essential aspect of influencer communication, the personal and the intimate have obtained a new importance. Intimacy also characterizes the ways in which influencers are in contact with their followers and which performance styles they utilize in their output. The register of their posts is relaxed, carefree and journal-like, and their pictures follow a visual style reminiscent of family albums and home videos. The genre of influencer communication is characterized by familiarity.[255]

Although fashion influencers operate online, the best-known ones live in the big fashion cities – Paris, London, New York – and have good connections with the fashion industry. In the Finnish context, most well-known influencers live in the Helsinki metropolitan area and often work with communication agencies, which pair up influencers with brands. An influencer's influence is based on personality, which is mediated through photographs, selfies and texts that they use to communicate the styles and brands of clothes that they wear, the events they attend, the other influencers they are involved with, and their take on life. If fashion bloggers challenged fashion journalism, then fashion influencers have challenged also fashion photography.[256] The participatory nature of blogs and social media, especially Instagram, has lowered the threshold for publication and made it possible to reach a potentially global audience. This has revolutionized fashion by decentralizing the publication-related and financial power traditionally held by the (printed) fashion media.[257] However, social media influencing has also become more professional, exclusive, and hierarchical. Some online personalities have grown into celebrities and brands in themselves, followed not only by

244 See e.g. Allan and Thorsen 2009.

245 Fashion Net, About us (link in Bibliography).

246 The FashionSpot, About (link in Bibliography).

247 Thompson 2006; Rettberg 2013: 26.

248 Vänskä 2020.

249 Pedroni 2015: 185.

250 Findlay 2015: 160.

251 Rocamora 2013.

252 Bendoni 2017.

253 Noppari and Hautakangas 2012.

254 Alexander 2017; Harris 2017.

255 Marwick 2015.

256 Harris 2017.

257 Kline and Burstein 2005.

DATAFICATION

Datafication refers to social action being transformed into online quantified data. Datafication is possible due to websites and social media platforms monitoring and storing information on their users' behaviour in real time, for example through cookies. Often users voluntarily provide information on themselves, their preferences and hobbies in order to receive personalized services. The huge masses of user data thus collected are used for predicting user behaviour, but also to influence it. AI-based algorithms coded into the computer programs upon which sites and platforms are built predict which sites are shown to users by search engines or whose posts and what product advertisements users wish to see. Based on this, they suggest specific web pages, topics or products to users.

Datafication springs from a call for the development of "smarter", more user-friendly online environments, but it involves a whole host of problems. Algorithms predict users' wishes based on earlier choices, which results in users never encountering anything new in the online environment and being reinforced in their current "bubbles". Politically this leads to the online environment encouraging extremism. Because algorithms make decisions based on previously collected data masses, they also repeat and reinforce the current society's unjust structures. In recruitment, for example, algorithmic decision-making might place an emphasis on male applicants because that is whom the employers have previously favoured, regardless of their merit. The continuous monitoring and storing of user data and its sale to advertisers, carried out by platforms and websites, is also a risk to user privacy.

Jose van Dijck (2014), as well as David Nieborg and Thomas Poell (2018), among others, have written about datafication. In the context of fashion studies, the topic is examined by researchers including Agnès Rocamora (2021).

PHYGITALITY

Phygitality is a new portmanteau word, indicating the melding together of the digital and the physical, simulation and reality. The term was coined by the Australian company Momentum in 2013. It is mostly used in marketing to describe interactive user experiences, where the digital merges with the physical. In the field of digital fashion, phygitality has also been harnessed to refer to virtual fashion shows and products that utilize elements such as augmented reality or virtual simulations.

ordinary people but also the fashion industry and traditional media. For example, the American reality TV star Kim Kardashian has become a highly authoritative fashion influencer with more than 340 million Instagram followers. She has not only collaborated with diverse top fashion brands but launched various products – clothes, a mobile game and beauty products – under her own brand.[258] In Finland, the fashion influencer Miisa Grekov, alias Mmiisas, has half a million followers (a substantial number in the Finnish context) and became known to broader audiences through her appearances on the Finnish versions of the TV formats *Dancing with the Stars* and *Project Runway*. The shift has been rapid: in a book published in 2012, Pamela Church Gibson could not yet answer the question of whether bloggers supported or challenged fashion journalism.[259] A few years later, Agnès Rocamora confirmed that it was the latter, suggesting that fashion blogs had become a permanent element of fashion media.[260] Not only that, but influencers have become a fashion medium in themselves – the most famous of them becoming brands.

IMPACT OF DIGITAL MEDIA ON FASHION DESIGN

From the point of view of design, the afore-mentioned visualization, mediatization and digitalization are new, global phenomena that are shaking the field of fashion. They also impact on design and have inspired some to toy with the concept of clothes designed purely for screens. The designer Autuas Ukkonen (b. 1994), who graduated with a BA in Fashion from Aalto University in 2021, poses critical questions aroused by social media. Ukkonen's collection was entitled *Posh Lost*. (Fig. 28–29) *Poshlost* is a Russian word meaning "vulgarity", "banality" or "platitude". Ukkonen added a twist by interpreting the word through the two components into which it can be divided in English: "posh" and "lost". The idea of lost poshness sparked a satirical story for the collection, welling from Ukkonen's own frustration at Western idolization of good taste and the symbols of glamour and luxury, and at the creation of fake selves on social media.

Additionally, the design inspirations for the collection included gay camp culture, in which extravagant dress and exaggerated gestures are combined with diverse songs and other performances, and a trend created by the Italian fashion designer Elsa Schiaparelli (1890–1973) in the 1930s, which only emphasized the parts of the body above the waist. Thirdly, Ukkonen was interested in examining the opportunities allowed by social media for creating fake personas. The collection was especially inspired by the story of Anna Delvey, i.e. the Russian Anna Sorokina, who succeeded in reinventing herself as a German millionaire heiress among New York's

jet set in the Internet, until she was caught and imprisoned in 2017. The subject is topical also because in early 2022 the US-based streaming and production company Netflix released the miniseries *Inventing Anna* based on Sorokina's deceptions under the name Anna Delvey. After her release from prison and during her subsequent house arrest, Delvey has utilized her controversial media presence to build a career as an artist and as the host of a dinner party series.

In their collection, Ukkonen turned these various elements, aspects and effects of digitalization into a hilarious yet insightful entity that considered the changing role of the designer in the age of cameras and digital applications. His collection commented on serious questions such as the effects of real-time sharing to fashion design. Firstly, it has speeded up fashion cycles and caused a whole host of worries for designers and the whole fashion industry. Fashion trends are outdated before they even hit the stores, which gives mass fashion the upper hand. Secondly, this kind of trend acceleration is ecologically unsustainable. Thirdly, and perhaps most relevantly for Ukkonen, the structure and fit of garments, as well as the silhouette, become secondary when the primary focus is on how clothes look in pictures, on the screen and from the front – from the waist up. They ask, when clothes and the person are seen through the camera lens as a fragment, what kinds of clothes are even worth designing? To comment humorously this line of thinking, Ukkonen brought Schiaparelli's "waist up" style into the modern day with a nod to the hugely popular video platform YouTube and its millions of content providers: "I remember one content provider sitting there with perfectly done makeup in an embroidered bomber jacket and revealing they weren't wearing any trousers. Thanks to social media we can frame ourselves to appear wealthy and glamorous even if the reality outside of that frame is completely different."[261]

Ukkonen thus proposes that the screen-life impoverishes garment construction and sewing skills and the embodiment of design, which were already being forgotten by the post-industrial fashion industry.[262] The reasons lie in design tools and the outsourcing of manufacturing to the other side of the globe: as the use of Illustrator vector software became more common and patternmaking was increasingly ceded to subcontractors, the construction of garments became more two-dimensional, i.e. it became visual at the expense of materiality.[263] But it also lies in the social media and its logic. Even though social media may provide room for creating personalities such as the fake persona of Anna Delvey, and be liberating in this sense in explorations of identity, the focus shifts from clothes to personalities. Thus, the influence of the influencer on fashion design is not without concerns.

258 @kimkardashian, Instagram.

259 Church Gibson 2012: 125.

260 Rocamora 2016.

261 Autuas Ukkonen, personal communication on 6 April 2021.

262 Atkinson 2017.

263 Ibid.

FIG. 31 · The video *Deep Collection* (2018) by The Fabricant uses artificial intelligence. A computational model based on data processing, i.e. a neural network, was fed imagery from Paris Fashion Week and the outfits were designed from new imagery generated by AI on this basis. The work explores humanity, designership and materiality. Screenshot from the video.

264 My Facebook Chat History, see e.g. Sorbus. fi 2017.

265 Nieborg and Poell 2018.

266 Sibley et al. 2016; Kang et al. 2017; Gong and Khalid 2020.

267 Luce 2019: 126.

268 van Dijck 2014.

269 Meinecke 2021.

270 Hokka 2022.

271 Fuchs and Sevignani 2013.

272 Couldry and Mejias 2019.

273 Choufan 2021.

274 Ibid.

Influencers may have helped the fashion world to open up and become more dialogical, but they have also shifted focus from design, garments and their properties to the influencer's life and personality.

Another example of how social media has inspired designers is Aapo Nikkanen (b. 1982), who has been exploring the connections between social media and fashion for a while. In his installation *My Facebook Chat History* (2017), for example, Nikkanen examined how the social media build new forms of familiarity and how these, in turn, alter the social media themselves. Nikkanen was particularly interested in the dynamics between the public and the private. For the work, he trawled through all the Facebook Messenger conversations he had had and designed a pattern which he printed onto clothes and a shower curtain, making a tongue-in-cheek claim about social media, or Facebook, as the modern-day bathroom wall.[264]

Nikkanen's work invites us to consider the platformization and datafication of fashion. While platformization refers to "the penetration of economic and infrastructural extensions of online platforms into the web, affecting the production, distribution, and circulation of cultural content"[265], datafication refers o the ways in which owners of platforms quantify, use and monetize data they extract from users using the website or the platform. The data collected on platform users and shared between social media platforms is utilized in designing commercial clothes as well as in personalizing them to specific consumer groups.[266] Amazon, for example, makes extensive use of user data to better understand what kinds of clothes its customer groups want and to recommend suitable products for them.[267] The platforms' data gathering is based on an exchange by which companies offer their services to users for free in return for permission to collect the users' data; at the same time, the platforms measure and manipulate users' online behaviour and make money from using and selling the data.[268]

In his work *My Instagram Persona* (2021), Nikkanen makes use of data from another popular social media platform, Instagram (Fig. 30). The artist started the process by downloading all the data collected on himself by Instagram that he could access. Within it, Nikkanen found an interesting section that he had not encountered before, which was the user's areas of interest for advertising purposes. In Nikkanen's case, this meant 380 topics. He found they were apt in many cases, although there were also some duds, such as "Christina rap", which he did not even understand, and four golf-related topics. The list also included more abstract subjects such as love, children, industry and fashion. This is how Instagram categorizes its users' interests under certain topics in order to monetize the data by selling it to advertisers.

Nikkanen considered his own Instagram persona, based on the keywords found in the data and the artwork he created out of them, somewhat intrusive and scary.[269] On one hand, it was highly personal but on the other it flattened the issues that mattered to him callously into words, commercial potential and money, viewing a complex identity through a distorting and dehumanizing lens.

Users of Instagram (and other social media applications) may remove topics that are not of interest to themselves if they wish. Research has shown[270] that many users are keen to do so, because they want the lists of their interests formulated by the platforms to correspond to their actual identities. In this way, the users are doing the platforms' work for them for free by improving the data that the platform can then sell to others.[271] Nikkanen considers the addition of this removal feature to have been a stroke of genius by Instagram: on the one hand, it is responding to the criticisms directed at the company for concealing the data it gathers on users, and on the other, it increases the value of the data by letting users improve their own advertising profiles.

Nikkanen's interest was particularly drawn to the ways in which AI interprets his objects of interest at times when he uses the service by himself, presumably fulfilling his most intimate self. For the work, Nikkanen went through his ads Interests profile and classified the various topics into subcategories, which were then proportionately represented on the garments he produced. In this way, his production concretizes the ways in which social media platforms transform personal interests and social relations into quantifiable data.[272] Whereas for the users, social media is a vehicle for self-expression, sharing of intimate information and contacts with others, for the platforms, the users are consumer profiles who, according to algorithms, have a certain likelihood of being interested in products related to specific interests. Continuous sharing, in turn, brings the public sphere into the scope of the private and makes getting dressed more social than before, because it is directed towards increasingly large audiences.[273] The shareability of fashion and the immediacy of sharing have formed a basis for fashion that requires no ownership, no concrete product and no physical body.[274]

DIGITAL FASHION AND DESIGN

Some designers and companies operate entirely in the virtual sphere. The term *digital fashion* can refer to many things, but in recent years it has become established as the practice by which three-dimensional virtual garments are produced as prototypes and simulations of potential physical garments, or by which purely digital garments are created for use in virtual situations. In other words,

FIG. 32 · Costume designer Heli Salomaa, who specializes in digital costumes for games, focuses on the bodily aspects of the costumes and on telling a story through the characters' clothes. This is why Salomaa works simultaneously with physical and digital prototypes. While working at Remedy Entertainment (est. 1995), Salomaa designed the costumes for the characters in the game *Control* (2019). The figure shows the character Jesse Faden wearing a pantsuit. Photo: Remedy Entertainment.

275 Särmäkari 2021.

276 Volino, Cordier and Magnenat-Thalmann 2005; Särmäkari 2021.

277 Mattila 2016.

278 Santos, Montagna and Neto 2020; Makryniotis 2018.

279 Särmäkari 2021.

280 McQuillan 2020; Black 2019.

281 Särmäkari 2021.

282 Ibid; Santos et al. 2020.

283 Roberts-Islam 2019.

284 Hernandez, Vogelsteller and Sieler 2021.

285 Ibid.

286 Bollier and Racine 2005; Särmäkari and Vänskä 2020.

287 McDowell 2020.

288 The Fabricant: Sustainability report (link in Bibliography).

289 Särmäkari and Vänskä 2020.

digital fashion has a dual meaning: 1) a tool used as an aid for design and sales; 2) an end product used only in virtual spaces. Digital fashion is another new form and culture of fashion.[275]

Digital garments and virtual fashion experiences are typically designed using 3D software. Digital 3D garments are not just pictures of clothes but three-dimensional models and interactive simulations that contain data on the construction, pattern, material and behaviour in motion of the garment.[276] Digital garments are designed and made using computer software developed for designers based on patternmaking and game design programs, such as Browzwear, Optitex, CLO3D and Marvelous Designer.[277] An essential leap forward for these programs is the ability to simulate fabric that is separate from the virtual wearer's body and that drapes like genuine fabric does.[278] The use of these programs requires physical patternmaking skills and an understanding of garment construction, although the software also teaches its user things about garment-making.[279] 3D software may be used for coming up with novel patterning solutions and for effective communication between the designer and the manufacturer to reduce the environmental burden of the design process and the garment.[280]

The Swedish company Atacac (est. 2016) is a pioneer of digital 3D design. Its production has a focus on the human body and a physical end product. The structure of the garment arises from a novel patternmaking theory based on the movement of the body formulated by the company's founder, Rickard Lindqvist. He became interested in 3D design because it made experimenting easier. In this company's operating model, the 3D model must correspond entirely to reality in construction, because if customers are interested in a garment, they may try it on virtually and have it manufactured. It is also important for pictures to be realistic in online stores that use 3D models as promotional pictures. The same 3D models may be sold in virtual worlds and games for added income. Atacac predicts that its operating model reflects the future of the fashion industry, where companies will make money from imaginative virtual creations and only manufacture garments on demand.[281] Virtual garments allow for daring experimentation from designers who are used to abiding by bodily, functional, social, material and commercial limitations.[282]

"Digital-only" clothes often play with surrealistic materials and shapes, being made of fanciful materials such as water. A great example of digital-only fashion is The Fabricant (est. 2018). The Dutch-Finnish brand is a pioneer of digital fashion, calling itself the world's first digital fashion house. It was founded by Finnish-born special-effects designer Kerry Murphy with the Dutch fashion designer Amber Jae Slooten. Instead of physical garments, The Fabricant creates experiences: animations as well as surrealist and hyperrealist digital 3D garment simulations.

The Fabricant produces no physical clothes, but items that can be worn by virtual characters (avatars) or tailored onto a photographed body. (Fig. 31) Digital garments do not even have to be worn but may be purchased as rare collectibles. The company received international notoriety in 2019 for selling a digital-only, unique dress using blockchain technology for USD 9,500.[283] Blockchain is a list of records, in which diverse transactions are stored in a chain of consecutive blocks. It is used to ensure a product is genuine and unique, meaning that once authenticated, the original product cannot be duplicated or copied.[284] In other words, a single item of the dress by The Fabricant was made and registered to its owner. Should that owner decide to resell the dress, the new owner will be recorded in the item's history. Furthermore, all the makers of and contributors to the garment can be recorded. In this way, the garment's design process is entirely traceable.[285]

By creating digital-only fashion, the company wants to challenge the established design practices and structures of the fashion industry. In the era of collaborative and dynamic digital culture[286] and with the restrictions placed by a global pandemic, there has been much speculation and media attention on the opportunities afforded by digital fashion.[287] Non-physicality can resolve certain ethical issues and relieve the designer from limitations on creativity. One of The Fabricant's mottoes is "We waste nothing but data and exploit nothing but our imagination."[288] The company does specify, however, that "wastage" depends entirely on the energy source that is used to generate the electricity needed for digital design. In any case, The Fabricant's operations are a glimpse into the future of fashion: how the cross between fashion and technology will generate new ways of understanding embodiment, individuality and intimacy when fashion is located entirely in the virtual realm and only worn by digital avatars or photographs on screens.

The Fabricant maintains an extensive online community, initially on Facebook and now on Discord, where it activates conversation and shares information on digital 3D garment design, current events and other issues. The Fabricant regularly discloses its design processes and discusses digital fashion on the popular livestreaming service Twitch. The company's actions and attitudes are strongly characterized by the open-source philosophy, which emphasizes transparency, open sharing, building upon others' work and collaborating with amateurs.[289] Recently, the company launched The Fabricant Studio, where users may create, use and sell outfits based on The Fabricant's garment models. In this way, clothes become open, moving objects

that live and transform in their users' hands, unlike physical clothes which are made to be permanent (although short-lived). Such emphasis on community builds a new fashion culture that contrasts with the exclusivity and secrecy of the traditional fashion world.

Another The Fabricant slogan is "haute couture to thought couture",[290] referring to further dematerialization of fashion such that garments would entirely lose their functional dimension and be left only with their expressive layer. At the same time, the slogan refers to a work model that does not involve physical patternmaking, fittings or sewing. In this sense, The Fabricant's efforts expand the field of fashion and our conceptions of the competences of designers. Their work emphasizes collaboration with diverse amateurs and professionals, and the impermanence of professional boundaries. A digital fashion company blends fashion with cinema, animation, storytelling and even computer science.

The virtual layering of fashion has already lived long in images,[291] films and games.[292] In 2018, *New York Magazine* stated that the hugely popular free-to-play social online game Fortnite was making more money out of its virtual "fashion industry" than Amazon was from fashion sales.[293] The news posed the question whether the gaming world is a new arena for fashion designers to work in alongside costume and avatar designers. Even far from realistic digital products have been said to be closer to commodities than media imagery, especially if they are bestowed with an artificial scarcity.[294] Game costume designers have utilized 3D software longer than the fashion industry, where – with the exception of patternmaking – it is a very recent phenomenon.

Game costumes have their own designers, one of whom is the Finnish costume and game clothing designer Heli Salomaa (b. 1987), fascinated by telling stories via game characters. Specializing in digital costumes, Salomaa realized early on that character designers lacked sufficient understanding of clothing. When the designer understands garment construction and develops digital garments in interaction with a physical prototype, the game clothing will be more realistic. Salomaa designed the outfits for the characters in the game Control while working for Remedy Entertainment. (Fig. 32)

It is typical for Salomaa's work method to replicate a physical garment as realistically as possible in virtual form, using 3D scanning and photography. For example, light coming from different directions and the movement, i.e. animation, of the garment play a significant role in how realistic a gaming experience is. Salomaa, who teaches digital costume and fashion design in New Zealand, did not realize until transferring into a virtual operating environment how closely her work is tied to the body and to interaction with human actors. She wants to teach the significance of embodiment to digital costume designers and the gaming world. As she said in her research interview: "The game industry tends to emphasize the aesthetics of outfits over their narratives. I am trying to change that. While working in that sector, I underwent a professional identity crisis. Lacking the physical body of an actor, I realized how great the impact of physicality, an actor's interaction and collaboration was on the design process. When designing for games, it is difficult to work on the basis of limited character information and without a specific body for which to design."

Therefore, the gamification of fashion and the popularization of digital fashion in no way mean the disappearance of embodiment and physicality. Designers are able to conceptualize the parallel existence of two worlds: the analogue and the digital. A fine example is Finland's most historical fashion house, Marimekko, which started experimenting with virtual opportunities. The company is known for its colourful and bold patterns and prints. They are seen both in Marimekko's own, streamlined clothes and in home textiles.

Marimekko has also made its mark internationally thanks to its unique style, timeless approach and focus on equality. Marimekko's patterns are printed onto fabrics in traditional fashion, using pigments. For Copenhagen Fashion Week (2021) and Design Museum Helsinki's *Intimacy* exhibition, Marimekko created *The Art of Print and Shape*, a piece in which light-grey, monochrome, simple cotton-linen outfits acted as screens for digital pattern projections. (Fig. 33) This was turned into a video, in which the outfits are worn by human models, and an installation, where the outfits are worn by mannequins. The projections included classic prints by Maija Isola: "Isot Kivet" (1959), "Lokki" (1961), "Kaivo" (1964), "Seireeni" (1964) and "Unikko" (1964). Additionally, the projections included Kristiina Isola's 50th-anniversary update of "Unikko" (2013), Armi Ratia's "Tiiliskivi" (1952), Fujiwo Ishimoto's "Kuiskaus" (1981), Aino-Maija Metsola's "Valkea Kuulas" (2008) and Antti Kekki's "Laakeri" (2020).

With *The Art of Print and Shape,* Marimekko took a step into fashion's new "phygital"[295] state, the era of mixing the physical and the digital. The work predicts further moves by the company into the digital realm and the use of augmented reality (AR) experiences. In AR, physical bodies or objects merge with the virtual world either on screens or using smart glasses, for example.[296] Social media filters are a good example of AR, where a user's face can be altered or accessorized. Another example are virtual fitting rooms, in which customers may try on clothes on a screen or using

290 Larosse 2019.

291 Vänskä 2017a.

292 Makryniotis 2018.

293 Swearingen 2018.

294 Lehdonvirta, Wilska and Johnson 2009.

295 Gaggioli 2017.

296 Since Google Glasses (2012), several smart glasses have been launched: e.g. Ray-Ban and Snapchat presented their own versions in 2021, Wareable 10/9/2021.
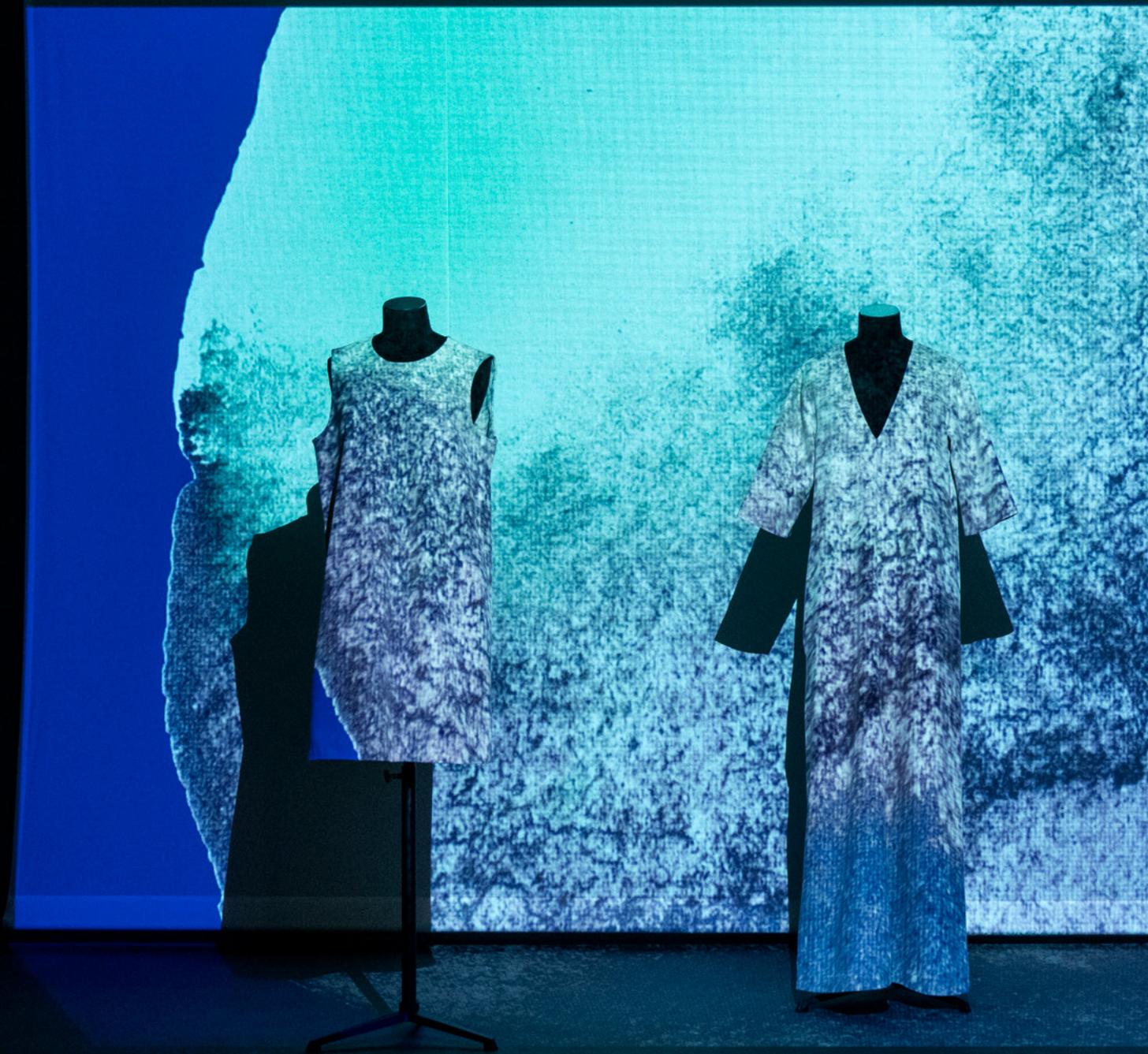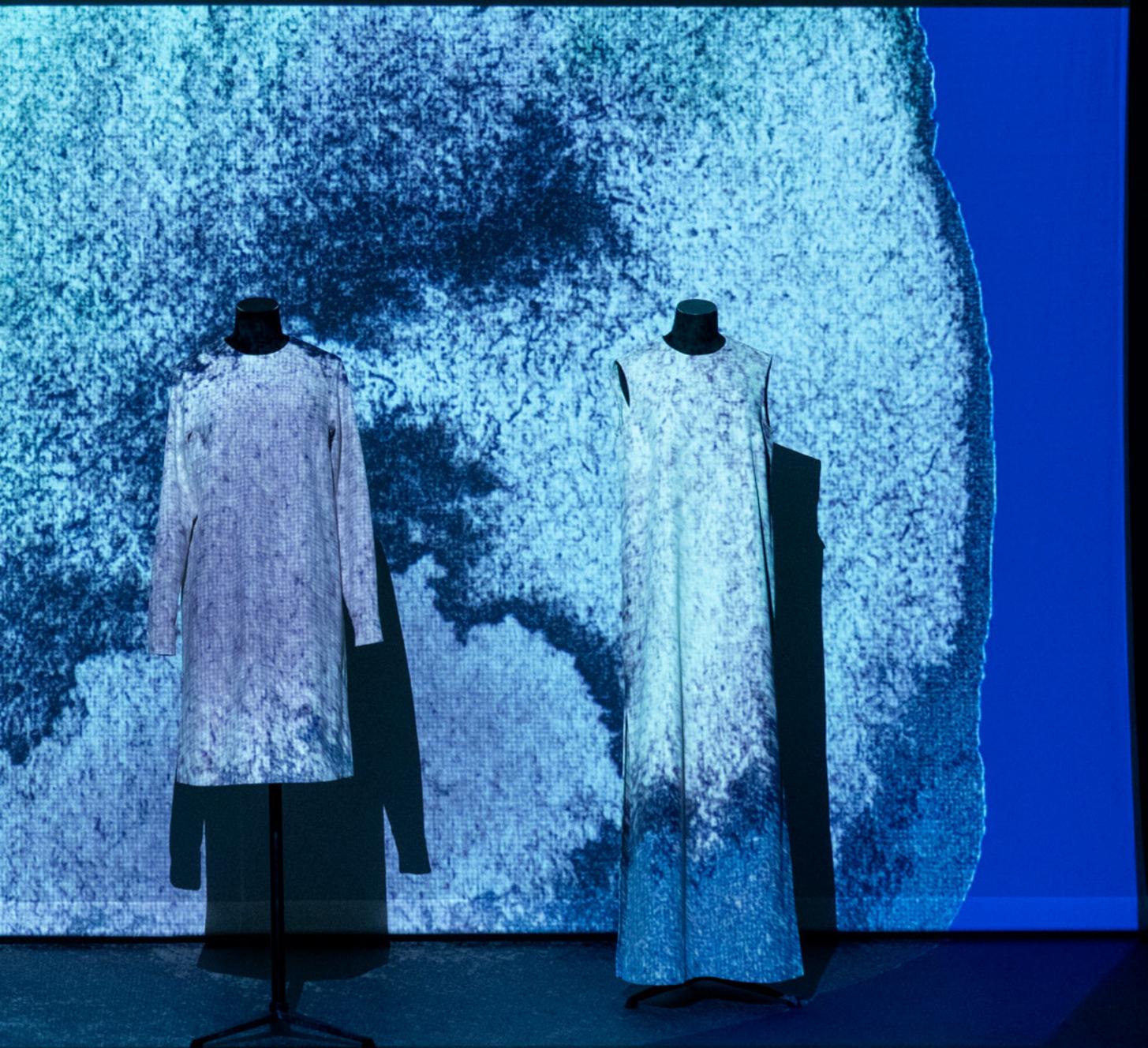
FIG. 33 · Marimekko's video projection *The Art of Print and Shape* (2021) shows how contemporary fashion is simultaneously virtual and physical. In the Design Museum's exhibition Intimacy, the company's dresses were used as surfaces onto which the company's core image – bold prints – were projected. Photo: Paavo Lehtonen.

297 McDowell 2021.

298 Särmäkari 2021b; Singh 2020.

299 E.g. McDowell 2020.

300 McDowell 2019.

301 Särmäkari and Vänskä 2020.

302 Särmäkari 2021.

303 Gorman 2021.

304 Thomas 2021.

305 The coining of the term is attributed to science fiction author Neal Stephenson and his novel Snow Crash (1992). The novel's metaverse is a three-dimensional virtual reality to which characters may escape the dystopian world.

306 E.g. Reese 2021.

307 E.g. Rosenberg 2021.

a smart mirror.[297] In AR, the human body and an image merge together, forming an intimate interaction between the material and bodily imagination, which is based on empirical experience.

MEDIATIZED FASHION AND THE FUTURE

The global Covid pandemic has accelerated the shift of digital fashion from being a marginal phenomenon and a curiosity that elicited mirth, wonder and even anger into a noteworthy challenger for the fashion industry[298] – not least due to the enormous pressure faced by the industry to improve its ecological footprint. If digitality was once seen as a destroyer of the materiality, embodiment and culture of fashion, now the focus is more on the solutions that digital clothing could provide for instance for office workers, whose work has shifted to diverse virtual meeting platforms. Similarly to how blogs and social media influencers defied fashion's distribution channels, digital fashion is posing a challenge for manufacturing.

Traditional fashion industry operators have started virtualizing their design processes and ways to present collections, therefore increasing demand for digital fashion designers. Fashion media, such as *Vogue Business,* have started writing about digital fashion in more serious tones.[299] The American fashion house Tommy Hilfiger stated its intention to digitize its design process and showrooms by 2022.[300] Online fashion stores are developing the ways in which they present their garments for sale, to help minimize purchase returns. Some companies, like Sweden's Atacac, have built their online stores upon digital 3D models to delay the production of sample garments until consumers actually show an interest in them.[301] Atacac, like some other companies, has also been working on a business model where garments are produced flexibly on demand. The establishment of new approaches in the fashion industry also requires changes in designers' training. Pioneers like Atacac and The Fabricant have started gaining a foothold as consultants for businesses and educational institutions.[302] Digital fashion design is not only integrated into degrees but can can haveentirely new degree programmes built around it. It is sensible to account for digital 3D design in designer education, because it can be expected swiftly to become an everyday element of the fashion industry – not least because of the aforementioned environmental concerns.

Digital fashion in general has become a more visible part of fashion practices, and even well-established designers and companies that work with physical fashion, such as Balenciaga, Gucci and Dolce & Gabbana, have increasingly been experimenting with it. Gucci, for example, launched virtual trainers in 2021[303], while D & G brought the entirely virtual collection Collezione Genesi onto catwalks beside a physical collection, emphasizing the handcrafted nature of the company's creations, as every virtual outfit was made to be unique using NFT technology.[304] An NFT (non-fungible token) is a smart contract "minted" onto a blockchain, which identifies the ownership and authenticity of virtual objects. As a decentralized and distributed ledger, the blockchain records transactions in interconnected blocks and allows for items such as digital or physical garments to be unique and traced through the fashion production and distribution chain. The increased use of blockchain technology also marks the beginnings of Web 3.0 (now typically referred to as Web3). As the third iteration of the World Wide Web, Web3 promises to end the monopolized data power of the technology giants and – through the decentralized infrastructure provided by the blockchain technologies – to bring the ownership of data back to the people.

Web3 is also associated with the metaverse[305], i.e. a networked virtual space consisting of various platforms. Preferably, the platforms, activities and assets of the metaverse should be interoperable, i.e. operating across different platforms and transcending platform boundaries. The metaverse is forecast to become a parallel, virtual, three-dimensional universe utilized by everyone, in which users may for instance own (numerous) bodies, wardrobes and real estate. The Finnish company Marimekko has recently jumped into the metaverse by creating their flower field and digital garments in the Decentraland. This platform arranged its first Metaverse Fashion Week in 2022. The technology is not yet advanced enough for the platform to work smoothly on personal computers, which meant that the Metaverse Fashion Week and Decentraland provoked critical debates about the promises of the metaverse. The hype around the metaverse has attracted plenty of debate for and against: some see it as a haven of opportunity for creative makers, for example[306]; others warn against the negative, even dystopian effects it may have on people's lives and privacy.[307] The consequences may be multifaceted and will require extensive and deep ethical analysis, because – as Facebook's Meta launch indicates – metaverses are becoming more common. However, Meta should not be confused with the ethos of other metaverse proponents, such as The Fabricant. They emphasize decentralization and deplatformization of the web – becoming Web3 – ideally leading to users' personal ownership of their data, encrypted on and protected by the blockchain. If this happens, the whole structure of the fashion system would need to be rethought. The magnitude of the change could be compared to the earlier shake ups triggered by the Internet, e-commerce and social media.

The mediatization and digitalization of fashion has fundamentally revolutionized the fashion system in

a relatively short time. While fashion distribution has transferred to the Internet and social media platforms, clothing design has become virtual thanks to digital tools. Virtualization demands an elemental change of mindset as to the essence and significance of fashion. One could also ask whether it signifies the disappearance of the embodiment and bodily experience of fashion. We believe it will not: on the one hand, digitalization will make the experience of fashion more multisensory. On the other hand, the designer's embodied knowledge and understanding of the spatial nature of a garment will be emphasized. Digital clothing design is not just the creation of two-dimensional images, but a craft that brings together bodily and spatial understanding, artistic expression, patternmaking competence and realistic details. In practice, digital garments are "stitched together" using 3D software. They will not stay on an avatar if sewn in the wrong order, for example. The best digital fashion designers are highly skilled at constructing garments and transferring these skills to the virtual sphere. Finally, any advancing phenomenon tends to elicit a counterreaction: as fashion becomes virtualized, designers recall the importance of feeling fabric in their fingers, working with real bodies, experiencing clothes on their own bodies and cherishing both the crafting and quality physical clothes. In this way, digitality and handcrafting are not mutually exclusive; they nurture each other.[308]

5

Wearable Technology as a Part of Fashion

Wearable technology refers to interactive clothes and accessories combining electronics or digital materials with textiles or other wearable materials.[309] In their capacity as garments or accessories, they represent specific aesthetic styles and are carefully designed items that communicate a message on the wearer's lifestyle and values. In this sense wearable technology, sometimes called fashionable technology[310], forms a part of the fashion field and the evolving processes of fashion. More specifically, wearable technology is found at a juncture between fashion, design and technology: they are designed objects containing electronics that, when worn, become a part of an outfit.

Just like clothes reflect a person's social and cultural status,[311] wearable health and wellness technology indicates belonging to a certain social group: those who are interested in and have the ability to look after their well-being by exercising enough and sleeping well – and of course can afford to purchase such a device. In other words, wearable technology intended for monitoring one's health and maintaining physical fitness probably demands at least middle-class status, because the user must be able to afford a relatively expensive device and have enough leisure time to spend on fitness, as well as having the ability to influence their lifestyle by sleeping regularly. Otherwise there is no point to using the technology.[312] Studies have shown that health and wellness technology can offer users the ability to recognize the capabilities of their body, but in some cases it can mentally exhaust their users if they feel that they fall short of the performance demanded by the device due to lack of time or energy.[313]

Wearable technology forms a part of the broader datafication trend – the trend by which every aspect of life, from friendships to hobbies, can be turned into quantified data.[314] Smart watches and rings that measure the body's activity level, sleep quality and stress levels can provide users with exact data on their bodily functions. The digital devices are in skin contact and use sensors to measure data such as the heart rate, blood pressure, changes in the skin's electrical conductivity, breathing rate, stages and duration of sleep, body temperature and the movement and activeness of the body, for example in relation to number of steps. The manufacturers' promise is that this numerical data provides a picture of the wearer's physical activity and fitness.[315]

Social scientific research, particularly from the Anglo-American world, has criticized wearable technology for encouraging self-datafication and self-management and thus representing the neoliberalist ideology that strives to shift responsibility for healthcare from the welfare state to individuals and commercial products. From this perspective, the users of wearable technology represent the neoliberalist ideal of the citizen who uses data and self-analysis to further their health and well-being in order to be as efficient and effective in all aspects of life as possible.[316] Many have applied Michel Foucault's theory to compare wearable technology to the Panopticon – the omnipresent surveillance system that makes individuals fulfil the will of political and economic leadership, not through fear of physical punishment but by ensuring that they know they are under surveillance and thereby want to meet the system's expectations. Through continuous surveillance, the prevailing power structure regulates human bodies to be disciplined and adaptable and thereby as useful as possible for the economic and political system.[317] User research has critiqued this Foucaultian view, however, because for a large proportion for those users for whom the use of wearable technology is voluntary (and not required by an employer or a sports coach, for example), it is a positive, even empowering aspect of daily life that often increases their feeling of control over their lives.[318] At the very least, though, wearable technology that measures bodily functions forms a part of the prevailing worldview that emphasizes the importance of the consumer's personal choices and ability to self-regulate as means of maintaining health and physical fitness.

DEVELOPMENT OF WEARABLE TECHNOLOGY AS CROSSOVERS BETWEEN EXPERIMENTAL AND PRACTICAL

The history of wearable technology is long. Seen in some lights, even eyeglasses, developed since the fourteenth century, and pocket and wrist watches, popularized in the nineteenth century, can be considered examples of wearable technology. In Ancient Greece and Rome, rings were equipped with a seal needed for authenticating documents, and in the seventeenth century, Chinese traders seem to have used a kind of ring-mounted calculator. The first hearing aids were taken into use in Europe in the 1600s.[319] Besides enhancing the senses and measuring bodily functions, wearable technology has been used for providing artistic experiences: in 1883, a ballet entitled *La Farandole* was put on in Paris, in which the dancers wore headlamps that could be switched on from a belt. Their batteries were hidden among the pleating of the dancers' clothes.[320] Needs for protective clothing for soldiers and astronauts have accelerated the development of electronic textiles, as well as portable devices suitable for field use since the early 1900s[321]. Fashion designers began combining clothing and technology in the late 1900s.

These examples show how wearable technology has developed along two distinct routes that have remained fairly separate until recently: the wearable technology used in the fields of art and couture has sprung from the experimental and utopian, from producing experiences, playfulness and aesthetics,

309 van Dongen 2019: 44–45.

310 Seymour 2008.

311 Simmel 2009 [1904].

312 Smart textiles are still so expensive to produce that hardly any are available for consumer use; instead they are mostly used in medical research and elite sports coaching.

313 Lupton 2019.

314 van Dijck 2014; Couldry and Mejias 2018; Breiter and Hepp 2018.

315 Schüll 2016; Berg 2017; Salmela et al. 2018.

316 Fotoupoulou and O'Riordan 2017; Schüll 2016.

317 Foucault 1995; Hepworth 2019; Ruckenstein and Schüll 2017; Jones et al. 2016; Goodyear et al. 2019.

318 Ruckenstein and Schüll 2017; Lupton 2019; Lomborg and Frandsen 2016; Ruckenstein and Pantzar 2015; Pink et al. 2017.

319 Guler et al. 2016.

320 Guler et al. 2016.

321 Quinn 2002: 1–10; Berzowska 2005; Ometov et al. 2021.

322 Van Dongen 2019: 45–50; Ometov et al. 2021; Barile and Sugiyama 2020.

323 See e.g. Yavuz et al. 2018. The technology has also been tested by clothing designers, e.g. Hussein Chalayan in 2007. (See Barile and Sugiyama 2020).

324 Quinn 2002: 56–76.

325 Zierrot 2021. See also Scheller (link in Bibliography).

326 Fisher 2017.

327 Quinn 2002: 33–56.

328 Quinn 2002: 446.

329 Ross 2006; Chalayan (2011), see the "Transformer Dress" YouTube video (link in Bibliography).

330 Quinn 2002: 22; The Guardian 19/3/2009: "Best in Show: Solar Clothing".

331 Borrelli-Person 2016.

332 Malkavaara 2009; Guler et al. 2016; Ometov et al. 2021.

333 Quinn 2002: 33–56; Patents Assigned to Charmed Technology, Inc.

334 Uusi Teknologia.fi, 9/2/2016.

having been seen in individual collections and fashion shows; while designs arising from the field of computer science and electronics have been aimed at solving practical issues in everyday life. Rather than creating experiences, technological designs have been focused on the scientific and practical needs of sports, the military, healthcare and medicine.[322]

The division between practical engineer-led wearable technology and the playful and utopian wearable technology created by fashion designers need not be absolute, however. Many experiments in the fields of fashion and art have partnered with experts from the field of technology, and vice versa. Importantly, even wearable technology products designed by engineers sometimes spring from experimentation with the possibilities of technology rather than from solving users' problems. For example, technology designed to recognize and transmit emotions[323] raises questions not only of how necessary it is but also related to ethics, as in the wrong hands it could enable significant privacy intrusions and emotional manipulation. Some fashion designers have created work criticizing surveillance that intrudes on individuals' rights in today's technologized society: already in the 1990s, Vexed Generation was designing concealing clothing that protected wearers against urban video surveillance,[324] and more recently the German designer Nicole Scheller designed garments equipped with LED lights that prevent facial identification by surveillance cameras and bags that prevent tracking of mobile phone data.[325] The boundaries between fashion and technology has also become blurred in consumer products; with fitness becoming a mainstream lifestyle, sportswear and accessories designed for practical use have been incorporated into couture, with Hermès and Apple, Louis Vuitton and Google and Michael Kors and Tag Heuer in collaboration launching luxury versions of sports watches in the 2010s.[326]

One of the first well-known examples of technology being coupled with couture was Hussein Chalayan's *Remote Control Dress from* 2000. The dress consisted of sheets of a composite material designed for aeroplanes, which could be controlled wirelessly. As they moved, the sheets revealed or concealed some of the body's erogenous zones.[327] Chalayan has continued to combine technology with fashion: for example the Spring/Summer collection *One Hundred and Eleven* from 2007's Paris Fashion Week included mechanical "transformer dresses", which opened, closed and adjusted using electronics.[328] The transformations – rising skirt hems, opening tops, changing silhouettes, withdrawing jackets – were facilitated by technology (batteries, control chips, microcontrollers, wires and switches) hidden in the clothes. As with wearable technology in general, the robotics-based technical implementation of these transformer dresses required a dedicated technical design team.[329] However, unlike in the case

of contemporary wearable technology-which tends ideologically to emphasize the wearer's own control and awareness over their body, in Chalayan's work the operator of the technology was someone other than the wearer: in these technical experiments, the fashion model's body was nothing but a platform for presenting the garments and their designer's ideas. Be that as it may, on a conceptual level Chalayan's collection demonstrated new ways to merge together the body, a garment and technology.

Other early adopters of wearable technology include Alexander McQueen and Oliver Lapidus, whose Winter 1996–1997 collection included a solar-powered parka.[330] Mentioned even more in the context of wearable technology is Alexander McQueen's Dress no. 13 from his Spring/Summer 1999 collection, where robots sprayed black and yellow dye onto a white dress worn by a model, in this way "designing" the surface of the dress in a similar technique to that pioneered by painter Jackson Pollock some 50 years previously. From the perspective of this chapter, however, the Autumn 1999 ready-to-wear collection designed by McQueen for Givenchy is more interesting. In what fashion journalists called his "android collection", McQueen adorned garments with glow-in-the-dark circuit board prints and flashing LEDs, the latter of which have since then become widely used in wearable technology.[331]

At the same time, wearable technology was being developed as part of scientific research. The first scientific experiments were made in the 1960s, but wearable technology was more widely developed from the 1990s onwards in several American universities, including Georgia Tech, Pittsburgh's Carnegie Mellon University and Central Michigan University. The most renowned university investigating wearable technology, however, has been MIT (Massachusetts Institute of Technology) and its Media Lab, where researcher Steve Mann designed the first backpack-mounted computer as early as the 1980s. In the following decade, Mann and MIT colleagues including Maggie Orth, Thad Starner and Bradley J. Rhodes developed augmented reality (AR) devices, wearable computers and electronic textiles, among others.[332] The scientific and fashion/artistic paths concretely intersected when Thad Starner established Charmed Technology with a number of business partners. In 2001, the company showed on a catwalk a portable computer designed in the form of jewellery, in which the CPU was attached to the user by a belt on the hip and the screen was positioned over one eye, like glasses.[333]

The United States is by no means the only country to have pioneered research and product development related to wearable technology. The Finnish company Polar was the first in the to launch a wireless smart watch that monitored the heart rate in 1982.[334]

Five years later, another Finnish company, Suunto, released the world's first diving computer, which told a diver the time that remained to them underwater according to a decompression table.[335] In the following decade, Tampere University of Technology (TUT), the Kankaanpää-based clothing manufacturer Reima and Clothing+, a separate company that demerged from Reima's wearable technology department, initiated a research partnership, resulting in Clothing+ launching the

first-ever textile heart rate monitor belt in 1998 and starting mass-production of the first washable textile heart rate sensors in 2002.[336]

The development of wearable technology in Finland has centred around functional garments and work clothes rather than products created from a fashion perspective. This has meant that it has been carried out in a multidisciplinary context, outside of or on the edge of actual fashion design. In 1998, a research

335 Suunnon perinne, Suunto 2021.

336 Guler et al. 2016; Suomen Tekstiili ja Muoti 2/6/2015. Reima has also developed smart textiles for children's wear.

FIG. 34 · Myontec's smart sportswear measures muscle activity by using silver-coated fabric and sewn-in sensors. The garments are used in elite sports coaching to analyse performance and muscle recovery during sports or, for instance, after injury. Photo: The Czech Ergonomics Association.

WEARABLE TECHNOLOGY

The term wearable technology covers highly diverse technologies and purposes of use. Firstly, it includes clothes that are equipped with technological devices such as LEDs, emergency alarms or diverse sensors that collect information on the wearer's body or the garment's location. A second major segment in wearable technology consists of garments made from electronic textiles, in which the fabric conducts electricity thanks to either a surface coating or threads woven into the fabric. Thirdly, wearable technology can comprise wearable devices that in the early days used to be portable computers of various kinds but now days tend to be smart wristbands or rings that are in skin contact and use various technologies to measure the body's vital functions and activity. Especially the wearable technology that gathers data usually contains specific software to analyse the data, and involves a mobile or online application, through which the wearer may access these analyses.

Wearable technology may be used, among other purposes, for following the wearer's well-being or sporting performances; monitoring employees or an employer's property in the workplace; improving employees' working conditions through the inclusion of warning lights or electronic heat panels, for example; medical or physiological research; or as an artistic element in costumes or experimental fashion.

IMPACT OF FINNISH UNIVERSITIES ON DEVELOPMENT OF WEARABLE TECHNOLOGY

Expertise in wearable technology developed through diverse research projects, and higher education provided by Finnish universities have formed the foundation for the Finnish wearable technology companies and products discussed in this chapter. Since the Cyberia suit, Reima has been focused on children's clothes, but it has continued to develop wearable technology; in 2016, for example, it launched the Reima Go fitness band that measured children's activity levels using MoveSense sensors from Suunto. The Reima spin-off Clothing+ was sold to the American company Jabil Circuit in 2015, which closed down the Finnish branch in 2018. Some of the expertise from Clothing+ transferred to Myontec in Kuopio, which in collaboration with Suunto and the Universities of Jyväskylä and Eastern Finland has continued to work on measuring muscle activation and integrating this into textiles. Suunto is also known for carrying out product development in collaboration with universities, as is Polar. Tampere University is currently conducting research on wearable technology, and the expertise garnered at TUT through its former collaborations with Reima is visible for instance in the product development carried out at Image Wear. The innovations launched by smart ring Moodmetric were based on research conducted for Aalto University. Aalto is also continuing its research on wearable technology. The know-how of the founders and designers behind Oura, from Oulu, springs from previous experience in product development for Nokia and from studies in technology, computer science, HCI and design at the Universities of Oulu and Lapland, as well as Aalto University.

project was initiated combining the expertise in electronics and body measurement technology of TUT, the competence in industrial design and fashion design of the University of Lapland, and the long experience in the user needs and design of outdoor winter wear of the children's clothing manufacturer Reima. Over the course of the project, Suunto, Polar, DuPont and Nokia lent their expertise to product development. The partnership resulted in the Cyberia Survival Suit, which can be seen as the first item of smart clothing produced in Finland.

The Cyberia suit, intended for working in northern winter conditions, contained diverse elements that are still used in wearable technology. Sensors in the suit measured the heart rate and body temperature, as well as the body's movements and positions. They also indicated the outdoor temperature and the amount of moisture passing through the suit during use – a factor that significantly affects the warmth of the suit. Because the suit was intended for difficult working conditions, it included a GPS module so that the worker could be located using GPS satellites when necessary. Another innovative solution for the time was to integrate a mobile phone into the suit, through which the wearer could communicate using text messages or, in emergencies, by phone call. One sleeve included an LED light to assist in the dark. The system was run by a CPU powered by two batteries. The wearer would use the Yo-Yo interface to control the functions and monitor data. The hand-held user interface could be used one-handed and even with winter gloves for hand protection. The Cyberia Survival Suit was launched at the Hannover World Expo in Germany in 2000, but it was never intended for mass production, because it was still being prototyped and extensive usage would have required certain technological alterations.[337]

Levi Strauss and Philips partnered with designer Massimo Osti to launch the brand IDC+ (Industrial Clothing Division) for the consumer market in 2000. It was directed at "nomads", a consumer group envisioned in the 1990s, which was assumed to look for flexible solutions in possessions and housing to match their nomadic lifestyle. The collection comprised four coat models: Beetle, Mooring, Producer and TRC Gilet. The collection was aesthetically ambitious and attractive with carefully designed cuts and glossy materials. In terms of technology, however, it mostly relied on the idea of portable devices: its pockets had an integrated Philips MP3 player, a voice-activated Philips Xenium 989 phone, headphones and microphone, all of which could be operated with a single remote control. The company launched a new, slightly improved collection in 2001, but after that IDC+ was shut down due to modest sales despite extensive media attention. Some have put this down to the fact that despite the relatively high price, the technological devices were still fairly clunky and were powered

by separate batteries, which was awkward for the user. The visible wires may also have scared off some potential buyers by being unaesthetic.[338]

Even in the 2020s, wearable technology is rare in street fashion and daily apparel, mostly because integrating hard technology into soft materials is still challenging.[339] In contrast, it is ubiquitous in sportswear and work clothing and accessories, as well as in accessories intended for health and well-being. Jewellery-like products such as smart watches and rings are common.[340]

So far, Finnish-made wearable technology has centred around practical accessories like smart watches and rings that are used to promote health and well-being in and out of the workplace. For this book, we interviewed designers and product developers from five Finnish companies: Image Wear, which integrates technology into work clothes; Moodmetric, which measures the ring wearer's stress levels through the skin's electrical conductivity; Myontec, which measures muscle activation using smart clothing; Oura, which measures sleep phases and other vital functions using a ring; and Suunto, which makes smart watches that measure vital functions and provides diverse services (such as training routes) based on GPS navigation. In spite of the practical approach or perhaps thanks to the practicality and comfort for which Nordic fashion and design are traditionally known, these products have become luxury items: just as Jackie Kennedy was known to admire the modern simplicity of Marimekko, Oura rings count celebrities including Prince Harry and Kim Kardashian among their fans.

THE INTIMATE RELATIONSHIP BETWEEN HUMAN AND MACHINE

While fashion in general has become distanced from the body due to the impact of photography and new media technology such as social media, wearable technology has brought the body back into the centre of fashion and, especially, a fashionable lifestyle. Proponents of this lifestyle are seen as individuals who are interested in measuring themselves and their bodily functions in their ambition to live a good, balanced and healthy life. Our interest in ourselves is no longer limited to the surface of the body and to decorating it with clothes: it goes deeper.

It is essential for wearable technology to be in contact with the skin and the body. Sensors in accessories and clothes measure the body's functions through skin contact, thereby interpreting intimate data that cannot be obtained in other ways. In this sense, wearable technology expands the senses: a smart watch, for example, turns a runner's heartbeat, exertion and recovery into easy-to-read numbers, whose development may be followed through the app linked to the watch, as well as compared to

337 Malkavaara 2009; Rantanen et al. 2002; See also Quinn 2002: 41.

338 Gleasure 2020; Quinn 2002: 97–116.

339 The integration of electronics into textiles, i.e. so-called e-textiles have been studied at Aalto University (e.g. Pouta and Mikkonen 2019; Ilen et al. 2019). Promising results have been obtained from the use of e-textiles developed for healthcare use.

340 Wearable technology is also increasingly used in medical research. See e.g. Yang et al. 2019.

341 By Cordwainer
Smith. See Caronia 2015:
44, 45–51.

342 By Frederik Pohl.
See Caronia 2015: 44,
45–51.

343 Gibson, William
(1984) Neuromancer.
Interest in the
figure of the cyborg
was fuelled by films
of the time, such as
Blade Runner (1982)
and Terminator (1984),
although being robots
that look like humans,
their main characters
are actually androids,
not cyborgs. See Caronia
2015: 98–107.

344 Gibson 1984: 31, 37,
64–70, 153, 222.

345 Łukaszewicz Alcaraz
2021: 68.

346 Guler et al. 2016.

347 Haraway 1985.

348 Hayles 1999: 3.

the data of other similar users. Smart rings, in turn, save data on the stages of sleep and the user's body temperature during sleep, when the user's own awareness is impaired. It is assumed that by tracking data on the quality of sleep, the user will understand how they sleep and how they should sleep to maintain vitality.

In certain ways, wearable technology fulfils the vision of the cyborg formulated in the 1920s, even though the early notions are far removed from today's reality. In the first sci-fi literature descriptions, cyborgs are described as human-like but entirely artificial, robotic beings reminiscent of how aliens or monsters were imagined at the time. Gradually, by the 1960s, robot-like cyborgs were joined by ideas of cyborgs as humans whose bodies have been technologically and chemically altered for life in space. From the perspective of current wearable technology, it is scarily fascinating how sci-fi novels such as *Scanners Live in Vain* (1955)[341] and *Man Plus* (1976)[342] present people working in space, vital functions being continuously measured, controlled and sent on for recording on tape or use by researchers or the government.

Later, in the 1980s, the cyborg was once again revived, particularly by the novel *Neuromancer* (1984) by William Gibson.[343] In it the senses, metabolism and neuromotor reflexes of one of the main characters, Molly, have been enhanced through neurosurgery and electronic implants. A digital watch display is connected to her optic nerve and her vision is improved by mirrored lenses including "microchannel image-amps", a type of implant attached to her eyes, thanks to which she can see in the dark. Since Molly is a fighter, she has retractable blades beneath her fingernails that can be used as weapons. Besides these implants, she has clothes and accessories that could be considered wearable technology: she wears a light-absorbent shirt and acquires a "mimetic polycarbon suit" from the "Moderns" (a group of youths described as nihilistic technofetishists), which allows her to blend in with her environment and thereby renders her invisible.[344]

Although the wearable technology in *Neuromancer* was purely imaginary, "cyborgism" as an ideology had already been developing for a while. The researcher Steve Mann, who was mentioned above is often presented as the first real-life cyborg, having worn EyeTap glasses – the predecessors of Google Glasses – since the late 1970s. In them, one eye is covered by a lens equipped with a camera and computer that add a datafied view of the world to the viewer's ordinary ocular input. The first technological body implant was made in 1997, when the artist Eduardo Kac had a numbered RFID chip intended for animal registration inserted into his left ankle and had himself registered as both

a pet and its owner as part of a political work of art entitled *Time Capsule*.[345] In the work he predicted that in the future humans would be registered like animals are now, to preserve memories.

Today, the word cyborg has two meanings. Narrowly viewed, a cyborg is a human whose body has been equipped with medical or experimental implants that improve or alter the body's functions and capabilities. In a broader definition, a cyborg refers to a person who either needs technology to improve their bodily functions or otherwise utilizes mechanical or electronic devices, which would actually class all users of wearable technology as cyborgs.[346] Although an amateur fitness enthusiast following their sports performances or an office worker keeping an eye on their coping ability at work are far removed from the sci-fi cyborg figures of yore and from the artists and researchers who have had technology implanted into their bodies, it appears that wearable technology as a phenomenon forms part of the long historical continuum of the changing relationship between humans and machines. In her prophetic essay *A Cyborg Manifesto* (1984), feminist technology researcher Donna Haraway described a future in which the boundary between human and machine is blurred. In her prediction, machines can be prosthetic devices, intimate components, friendly selves. They are no longer enemies but part of us and our bodily processes and one aspect of our embodiment.[347]

Technology researcher N. Katherine Hayles is along the same lines: in *How We Became Posthuman* (1999) she wrote about the technologization and virtualization of humans and how our bodies will be integrated with smart devices. For example, she viewed the body as "the original prosthesis we all learn to manipulate," meaning that the human body is by original design a cultural object, a compound of materials and information whose parts may be bought, owned and exchanged.[348] For Hayles the human body constitutes an "interface" comprising both nature and technology. Through wearable technology, machines become an ordinary part of our conceptions of ourselves.

For designers of wearable technology, the intimate relationship between the wearer and the machine poses a challenge. As the name indicates, wearable technology is a technical device, but in order to be wearable it must also be pleasant to use. The designers interviewed for this book particularly brought up three requirements for wearable technology. Firstly, they must be sufficiently small; secondly, they must be sufficiently discreet in their design; and thirdly, both accessories and clothing must adapt to the human body and its movements. In this sense, wearable technology exemplifies the increasing cultural significance of embodiment and materiality: while clothing has historically expressed the social aspects of the body, now attention is being paid to

THE CYBORG

Cyborg refers to a human whose body has been equipped with medical or experimental implants that improve or alter the body's functions and capabilities. Occasionally, the definition is broadened to apply to people who use technology to improve their bodily functions, which in fact encompasses nearly all modern humans. The figure of the cyborg springs from science fiction, but since the 1990s numerous researchers and artists have turned themselves into real-life cyborgs by having technological implants inserted into their bodies. A cyborg is still always a human at heart and must not be confused with an android – a robot that only looks like a human on the outside, popularized by numerous 1980s' films such as James Cameron's *Terminator* (1984) and Ridley Scott's *Blade Runner* (1982).

FIG. 35 · Oura integrates a technical device into jewellery. The designers have striven for a discreet style and minimized size, as the ring is meant to be worn day and night and in all kinds of everyday situations. As a piece of jewellery, a ring also carries emotional significance. Ouras have even been used as wedding rings. The first consumer version of the ring was designed by Harri Koskinen. Photo: ManvsMachine.

349 Entwistle 2000b.

350 Tomico et al. 2017.

351 Wexler 2017. The biohacking movement involves a strong spirit of DIY: many biohackers have built their own measurement devices and have used these in an attempt to democratize science.

352 Malatino 2017; Quickley and Ayihongbe 2018.

353 Lupton 2019.

the physical experience and physical materiality of the body, not just in accessory design but in the culture at large.[349]

For Myontec, for example, whose garments use sensors to measure muscle activity during a sporting or work performance, adapting the device to the moving human body has been one of the biggest challenges in their product development. (Fig. 34) According to the company's clothing designer, Ulla Kaasalainen, when designing this kind of garment the entire process must be turned upside down: because it is essential for the sensor to touch the correct muscle and stay there during activity, the starting point for the garments must be the placement of the sensors and their wires. Only after that can the designer build the pattern and garment on their terms, and finally plan the look of the garment. A further challenge is that an athlete's body depends on the discipline: a runner's figure is very different from that of an ice hockey player, for example, but the garment must work on bodies of all shapes. In this way, the boundaries between the object of design and the subject become blurred in the design of wearable technology.[350]

A demand for scaling down has applied to almost all technology throughout history. In the case of wearable technology it is particularly weighty, because a wearable device must fit in with the wearer's daily life. A smart ring or watch must not interfere with the wearer's work, sleep or exercise, but at the same time it must fit the necessary electronics. The designers for Oura, Suunto and Moodmetric all mentioned that achieving a suitably small size for their smart devices has been one of the biggest practical challenges during the design process. The size requirement is not limited to user comfort, either: designers explained that both their own intuition and consumer research carried out by their companies told them that wearable technology must fit in seamlessly with the wearer's desired outward appearance, being as inconspicuous in design as possible. Users expect their wearable technology accessories to resemble ordinary, well-designed rings or watches. Like one designer stated, it is essential for wearable technology to act as "a kind of positive sign that the wearers look after themselves and strive for increased awareness of their body's functionality."

The demand for discreet design is probably at least partly related to changes in the clientele for wearable technology. Designers and product developers from the investigated companies explained how, in the early days of product design (the early 2010s), the target group was envisioned to be biohackers – people who collect and openly publish data on their bodies in order to enhance not only their own lives but also biology as a science[351] (some describe biohackers as the cyborgs of today).[352] Other potential target groups were identified among those who were interested in their health for professional reasons: athletes and fitness professionals. Over the 2010s, however, the idea of self-tracking was popularized and normalized,[353] and the companies began seeing the target groups for their wearable technology not as niche users but so-called ordinary people, who displayed a strong interest in knowing how their bodies worked in diverse situations (during sleep, exercise or work).

The essence of wearable technology is that it is not just any electronic device but a device with which the user has a very personal and intimate relationship – more intimate than with other garments and accessories because it is on the skin and works through it. Unlike other electronic devices, which are only used in specific situations, wearable technology fulfils many functions – being a computer, a watch or a part of clothing – but not completely fitting into any of these categories because they are designed to be products worn in all situations of daily life.

Smart ring designers, in particular, described the difficulties in combining a device and an item of jewellery. From a jewellery designer's perspective, any item of jewellery is by definition a very personal and individual item. While a smart ring has to work reliably as a technological device, it should also fulfil the wearer's desire for adornment and expression of identity, just like other forms of body decoration. When a ring is combined with technology, its purpose of use becomes diversified: on the one hand it collects personal data and communicates it to its user; on the other, it communicates something about its wearer's personality to the world. According to the designers, an understated design is one way to solve the challenge of the data-collecting ring straddling these two worlds and being very strongly within the realm of the personal and intimate. Oura, for example, knows of users who have used their smart rings as wedding rings – heavily symbolic and affectionate accessories. (Fig. 35) On the other hand, designers and developers of smart rings such as Oura and Moodmetric also recognize a user group for whom the essence of the product lies in the data it produces rather than its characteristics as a piece of jewellery. Thereby the strong emotions that could be expected to be connected to jewellery may for some users be overshadowed by its rational data-collection purposes, which is not something one necessarily thinks about in conjunction with a skilfully designed, elegant and very expensive ring. The challenge for designers is, naturally, to serve the needs of highly diverse users.

This expectation for understated, elegant and inconspicuous design, which wearable technology companies have encountered in their user surveys, is interesting. Wearable technology has gained ground

FIG. 36 · The Moodmetric ring and the related app measure and interpret the electrodermal activity (EDA) signal that reflects the activation of the sympathetic nervous system (SNS). SNS activation directly influences sweat gland activity and this change can be measured as variations in skin conductance. The measurement is done with the help of two electrodes placed on the skin through the ring. Photo: Paavo Lehtonen.

in the field of fashion, because looking after one's health and well-being has become a central cultural value and because fashion is striving to expand its scope from pure clothes to lifestyle in a broader sense. Besides clothing, fashion now encompasses at least interior design and food; thus, a logical continuum is its extension to the field of wellness, which wearable technology represents in many ways. In spite of this (at least some) users seem (at least for now) to wish that the fact that they use wearable technology and follow their own readings and results using technology would go unnoticed by most people.

A whole separate academic study could be made of the motivation behind this concealment, as it seems that there could be many reasons. Despite the current well-being ideal, monitoring of one's body may conflict with another value central to our culture: carefree living. The ideal wearable technology users are fit and sleep well; not those who sadly confirm their inactivity from their devices or stress about their lack of sleep. A couple of autoethnographic user studies[354] have found that wearable technology users may have highly conflicted feelings for their devices, ranging from excitement and joy to anxiety and shame, which may go some way to explain the

355 Barile and Sugiyama 2020: 215–216.

356 McLuhan 1964: 112.

357 Ryan 2014: 50, in Barile and Sugiyama 2020: 218.

need to conceal the devices. Probably the use of wearable technology uncomfortably crosses the boundary between the private and the public: leisure-time fitness and sleeping fall clearly within the private realm so having them discussed in the workplace, for example, can be uncomfortable. It is also possible that our close relationships with machines – devices that carefully track and store our bodily functions – are so intimate and personal that even the fact that it is recognized by others risks infringing on our privacy.

COMMUNICATION OF PERSONAL DATA AS PART OF WEARABLE TECHNOLOGY DESIGN

No one can design wearable technology products alone: it requires expertise in diverse areas, including electronics, mechanics and design (e.g. clothing design). Wearable technology that tracks bodily data usually involves an application, whose creation requires expertise in algorithmics, coding, underlying data analysis, software design, graphic design and conceptualization. Some companies in the field also employ researchers who are experts in human physiology.

Today's smart rings, smart watches and clothes worn against the skin incorporating wearable technology send the data they have collected via Bluetooth to a mobile or desktop application. The app analyses the data using algorithmic calculations and provides a visualization in graphic form that is easy for the user to understand. This enables the user to interpret the physiological data, which means that any ordinary consumer can buy and use the device.

According to Barile and Sugiyama, wearable technology has become a part of our digital and datafied ecosystem, in which clothing and accessories are just one of our tools for collecting and sharing data.[355] The app is an integral part of the product when designing wearable technology. Discounting smart clothing that use heat or LEDs, wearable technology devices are often not very useful without their app. Sports watches may be used without apps, but many of their features, such as route plans, follow-up of data over time and comparisons with others' results are only available through the app. The app's software development and graphic design form crucial aspects of the wearable technology in question. It is through the app that the accessory or garment becomes an intelligible part of a technological system and links the user's body to their own and to others' data. Some products' apps automatically link the user to information networks, but certain Finnish manufactures, such as Suunto and Moodmetric, allow for use of the devices without an app. In other words, the user may choose whether to allow sharing of their data or not, which increases their ability to protect their data privacy.

It could be claimed that wearable technology based on skin contact blurs the boundaries between humans, media and technology. As media theorist Marshall McLuhan stated already in the 1960s, "the electric age ushers us into a world in which we live and breathe and listen with the entire epidermis."[356] Channelling McLuhan, art historian Susan Elizabeth Ryan[357] has claimed that the advent of wearable technology forms a part of recent cultural developments by which the significance of our sense of touch is growing at the expense of our sense of sight and visuality. At least on the basis of wearable technology, however, one cannot predict any loss of visuality; on the contrary, it uses visuality to make data that was previously unavailable to us accessible by transforming information collected through skin contact into visually informative graphics. In other words, wearable technology creates a whole new connection between the haptic and the optic, in which both senses are equally important.

Naturally, the graphic design of wearable technology apps must be clear and intelligible. Certain special characteristics apply to the visualization of users' personal data, however. Wearable technology apps tell their users things about their bodies' physical fitness, recovery or readiness for exercise. Thus in some way they encourage certain types of activity or warn against others. Using colours to communicate these things is one of the major design choices to make, and also a challenging puzzle to solve, because the graphics must be both intuitive and in line with the brand's visual image. Developers of wearable technology that tracks health-related data in particular have identified difficulties in how to communicate to users that their results are at a worrying level. Representatives of the companies interviewed for this study described feeling a great responsibility for how to formulate the message concerning the user's health in a way that does not scare the user off but causes them to change their behaviour or seek medical assistance.

Clarity does not mean the communication should be aggressive, either. One of the crucial choices when designing wearable technology is how much and what data the device imparts itself and what is provided by the app. Out of the companies included in this study, Oura, Moodmetric and Myontec have chosen to place all communications towards the customer in the app, i.e. outside of the device. At both Oura and Moodmetric, the product development team initially considered a solution by which the device would communicate using e.g. lights. They rejected this solution, however, because these messages would be visible to others, thereby revealing intimate data on the user to outsiders. According to a designer for Oura, respondents to their user survey had valued the "muteness" of the ring for the same reason: it protects privacy.

FIG. 37 · The workwear company Image Wear designs its garments in close collaboration with users. Based on user interviews, the company developed the pictured neon-yellow high-visibility winter jacket equipped with a sewn-in LED band, to ensure visibility in dark working conditions. Photo: Paavo Lehtonen.

Wearable technology products designed for everyday use form an interesting contrast in their desire to protect the wearer's data with certain garments and accessories designed as part of couture. For example, in 2016 the aforementioned Hussein Chalayan designed sunglasses that claimed to measure the wearer's emotions, such as fear or stress, as well as the heartbeat and heart rate using sensors. It was unclear how this was achieved, but the data collected on the wearer was, in the fashion show, sent to a belt wherein an integrated Intel computer created a visualization that was projected onto a wall by an integrated projector.[358] The British company Studio XO has also designed products, such as wristbands, that identify and express emotions, which they believe open new doors for human interaction.[359]

Media researchers Nello Barile and Satomi Sugiyama see Chalayan's experiments as progressive, interactive use of technology, which may bring users new human and cultural experiences beyond the aesthetic dimension.[360] Some might consider this a naïve view. Visualizing and outwardly revealing highly personal and intimate data, such as vital functions and emotions, exposes the user to previously unseen levels of surveillance and monitoring. Examples from authoritarian states such as China and Russia prove how personal data

358 Intel Newsroom 2016.

359 Guler et al. 2016; Compton/Guardian 20/9/2014. Accessed on 23/2/2022.

360 Barile and Sugiyama 2020: 222–223.

FIG. 38–39 · The watches in Suunto's *Peak* range (2021) strive for inclusive design.
The colours of the wristband are inspired by Nordic nature and aim for gender-neutrality.
Photos: Anna Äärelä.

361 Lee 2018; Balayan and Tomin 2021.

362 Härkönen et al. 2022; Levy 2015; Lupton and Williamson 2017.

363 Freire 2021.

364 Van Dongen 2019; 43–53.

365 RFID Lab Finland ry 2021.

366 Rauttola et al. 2019; Härkönen et al. 2022.

can be used to surveil and evaluate citizens without any opportunity to opt out.[361] Technology that communicates emotions or other bodily functions to other people could be harmful or even dangerous for the user also in personal relationships in which the user is in a subordinate position regarding the party monitoring the data, whether it be an employer/employee relationship, a parent/child relationship or an abusive romantic relationship.[362] The opposite alternative has also been explored in clothing design: the Embodisuit by British designer Rachel Freire, for example, collects no data on the wearer but communicates findings from the wearer's environment using devices placed against the skin, for example in the form of vibration. In this wearable technology suit, in other words, the data comes from outside the body and is communicated to the wearer via the suit.[363]

Although prior fashion research has called for a new kind of visibility for wearable technology and has conjectured that the striving for inconspicuous design comes from the engineering side of the designers,[364] the interviews conducted for this book indicate the opposite. There could be many factors involved, for instance the fact that Finnish design is traditionally minimalist and understated. So-called "Scandi design", viewed as down-to-earth and natural, is currently in great esteem. Product developers at Suunto, in particular, have recognized a cultural trend for striving to limit the communications taking place via technology – whether social media or wearable technology – such that they do not overtake the users' lives. In practice this means reducing the diverse messages generated for users by devices to the bare minimum. Designers also strive to provide users only with the most essential data so that they can focus on living their lives. Users have extensive opportunities for deciding the extent to which their smart watch will inform them of changes taking place in their body, their running route, etc.

A further ideal that technology companies have recognized is also familiar on the clothing side: gender-neutrality. The toned-down design of products from Suunto, for example, aims to indicate that they are not intended for any gender in particular. (Fig. 38-39) A paradox lies therein, because despite the neutral appearance, the app forces the user to choose their gender if they want to benefit from everything the device has to offer. Additionally, the database to which individual users' data is compared, for example to determine their fitness level, is in almost all wearable technology products based on data classified according to other users' gender, age and weight. Mostly the apps' algorithms compare the users' results to data from these control groups.

In contrast, some wearable technology manufacturers produce garments and accessories that are specifically expected to communicate diverse things to outsiders. The Finnish workwear company Image Wear works to ensure an employee's safety during the performance of their tasks. The technology they use differs from that in the aforementioned smart watches and rings, because the company's work jackets and vests do not collect data on bodily functions through the wearer's skin. (Fig. 37) Instead they use devices such as a sewn-in LED band with rechargeable batteries, which ensures visibility in dark working conditions like ports or construction sites, where heavy machinery and pedestrian workers operate in the same areas. Rechargeable heat panels can be attached to jackets to permit working outdoors or in cold offices in winter. Image Wear also uses RFID technology,[365] where clothes or accessories are equipped with a sensor whose collected data is used for observing, recognizing and identifying the garment. The data may be read with a separate RFID reader that uses radio waves and also transmits it to the service provider's cloud service, where it may be monitored by the employer using a browser. The RFID reader may be portable or attached to a gate, for example. Similar technology has previously been used in work passes, but it is now becoming more common in work clothing and accessories. The purpose of the monitoring is for the employer to check who is wearing a specific garment and where, so that they know where equipment is located within the workplace and when it is submitted for washing, for example.

The use of wearable technology in the workplace is fairly common in Finland – not just RFID for monitoring but also smart watches and rings for measuring occupational welfare as a tool for the occupational health service.[366] When wearable technology is worn in the workplace, access to personal data is governed by diverse laws. The EU's General Data Protection Regulation (GDPR) and, in Finland, the Act on the Protection of Privacy in Working Life demand that employees be consulted before adopting wearable technology for use and that data be stored securely to protect privacy. The consultation requirement does not apply to situations in which the use of protective gear including tracking technology is recommended for the employees' safety. A challenging ethical question concerns whether an employee would really be able to refuse to use wearable technology if it were required by the employer. On the other hand, the Finnish Occupational Safety and Health Act obligates employers to look after their employees' health and safety at work, even encouraging them to use technical equipment to do so. In these cases, it is particularly important in terms of privacy that the device does not communicate data to outsiders and is only transmitted via encrypted networks and servers with limited and anonymized access.

In other words, not only user wishes but also legislation directs wearable technology designers to

ensure communication is discreet and inconspicuous – at least when devices are used to measure the user's bodily functions or movements. Therefore, the design of the devices' communications supports the personal and intimate relationship between the user and the wearable technology.

Market forecasts predict further increases in the use of wearable technology, with adoption by new consumer groups. It will be interesting to see whether the current discreet design of data-tracking devices are joined by more flamboyant wearable technology that expresses the user's identity more prominently, as some fashion researchers[367] have hoped. It is important to note that all technology involves ideologies and values that only allow for certain kinds of cultural practices. Researchers Sakari Tamminen and Elisabeth Holmgren[368] have proposed three potential cultural states that wearable technology can enable: 1) a state of bodily discipline and control (when measuring e.g. sporting performance); 2) a state of love, imagination and belonging (when used to maintain interpersonal relationships and networks); and 3) a state of autobiography and recollection (when the data collected by the wearable technology becomes a part of the user's memory reserves on themselves). Because each of these cultural states and operating practices is deeply personal, it is likely that the designs of mainstream wearable technology will remain such that they support and build the intimate relationship between the technology and its user.

367 Tomico et al. 2017; van Dongen 2019.

368 Tamminen and Holmgren 2016.

Distmantling

the

Boundaries

of

Fashion

While fashion has become image-driven and, broadly speaking, mediatized and technologized, it has also conceptualized. The birth of conceptual fashion is usually dated around the 1980s and 1990s, a time of change when fashion stopped being limited to clothing and saleable assets and became a tool for critical and creative thinking. Some of the pioneers of conceptual fashion are considered to have been Japanese designers such as Yohji Yamamoto, Issey Miyake and Rei Kawakubo, as well as European designers of the so-called Antwerp School, like Martin Margiela, Ann Demeulemeester and Walter van Beirendonck.[369] They were said to question what fashion is, how it looks, how it interacts with the body and how and where it is presented. Conceptual fashion has been linked especially to the European traditions of conceptual art, such as Dadaism and surrealism. It is true that conceptual fashion became blended with other disciplines like visual art, music and architecture. This blending to some extent intellectualized[370] fashion and took it beyond the limits set by clothing and the body.

Seen more broadly, the history of the conceptualization of fashion can be traced back to the early 1900s, to the early collaborations between artists and fashion designers among Dadaists and surrealists – for instance Salvador Dalí and Elsa Schiaparelli. In Finnish contemporary fashion, this is reflected for example in the work of Juslin/Maunula (est. 2015).

The collaboration Juslin/Maunula between fashion designer Laura Juslin and architect Lilli Maunula inventively combines fashion and architecture, colours and materials. Their vision is to construct seamless entities out of products and the architectural spaces built around them. Juslin/Maunula's work often brings together arhitecture and clothing, thus proving that a garment or a product is not limited to the body but forms a living and breathing entity with its surrounding.

The installation *A Floating Surreal World* (2021) presented by the designer duo in the exhibition *Intimacy* is a good example. It consists of a floating painterly tulle rug, a mirrored floor and three outfits with jewellery. The translucent rug gives the space a layered feel and provides a painterly background from which the outfits stand out, the mirrored floor emphasizes the feeling of spatiality, while the illusion it creates makes a surrealist world that flows from one world to the other (Fig. 40). Meanwhile, the architectural element provides surroundings for the outfits, encouraging the viewer to see beyond the clothes and the body into the space and how fashion and the space intertwine and interact. Juslin/Maunula's work is a reflection of how conceptualized contemporary fashion proves the absurdity of viewing the relationship between art and fashion as controversial or fashion as "other than" art.[371]

TOWARDS EMOTIONALLY SUSTAINABLE FASHION

The conceptualization and intellectualization of fashion are about assuming a distance from the mass-produced garments intended as consumables, which tend to revolve around continuous change and the cyclicity of fashion. Today's conceptual fashion is often fundamentally removed from the ecological, cultural and emotional unsustainability of mass fashion. For designers, mass fashion does not pose enough of a designerly or intellectual challenge nor embody the deeper thought that is essential for the development of products that withstand time and maintain their emotional value.

Paintings (est. 2018) is a designer duo that stands for conceptual fashion and inherently distances itself from the unecological fashion industry. It is also a multiartistic collective that brings together creatives from diverse fields. Paintings hand-produces so-called upcycled clothes, i.e. garments that give new life to used items (Fig. 41). The basis for Paintings's work are existing garments, which it modifies instead of making new ones. The old garment is the foundation upon which a new garment is constructed. The existing garment places constraints upon the design work in terms of materials and shapes, for example, because the creation must be made on its terms. At the same time, the designer duo argues, these constraints open new opportunities and feed the imagination, for example through the visible marks left by previous users. New garments made from old ones have a temporal and experiential depth that items made from new raw materials do not have.

Paintings reworks the old garments using appliqué, which is a technique of sewing pieces cut from other fabrics onto the base fabric. Paintings does this by pleating the appliqué pieces, which gives the garment a novel, individual look and a three-dimensional surface. Besides upcycling clothes, the Paintings collective creates multimedia art such as installations. The installation in the Design Museum's *Intimacy* exhibition in 2022 revealed some of the collective's design and work methods. They hung garments identified by serial numbers on a rack to represent diverse work phases, as a nod simultaneously to one-of-a-kind couture and serialized art. The installation included diverse objects, from a lighter to video tapes, building a holistic experience of the world of Paintings. A video consisting of their own and found image materials displayed the clothes manufacturing process together with random content, as if questioning the artist's agency. Similarly the founders of Paintings shared their agency with photographers and stylists in the installation's photographic work. The photographs are other creators' visual interpretations of the garments.

369 Clark 2012.

370 Van de Peer 2014.

371 E.g. Radford 1988.

FIG. 40 · Installation by Juslin/Maunula entitled *A Floating Surreal World* (2021), depicting how fashion is not limited to the body or to a garment but also commands the surrounding space. The material choices for the installation were governed by environmental friendliness. The rug was made from Juslin/Maunula's surplus and waste fabrics. Photo: Paavo Lehtonen.

FIG. 41 · The multiartistic collective Paintings hand-produces upcycled clothes, i.e. garments that give new life to used items by using appliqué. Their three-dimensional pleated appliqué is typically close to the original garment in colours. The garment's past is allowed to be seen through the visible marks left by previous users. New garments made from old ones have a temporal and experiential depth that items made from new raw materials lack. Photo: Paintings.

In this way the meanings of clothes and the representations of fashion become diversified when a garment does not primarily stand for the functionality that is usually considered its fundamental characteristic, or even for its wearer's identity. As it becomes conceptualized and intellectualized, fashion can express a designerly, artistic or conceptual vision or a new way of thinking about clothes, for example. Hussein Chalayan, known for his conceptual approach, has aptly said that a conceptual garment is a "monument to an idea".[372] By this he refers to the new role of fashion makers as analysts of fashion and clothes. Like Paintings, they may distance themselves from the fashion industry, or they might suggest concepts and ideas through critical reflexion and experimentation, like Laivi and Sasu Kauppi.

Laivi (b. 1989) is an artist and fashion designer whose works often transcend the body's physical boundaries. She also creates performances, installations and object collages. (Fig. 42) Inspired by the traditions of conceptual fashion and art, Laivi's work is characterized by experimentation based on materials. She emphasizes the emotional relationship between garment and body and takes a stand against the fact that the value of fashion usually follows the value logic of disposable mass fashion: it vanishes as soon as a product is purchased. In this sense the value of fashion is equal to the monetary price paid for a product to the company that sells it. This effectively props up the fast cycle of fashion, because value is not intrinsic to the garment.

Examining the relationship between clothes and the body from the perspective of emotionality, Laivi emphasizes the "emotional durability" of fashion.[373] By deconstructing clothes into sculptural works or transforming them into two-dimensional object collages, Laivi tries to draw attention to the kinds of emotional bonds that people have to items they do not want to discard. She asks whether we could form similar bonds with clothes and, if so, how they could be fostered by means of fashion design. The British researcher Jonathan Chapman has ironically stated that waste is a symptom of a "failed relationship" between a person and an object.[374] If the emotional bond is reinforced, fashion could become more sustainable.[375] As in art, in fashion we consume meanings. We don't want to give up garments that are emotionally significant for us.

Like Laivi, Sasu Kauppi (b. 1982) is interested in the conceptual dimensions of fashion. As a designer, Kauppi's name is usually connected with relaxed, sporty streetwear, drawing from many of the same sources, street, sports and subcultures discussed in chapter 2. He established his eponymous company in 2011 and in the mid-2010s was employed as creative director and head of menswear designer of American rapper Kanye West's brand Yeezy in LA. Having

returned to Finland, Kauppi started up the brand SSSU in 2017, under which he carries out diverse collaborations within fashion and popular music.

Kauppi is inspired by youth and street cultures, Americana and urban sportswear. He is also interested in breaking down boundaries and building dialogues between various art forms, and in developing conceptual and experimental fashion. His installation in the exhibition *Intimacy* was a multiartistic exploration of the relationships between clothing, sound, images and time. (Fig. 43) It was also the first time that Kauppi used a garment as the projection surface for sound transformed into images: a sound wave was projected onto the fabric,

372 Chalayan, cited in Evans 2003: 270.

373 Chapman 2005.

374 Chapman 2005: 169.

375 E.g. Chapman 2005; Fletcher 2012; Esculapio 2020.

FIG. 42 · Laivi's installation *Notes, Shed Skins and Dissolved Memories* (2021) comprises garments deconstructed into two dimensions and picture-like object collages. The installation's muted tones – black, white and various skin tones – invite viewers to ponder the boundaries between garments and the body. For Laivi, clothing is a liminal zone between the self and the body. Photo: Laivi.

FIG. 43 · *An Audiovisual Study* (2021) by Sasu Kauppi represents experimental fashion. The basis for the work is a frame, such as those used for paintings, mounted with a black base fabric and a black T-shirt made according to patterns from the SSSU collection. A white, was printed onto the shirt using photoluminescent plastisol, acts as the projection surface. A sound wave is projected onto it that turns into a graphic pattern, leaving an evanescent trace on the surface. Photo: Paavo Lehtonen.

leaving a mark that was at first momentary but over time became permanent.

CHALLENGING THE BOUNDARIES OF THE BODY

The work *Returned for Eternity* by Anna Semi (b. 1990) was constructed out of sculptural clothes and materials and created an ecosystem between itself, the body and the fabric. (Fig. 44) Semi is a material-oriented designer, and the behaviour of matter has a decisive effect on her work and its outcomes. The focus of her work is on following the creative process and expanding the idea of fashion: a garment is a part of the body, just as a shoe is a part of its box. The red colour of the pictured dress forms a part of the designer in that she sees her own name as the colour red. The crafted wood seen in the shoe-and-box combination has references to the number eight, which signifies eternity and the interweaving of humans and the world.

Although fashion and garments change over time, the human body usually sets the conditions within which this can happen. Semi's work poses a challenge for this idea. At its most ordinary, a garment in some way follows the body and its shapes. When fashion transcends the boundaries of garments and the body, the starting points and objectives of design are different from when garments are designed to be worn. The approach also concretizes the meanings – e.g. the purpose of use – generally associated with apparel. When fashion is thus conceptualized and intellectualized, it emphasizes the multisensory nature of how the meanings of fashion are formed: how clothing interacts with space, as in Juslin/Maunula's work; how apparel forms a continuum with the body and with other objects, as with Anna Semi; how fashion transforms into art, as with Laivi; or how it can become a platform or projection surface for other arts, such as music, as with Sasu Kauppi.[376]

Conceptually oriented, critical fashion also strives to challenge and expand our understanding of the ideal body. Therefore, this more conceptual approach is also about assuming a critical distance from the prevailing notion of humanity and anthropocentricity of fashion. On the one hand it asks what kinds of bodies fashion considers as the norm; what bodies fashion is designed for and what alternatives could be envisioned for individual- and human-centricity, as we discussed in Chapter 3. On the other hand, it considers how the conception of humanity can be altered by means of fashion, among other things, such that design takes into account the living world as a whole. The conceptualization of fashion is simultaneously a search for new design and operating models for fashion, a counterreaction to the prevailing view of fashion as a consumable, and a rethinking of the body and the boundaries of intimacy.

The collection *Wearable Sculptures* by Amina Saada (b. 1989) examined clothing and the ideal body from the perspective of sculpturality. (Fig. 45) Saada challenges the viewer to consider the line between clothing and non-clothing: where does clothing end and become something else? Additionally, Saada challenges us to ponder beauty norms. Can a garment be viewed as ugly if it is beautiful as a sculpture? Do clothes alter our conceptions concerning the beauty of a human body if they emphasize the backside instead of the breasts or if they create lumps in places where beauty norms dictate they should not be? Although the collection exemplifies the conceptualization of fashion, its starting points are highly material-oriented, as with Anna Semi. To achieve work that distanced itself from the framework of apparel, Saada developed a new technique for moulding and patternmaking, using sculpture. The garment shapes and patterns are based on clay sculptures.

POSTHUMANIST TURN IN FASHION

Conceptual fashion takes a stand on the issue of our culture's focus on the human body – on anthropocentrism[377] – and how the individuality of fashion is emphasized using body-related notions. Today's critiques of the ethics of fashion are based on the understanding that we are living in the Anthropocene Epoch, which means that the major crises taking place in the world, such as the new extinction wave and climate change, are caused by humans. In other words, the human race plays a critical role in what is happening on Earth.

This could be named the posthumanist turn in fashion.[378] It means open and critical examination of the very premises of fashion, and an attempt to dismantle the prevailing anthropocentrism in the field. This implies, among other things, viewing humans as a "climatological force":[379] understanding that our actions always have consequences that

are not limited to our intentions, beliefs or wishes. The posthumanist approach strives to offer tools with which fashion can be seen as a theory and practice that alters humans and our relationship with the world.

An example of the effects of posthumanist thinking on fashion is Daniel Palillo (b. 1981). While global fashion brands like Kanye West's Yeezy, Stella McCartney or Hermès have been inspired to research and test opportunities for using living organisms such as algae and fungi in clothing manufacture[380], Palillo challenges us to consider what it means to be human. He is perhaps one of the most internationally renowned Finnish designers, particularly known for his loose-fitting, colourful, flamboyant and playful patchwork-like unisex garments, which feature imaginary creatures rather than people. These imaginative works embodying non-human

377 Braidotti 2013.

378 Vänskä 2018; Smelik 2021.

379 Grusin 2015.

380 Davidson 2021.

FIG. 44 · Anna Semi's *Returned for Eternity* (2021) is, according to the designer, a first draft of what she plans to do in the future. The interest of this material-oriented researcher lies particularly in the connections between different materials and in how clothes, other objects and the body form a seamless whole. Photo: Sofia Okkonen.
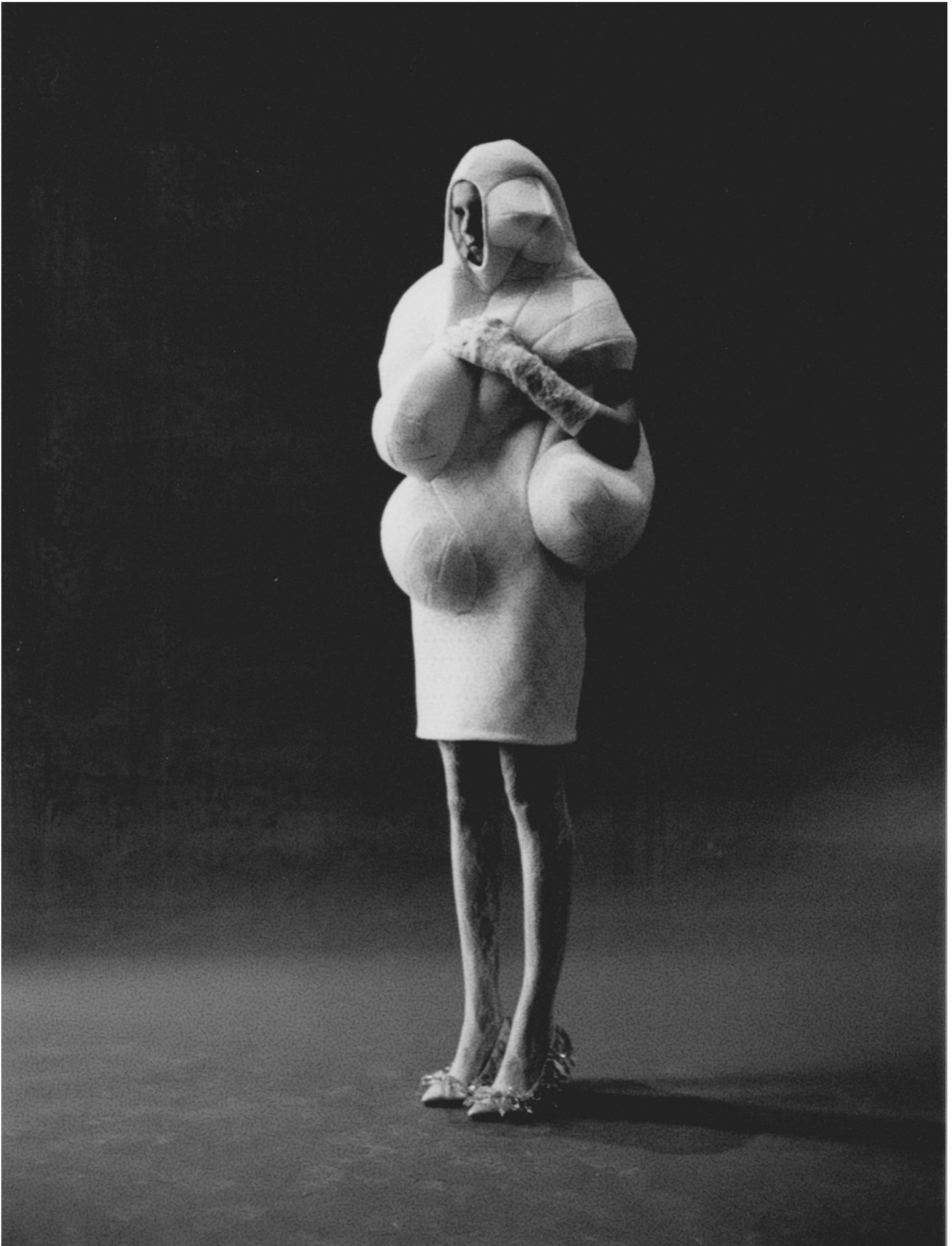
FIG. 45 · Amina Saada's *Wearable Sculptures* (2020) won the Exhibition Prize 2020 at the *Designers' Nest* competition held at Copenhagen Fashion Week. The visual image of the clothes is derived from 1960s' futuristic space-age bridal and mourning wear, and especially from Yves Saint Laurent's Cocoon bridal dress from 1965. Narratively, the collection was inspired by Mary Shelley's novel *Frankenstein; or The Modern Prometheus* (1818). Photo: Amida Saada.

beings call into question what it actually means to be human. It is a question pondered by many so-called posthuman theorists.[381]

Having designed clothing since 2006 and established an eponymous apparel brand in 2008, Palillo turned to art in 2015. Since then, his works have moved on from fashion stores into galleries, museums and art collections. Palillo paints and designs clothing in parallel, with the same motifs appearing in both his two- and three-dimensional works. Palillo's outfits are more paintings than functional attire. (Fig. 46) They are imaginative and humorous explorations of the borderlines between humans and animals, among other things. Today, Palillo views himself more as an artist than a fashion designer. Although his clothes may be worn by a human body, their mask-like, face-concealing hoods disrupt our idea of humanity and invite us to consider the lines between the human and non-human. In this sense, Palillo's garments form a part of posthumanist considerations of the meaning of humanity and what can be included under that term.

Another approach to the definition to humanity is offered by Sami Samaletdin (b. 1997) and Timur Samarskiy (b. 1999). Their project *Oneness/Manyness* (Fig. 47) derives from the feeling of estrangement that the designers experienced in relation to the fashion industry, the teaching of fashion and other students after starting their studies in Fashion Design at Aalto University. The mutual feeling sparked a collaboration that has lasted until the time of writing. Their close collaboration meant committing both to the other person and to their joint work, and striving to understand the other partner's thoughts; it resulted in a menswear collection that was wholly hand-sewn out of recycled materials and botanically dyed fabrics. For the collection, the duo researched old clothes, materials, photographs and dyeing techniques.

The garments in the collection may be worn by either one or two people simultaneously. When worn by two, each garment forms an intimate, shared world; worn individually, the wearer will bear with them the other person in the form of the clothing. This gesture defies us to consider the meaning of clothing: not as an expression of individuality but as a becoming with others. The conceptual perspective appears in Samaletdin and Samarskiy's idea that designing garments for a single person and body prevents the development of so-called garment understanding, design, cutting and silhouettes. They call for designers to have more courage and experimentation in testing diverse shapes and cuts. The garments in the collection also visualized the fact that a garment is an offering that directs us towards a specific kind of use and that is designed for specific situations.[382]

Throughout history, clothes have been used to determine and classify the boundaries of humans. The question of becoming human and the role that clothes play in this process – who is considered human – has actually been a fundamental cultural issue. The question has preoccupied many European philosophers through the ages and has been evident for instance in how we view children. Some have considered a child as a *tabula rasa* (empty slate)[383] or seen them as occupying a natural, precultural state; a being that only becomes a (civilized) person once they receive an education and dress appropriately.[384] Children's clothes had to be light and loose-fitting so as not to interfere with and to support this important process of hominization.

Nowadays hardly anyone would consider a child as inhuman. In fact the line drawn between childhood and adulthood is anything but clear: on the one hand we want to keep children as children, protected against the hazards of the grown-up world for as long as possible, on the other hand the two worlds

381 E.g. Hassan 1977; Hayles 1999; Braidotti 2013; Herbrechter 2013; Lummaa and Rojola 2014.

382 Norman 1999.

383 Locke 1964 [1693].

384 Rousseau 2011 [1762]: 210–212.

FIG. 46 · In the spirit of posthumanism, artist/designer Daniel Palillo makes room for figures with human and non-human characteristics. Palillo does not entirely reject humanity or clothes as its symbol, but challenges us to rethink humans, clothes and the essence of both. Photo: Paavo Lehtonen.

CONCEPTUAL FASHION

Conceptual fashion was recognized by the fashion world in the early 1980s with the rise of Japanese designers. Their designs defied the European understanding of fashion as a body-, age-, gender-, and season-related concept and highlighted the longevity of clothing, the importance of materials and an interest in shapes and patterns that do not make specific demands on body shape. Conceptual fashion strives to challenge the conventions of fashion beyond the norms of the body: what fashion is, how it looks and feels, how, where and by whom it can be displayed etc.

Beyond Japanese influences, conceptual fashion draws from Euro-American conceptual art of the 1960s, and from the avant-garde art movements of early twentieth-century Europe. In Europe, conceptual fashion is linked with Belgian designers of the so-called Antwerp Six.

Conceptual fashion design has a critical and self-reflective approach. It builds on experimentation, rather than on creating commercial products. It poses questions and creates new concepts for making fashion. Conceptual fashion comes close to research and fine arts. Hazel Clark (2012) and Angela McRobbie (1998), among others, have written about conceptual fashion.

POSTHUMANISM

Posthumanism is an umbrella term for diverse theoretical approaches that critically analyse humanity and the humanist tradition. Scientifically its roots lead back to poststructuralism, postmodernism, deconstruction, feminist criticism and postcolonial theory. Posthumanism is understood as a theory that strives to reappraise the relationships between humans and non-humans, humans and technology, and humans and the environment. Posthumanism does not mean an end of humanity or humanism, nor misanthropy. Rather, it means the end of anthropocentrism and the view of humans as creatures who have had the power and wealth to conceptualize themselves as autonomous beings and the kings of all living things. Donna Haraway (1985, 2003, 2008), N. Katherine Hayles (1999) and Rosi Braidotti (2013) are seen as the premier posthumanist theorists. The concept was coined by literary theorist Ihab Hassan (1977). In Finland, Karoliina Lummaa and Lea Rojola (2014) have contributed to posthumanist discourse, while Anneke Smelik (2021) and Annamari Vänskä (2018) have discussed posthumanism in relation to fashion.

blend together in many ways. This blurring – or continuity – between the worlds of children and adults is also visible in fashion. An example is the children's fashion company Wildkind Kids (est. 2017). The starting point for the brand started by stylist Emilia Laitanen and photographer Johanna Laitanen was seeing a child as an adult's equal – a persona with equal rights to fashion and to an individual style as grown-ups.

A major boom has taken place in the field of children's fashion in Finland in recent years. Wildkind Kids is one of many brands, including Papu, Vimma, Gugguu and Aarre, which not only offer apparel for children but have expanded from that to clothe the adults (especially mothers) of the family. Many parents want to invest effort and money into their children's clothes, which also reflects the porosity of the boundary between childhood and adulthood and the fact that children come under the extended identity of the parent.[385] The change is clearly visible in the consumer spending behaviour of parents – especially mothers.[386]

The aim of Wildkind Kids is to design the "vintage clothes of the future", as the designers have put it, which are passed down from one child to the next

and only improve as they age.[387] The cornerstones of the collection are classic workwear and sportswear styles borrowed from the adult world, ambitious print designs and references to subcultures. (Fig. 48) Wildkind Kids is inspired by the adult world but interprets it from a child's perspective. By doing so it strives to modernize the world of children's clothes while updating the centuries-old notion that small children do not yet have a specific gender. The brand's unisex philosophy is visible in that the garments are not designed for boys or girls but for all children regardless of gender.

As the above examples show, the socially constructed category of humanity is not set in stone. Debates are currently ongoing as to how the human species differs from other animal species. A new field of study has appeared in recent years called human-animal studies;[388] it is a growing interdisciplinary field of research that explores the complex relationships between humans and other animals and analyses their categoric differences. It also strives to alter the view of animals as "empty slates" – creatures that may only be given meaning by humans – encouraging us instead to see and recognize the ways in which humans and other animals impact and interact with one another. Being human is not

385 Belk 1988.

386 E.g. Åberg and Huvila 2019.

387 Personal communication on 14/4/2021.

388 Wolfe 2009: 564–575.

FIG. 47 · The jacket meant for two designed by Sami Samaletdin and Timur Samarskiy questions the individualism of fashion, emphasizing the importance of community. Even if only one person should wear the garment, they will bear with them the other person in the form of the clothing.
Photo: Sami Samaletdin and Timur Samarskiy.

FIG. 48 · Wildkind Kids demonstrates that today's children have become an important part of fashion culture. The label's non-childlike clothes are a reflection of the close relationship between childhood and adulthood in society. Children and adults may use similar styles of clothes and thereby show their mutual belonging. Photo: Wildkind Kids.

straightforward and not even as natural a state of being as we usually think. Paraphrasing the French philosopher Simone de Beauvoir, one could say that one is not born a human but becomes one. Human animals and other animals are products of specific historical, philosophical, theological, scientific and cultural discourses.

The boundaries between humans and animals are discussed for instance via "man's best friend", the pet dog. Journalist David Grimm's book *Citizen Canine* (2014), for example, demonstrates how the social status of dogs has developed through history and how today's family pets are being endowed with increasingly human characteristics – even a sort of citizenship, as the title of the book indicates. The close relationship between humans and dogs has also been studied by the pioneer of posthumanist thinking, Donna Haraway.[389] She considers the two to be "companion species", which means that they share their lives and even their histories. Neither would be as they are without the other. Similar observations may be made by examining canine fashion, which makes evident the anthropomorphizing of dogs as childlike family members.[390]

Although dogs and humans share their lives, have developed together and have been taming each other over thousands of years, as Haraway writes,[391] the view of dogs as human-like individuals was popularized in the nineteenth century. On the one hand, the shift is related to the history of dogs as pets and on the other to the history of the breeding of dogs to remove wilder characteristics.[392] Thirdly, it derives from the establishment of the middle-class family in Central Europe.[393] In the 1800s, having a dog as a pet became a symbol of the middle-class family's love, loyalty and care. The pet dog rose above farm animals and wild animals and was given a status as an individual. As the value of dogs rose and their status shifted from animal to pet, so did people's views and understanding of the species. The family pet became an ambiguous creature somewhere in between human and animal.[394]

One of the manifestations of the homanization of dogs is that, like children, they are expected to behave – and dress – well. Dogs are offered diverse services, from training and doctors to insurance and fashion. The Finnish manufacturer of products for small dogs, NaNi (est. 2012), reflects this shift. (Fig. 49) The company's product design springs from founder Anna Helminen's (b. 1985) own small pet dogs and their needs. The products are primarily intended to be comfortable, but they also aim for high quality and aesthetics. With regard to their material choices, patterns and purposes of use, the designs of the clothes are a reflection of the close relationships between humans and dogs as family members.

TRANSFORMING USER RELATIONSHIPS

At the same time as fashion has started to observe the needs of diverse user groups and bodies, and has conceptually challenged human boundaries, the relationships of clothing and fashion designers with end users have also changed. Designers of functional clothes, such as work and sportswear, are increasingly surveying users and even involving them in the design process to obtain optimal information.[395] Co-design refers to various design methods in which companies strive to recognize and solve people's needs and wishes in collaboration with the users, turning them into co-designers.[396] The involvement may take the form of workshops, because while users may find it hard to communicate their needs directly, solutions may be found through collaborative work.

In functional design of wearable products, the user's bodily, functional and experiential dimensions take centre stage. The design of clothing, accessories and wearable electronics is more closely linked to the tradition of functional design than fashion, especially when it comes to the wearable technology discussed in Chapter 5. In the field of design, the "design thinking" approach has emphasized a focus on users' needs since the late 1950s.[397] Of the wearable technology companies included in this study, Suunto in particular has developed an advanced design thinking process. Diverse – even conflicting – descriptions of this approach exist, but in a nutshell it could be defined as a systematic, human-centric approach that guides all the design and product development taking place in a company, which strives to bring together users' needs, technological opportunities and expectations related to market conditions. In practice the approach may be implemented in diverse ways and the company must make decisions such as whether its design process will focus more on functionality, aesthetics or emotional aspects, or whether the design team members will have very equal roles or be hierarchically led.[398]

In wearable technology design, the users – or, rather, diverse user groups – almost make up a member of the design team, whose wishes are taken into account throughout the process. This may mean different things depending on the company's size and profile. Companies that specialize in specific functions often rely on data received from so-called lead users.[399] These users are the first to note the direction which the products should take and actively participate in product development. Companies may, for example, recruit athletes into their product development teams.[400] Larger corporations directed at major consumer markets also follow global trends and market events, and conduct extensive user research. They also pay attention to social media user groups, which may bring up problems related to product use

389 Haraway 2003; 2008.

390 E.g. Vänskä 2014: 262–272.

391 Haraway 2008.

392 Fudge 2008.

393 Kete 1994.

394 Fudge 2008.

395 Watkins and Dunne 2015.

396 Sanders and Stappers 2008.

397 Cross 2019.

398 van Reine 2017.

399 von Hippel 2005.

400 Watkins and Dunne 2015.

401 Chammas et al. 2015.

402 Nielsen 2013: 4-6, 59-79; Johansson and Messeter 2005.

403 von Busch 2008.

404 Fletcher 2014.

405 Peterson 2016; Wu 2010.

406 Gucci, for example, has the knitwear mass customization service Gucci DIY Knitwear (link in Bibliography).

407 Särmäkari 2021.

408 The first version of The Fabricant Studio platform was launched in 2022 and the platform is under continuous development.

409 The Fabricant Studio 2022.

410 E.g. Fletcher 2014.

or conduct conversations on the products' properties and their optimal use.

User-centred design is based on surveys because the aim is to understand the users, their activities and their living environments. The users' views and opinions on a product's properties are surveyed at various stages of the design process, as are the affects, emotions, beliefs and expectations aroused by the product. Besides the desired user group's habits, it is essential to understand their skills, outlooks, attitudes and preferences.[401] Many wearable technology companies apply "user personas" in their design processes: characters whose consumer behaviour is known based on user and market research, but that also include fictional elements and individual characteristics to make them more recognizable and relatable for the designers. In other words, they are homanizations of an abstract concept. Through them, designers can more easily understand the users' circumstances, thoughts and feelings. The purpose of the user persona method is to arouse empathy and closeness in designers and product developers towards certain kinds of users or user groups.[402]

In the fashion and casual attire sector, user inclusion through co-design, mass customization and other participatory practices has been suggested to challenge the formerly closed field of fashion through activism, for example,[403] and to enhance people's emotional ties to their clothes.[404] One method for achieving this is mass customization,[405] which usually takes place online, for instance on the company's website, where buyers are given the option to tailor products to themselves by choosing the colour, measurements, parts or other elements of garments or trainers. Mass customization characteristically involves the use of digital tools to tailor products to customers' wishes.[406]

Digital fashion, which we discussed in Chapter 4, usually also encourages users and amateur designers to design their own creations based on the company's basic models. Users may be supplied with free patterns and 3D models, including information on how to use the company's digital design tools.[407] The Fabricant is one of the companies that have recognized the importance of transparency and information sharing when it comes to creating community spirit and commitment. On its website it shares free 3D models for anyone to adapt. On its new The Fabricant Studio platform,[408] users may select the model, material, pattern and colour they prefer to create an outfit that they can sell or use in games or other virtual environments. The company calls its platform a "decentralized fashion house", taking the idea of the relationship between the user and the fashion house one step further: users are not only enabled to design new garments based on the models supplied, but also permitted to benefit from

them commercially, potentially sharing the profit they make with diverse creators.[409]

This philosophy emphasizing collaboration between professionals and non-professionals is primarily linked to a critique and a rethink of the prevailing fashion system. The common denominator between the examples given in this chapter is awareness of the critical role that we humans play in relation to our surroundings. On the one hand, this impact has been studied from the environmental perspective under the sustainable fashion movement;[410] on the other, some designers have stepped entirely outside of the precepts of the fashion industry, conceptualizing fashion and bringing it closer to visual arts, activating questions concerning the boundaries of humanity. Another reason to bring users to the forefront has been to avoid producing the wrong kind of products where possible. What these highly diverse starting points have in common is that the biggest critiques of fashion are currently coming from within the fashion field, rather than without. Many designers are working to rethink the material, production-related and conceptual principles of fashion, using their work to call into question the anthropocentric ideology that still lies behind fashion. Therefore striving for more ethical, more diverse and less discriminatory fashion involves, among other things, re-evaluating the anthropocentrism of fashion.

FIG. 49 · NaNi's products for small dogs are handmade in Finland. The knitwear is hand-knitted from lambswool. The company's design philosophy is user-centric: all prototypes are tested by end users, i.e. dogs. Photo: Ilari Törönen.

Epilogue

This book has discussed the various ways in which Finnish contemporary fashion concretizes the broader revolutions taking place in the principles, agendas and objectives of fashion, and how fashion design uses theory and participates in theory formation. As the preceding chapters have shown, the field of fashion is today very extensive. On the one hand there is high fashion, which relies on handcrafting and a personal relationship between designer and user, and on the other, more anonymous mass production. In this text, we have especially focused on fashion as a critical thinking tool – a phenomenon that not only defines zeitgeist but that challenges us to re-evaluate the design process, the user and the overall perception of ourselves as people and our place in the world as part of the biosphere. Chapter 2 looked at fashion as an area of culture in which a garment becomes defined as an interface between the self and the world, and where meanings related to the body and identity are continuously altered, challenged and re-established.

Chapter 3 considered an aspect of fashion that is perhaps surprisingly left in the shadow of ready-to-wear clothing: the work of designers, which is at once bodily and intellectual. We wrote about how designers utilize their own and others' bodies in their design work and processes, while also carrying out background research that provides the grounds for these. The chapter challenged the reader to see fashion design as an arena for critical and creative thinking and a language for the creativity and study of fashion, which generates new forms, imagery, materials and ways of seeing. We examined fashion as a process that can optimally change our ways of thinking about clothes and their wearers. Fashion design is giving form to garments, ideas and bodies. In some cases the body may be imaginary and the fashion designer's work may involve building diverse bodies, being inspired by their own and others' bodies, whether human or non-human. Here, "body" may refer to individual bodies as well as all bodies collectively.[411]

In Chapter 4, we turned our focus to fashion and new media technologies. Technological breakthroughs in fashion have always come at times of radical change. Industrial manufacture was revolutionized by the advent of mechanical spinning and weaving techniques, making fabric production many times faster than when it was done by hand. The breakthrough of the sewing machine in the mid-1800s also significantly accelerated clothing production,[412] while in our contemporary world, similar revolutions have taken place via the development of digital design and production methods. The fashion researcher Elizabeth Wilson has aptly stated that fashion offers a vantage point into the industrial revolution and the consequent changes in attitudes.[413] One could also call fashion a vantage point into today's digital revolution and the attitude changes that are currently taking place.

In Chapter 5 we continued considering fashion and digitalization from the perspective of wearable technology. Wearable technology is a concrete example of how media technologies not only assist in the design of novel products but are also becoming permanently integrated into our bodies and daily lives, altering how we see garments, wearers and fashion in the first place. Wearable technology also modifies our conception of the body, fragmenting it in focusing its attention on specific body parts and/or bodily functions like breathing, heartbeat, sleep or alertness. We also considered, how wearable technology is striving to create more holistic experiences of well-being by promising that it can be used to improve users and their characteristics. Wearable technology can be seen in the light of the twentieth century's popular discourse on cyborgs: realizations of the hybridization of the human body and machines, which challenge the anthropocentric view of the world, making room for posthumanist critiques. The posthumanist cyborg body is characterized by the seamless fusion of the organic body and technology.[414]

In the final chapter of the book we turned our gaze to the conceptual and post-humanist turns taken by fashion, which are visible both in new ways of making and understanding garments and in how human boundaries are seen and tested. On the designers' side, there is a new ambition to approach fashion intellectually and conceptually instead of simply through clothes, which reveals a desire to link fashion more closely to the other arts; as well as an attempt to take part in the broader social and research discourses that underlie fashion and clothing. We provided an introduction to how fashion comprises constant negotiation on human boundaries. For a long time now, fashion has had many new opportunities beyond practical concretization in the form of garments – in fact, they are just one of the many manifestations of fashion. Therefore conceptualized fashion is an embodiment of the approach that is interested in challenging the dependency of fashion on clothing and bringing up the close relationship between fashion and the other arts. At the same time it entails considerations of the boundaries of humans and how we relate to the rest of the world and its creatures, as well as of the status of fashion as an opener and conductor of critical dialogue.

Throughout the book, we have attempted to shed light on the diverse relationships between the body and objects related to it, whether they be garments, installations, virtual clothes or wearable technology. Fashion, like the body, is a multidimensional entity and the designers and works selected for inclusion in this book are fine manifestations of this. Although the body is undoubtedly a live and concrete element for the fashion designer, at the same time it can be metaphorical and symbolic – just like the fashion

[411] E.g. Turner 1996.

[412] Gordon and Hill 2015: 35–39.

[413] Wilson 2003 [1985]: 60.

[414] Hayles 1999; See also Wegenstein 2006.

FIG. 50 · Outfits from Juslin/Maunula's Spring/Summer 2017 collection, as part of the *Pink Bubbles* installation/performance in May 2016. The designers filled the room with pink bubble wrap, held up in the air by pink balloons. The slow movement of the floating bubble wrap and the plastic curtains hiding the models contributed a dreamlike atmosphere. Photo: Juho Huttunen.

that relates to it. Our main aim in this book has been to prove the many ways in which contemporary fashion generates new ways of understanding humanity, the world, clothing and the concept of fashion itself. Often its aim is more to pose questions than to offer answers. A central object of analysis in contemporary fashion is the human in her many forms – her characteristics, bodies and boundaries. The body and embodiment have become major objects of research in today's critically attuned clothing, fashion and accessory design.

Through their work, designers are increasingly taking a stand on burning social issues. They are concerned for the environment and social inequality. A critical approach is natural: only then can fashion claim its place as a social converser and change driver. It is also the only way of proving the social relevance of fashion and standing out from a clothing industry that has no interest in addressing the social problems it creates. Critical fashion distinguishes itself from clothing production whose operating principles are dictated by commercial limitations and industrial production.

Fashion offers a vantage point for observing and commenting on broader social trends and seeing how they and the related discourse become concretized on the surface of the body, as well as in and outside it. The most pressing debate is currently related to the diversification of society, which is visible in fashion as an attempt to design for more diverse bodies and groups. It is also visible as critical discussions on how and why smart technologies are utilized as part of clothing and what consequences this may have on issues such as privacy. Fashion is at the forefront when it comes to testing and popularizing new ideas and views – not least because it comes so close to our most personal and intimate area: the body. At the same time, it alters and transforms our understanding of what actually is personal and intimate, or what data is private.

To conclude, by discussing the *intimatization of contemporary fashion*, we have striven to draw attention to the lines between private and public and between what is internal and external to the body, and how those lines are becoming increasingly porous. We have tried to describe the broader context of the intimatization of fashion: the social and cultural changes that (in the West) have taken place in the postwar period, i.e. from the individualization and sexual revolution of the 1960s to the digital revolution of the 2000s, and the place of fashion as a central arena for these changes. We have proved how the trend toward individualization and the relaxation of norms related to gender and sexuality, among others, have fundamentally broken down some of the body and gender norms that are woven into fashion. Simultaneously they have facilitated the growth of designers into central interpreters, challengers and commercializers of norms related to individuals and communities.

The megatrend of the twenty-first century, digitalization, has integrated technological applications into our bodies and garments, and radically changed the ways in which we experience embodiment and what is intimate, personal, individual or communal. It has also challenged our understanding of what it means to be an individual or a community member in a world in which everyone is related to everyone else through technological infrastructure. Finnish contemporary fashion is closely linked to social change, both locally and globally. As societies change, so does fashion.
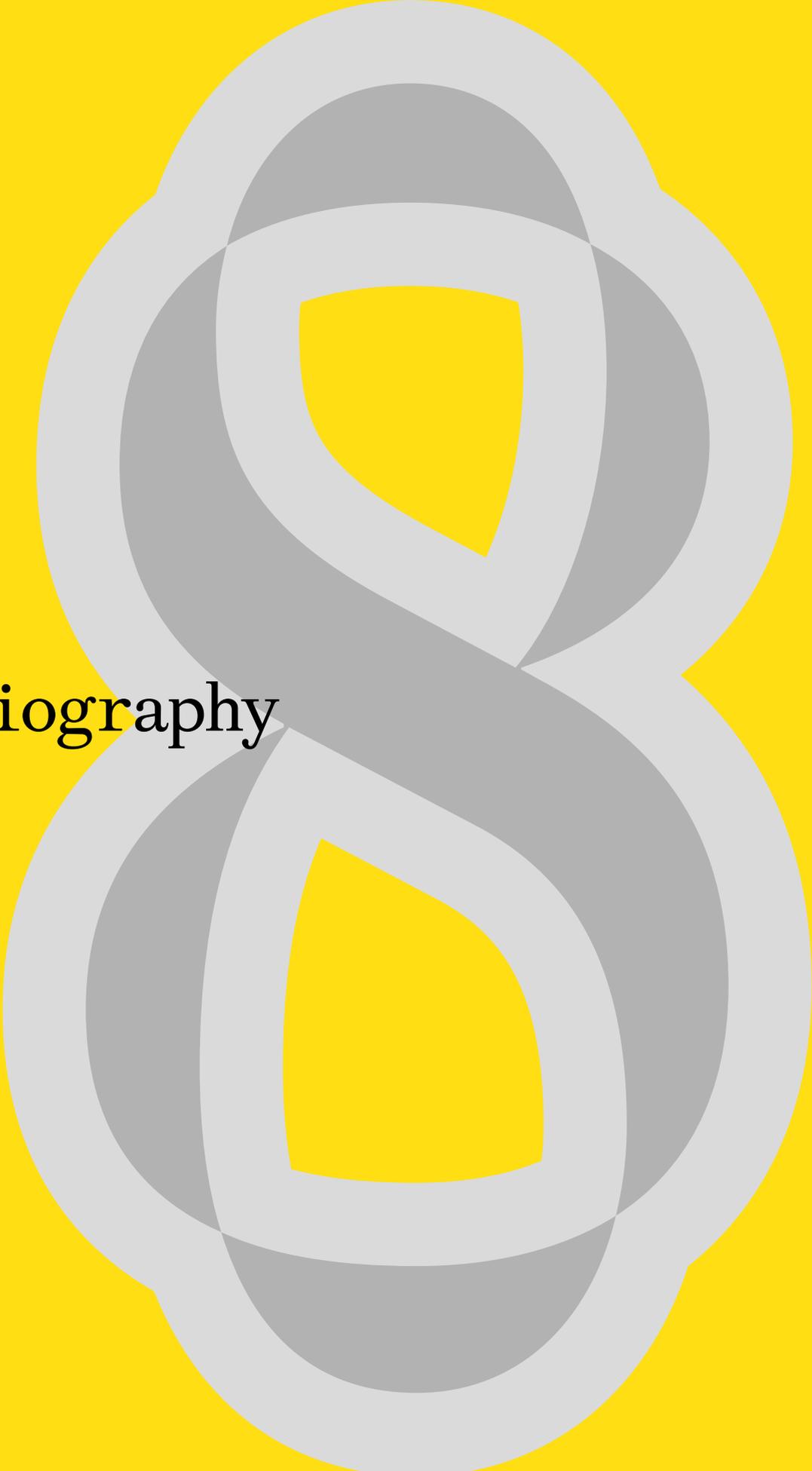
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Intimacy was the main exhibition at Design Museum Helsinki for the autumn of 2021. Its topic was the ways in which fashion was transforming due to the 2020s' new trends of politicization and digitalization. The exhibition showed ways in which fashion takes a stand and strives to change the world. It displayed fashion as an arena for creativity and critical thinking, in which the designer plays a key role. The exhibition explored the intimate relationship between clothing and the body through seven thematic areas. It presented products and works from forty fashion designers, artists and brands linked in some way to Finland.

EXHIBITION ARCHITECTURE Lauri Johansson   PHOTOGRAPHY Paavo Lehtonen

FIG. 51 · From left: Maria Korkeila/Fiskars, Wildkind Kids, Venla Elonsalo, Amina Saada, Rolf Ekroth.

FIG. 52 · Foreground: Autuas Ukkonen. Background: Henna Lampinen.

FIG. 53 · Front to back: Antonina Sedakova, LAURIJÄRVINENSTUDIO, Henna Lampinen, Maria Korkeila/Fiskars, Rolf Ekroth.
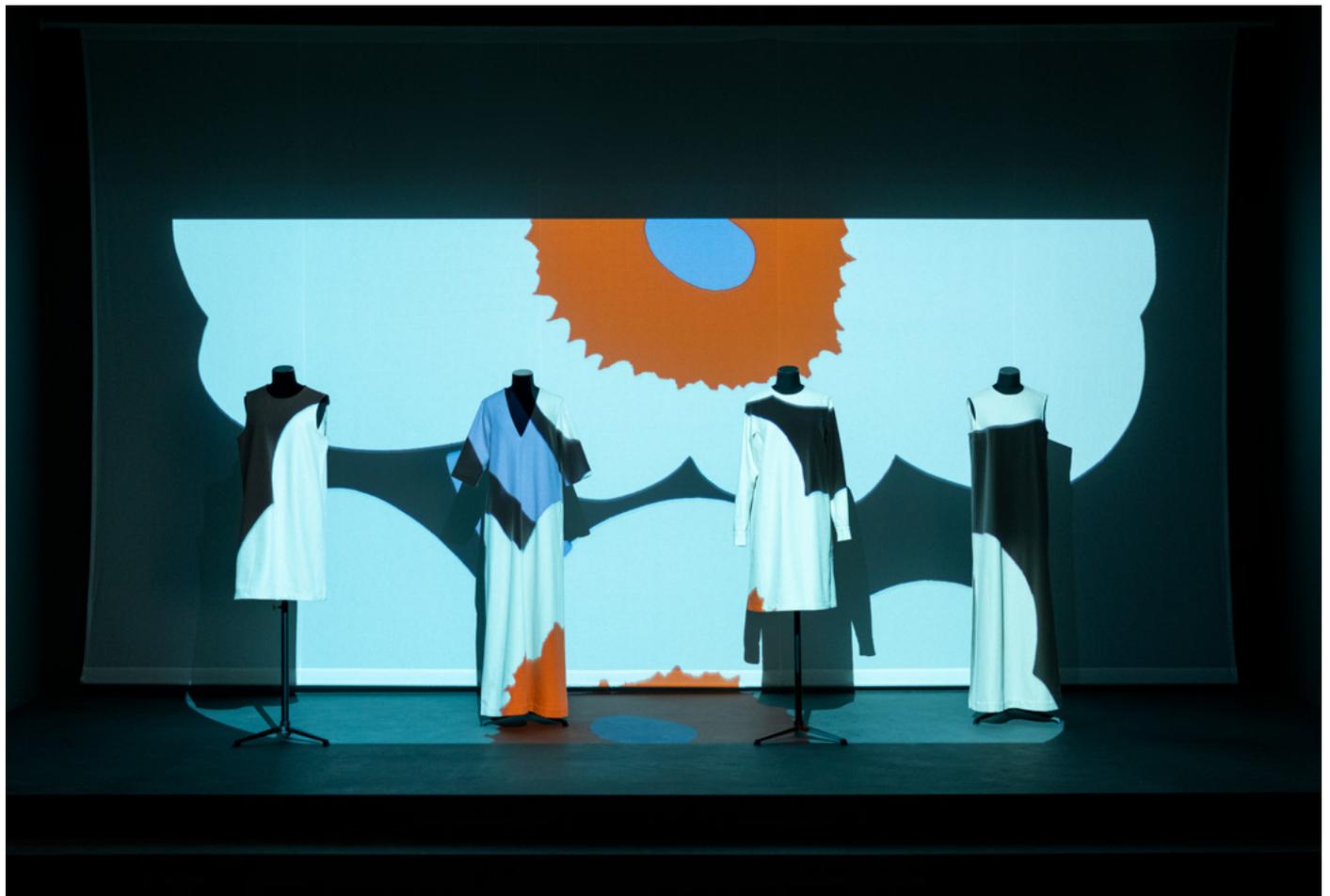
FIG. 54–55 · Marimekko.

FIG. 56 · Foreground: LAURIJARVINENSTUDIO. Background: Antonina Sedakova.

FIG. 57 · Front to back: Ville Pölhö, Ervin Latimer, Nomen Nescio, Rolf Ekroth, Maria Korkeila/ Fiskars, Henna Lampinen. On the wall: Picture from Ervin Latimer's collection by Hayley Lê.

FIG. 58 · From left: Teemu Muurimäki, Wildkind Kids, Venla Elonsalo.

FIG 59 · Vyner Articles.

FIG. 60 · DanieI PaIiIIo.

FIG. 61 · Henna Lampinen.

FIG. 62 · From left: Emilia Kuurila and Sofia Okkonen, Aapo Nikkanen.

A garment is not just a garment: it is a link between the self, our peers and our surrounding world,specific to a time and a place.

Intimacy is a book about contemporary Finnish fashion and international fashion studies. It considers the intimate relationship between the body and fashion from diverse perspectives: fashion as a tool for identity expression, the significance of the fashion designer's own bodily experiences in their work, and the contribution to fashion of wearable technology, which generates data on the wearer's bodily functions. This book is also about how fashion is always a product of its surrounding society and culture. Like our society, fashion is becoming mediatized, digitized and datafied, and the impact of social media is evident not only in fashion publicity but also in our use of fashion. In the new millennium, clothes can now be virtual. At the same time, our understanding of the wearers of fashion is shifting, as young designers challenge the strict body norms and the whiteness of the fashion world. Intimacy presents the processes involved in Finnish fashion designers' creative work, linking them to topical fashion studies discourse.