

# Materializing Memory in Art and Popular Culture

---

Edited by László Munteán,  
Liedeke Plate, and Anneke Smelik

First published 2017

ISBN: 978-1-138-20323-5 (hbk)

ISBN: 978-1-315-47217-1 (ebk)

## Chapter 5

---

### Memory and Materiality in Hussein Chalayan's Techno-Fashion

*Lianne Toussaint and Anneke Smelik*

(CC BY-NC-ND 3.0)

# 5 Memory and Materiality in Hussein Chalayan's Techno-Fashion

*Lianne Toussaint and Anneke Smelik*

... to put it more strongly, cloth *is* a kind of memory.

—Peter Stallybrass (1993, p. 38)

Textile memento moris are tactile.

—Anja Aronowsky Cronberg (2009, p. 9)

## A Technological Time Travel through Fashion History

During the 2006 Paris Fashion Week, the Turkish Cypriot artist and fashion designer Hussein Chalayan resurrected 'the ghost of fashion past' with a groundbreaking and now iconic series of self-transforming robotic dresses (Blanks, 2006, p. 160). The grand finale of the catwalk show consisted of five hand-constructed mechanical outfits, which took the audience on a time travel through a hundred and eleven years of fashion history. The collection, entitled 'One Hundred and Eleven', started with a full-length, high-necked Victorian gown that transformed from a calf-length 1910s dress into a beaded flapper dress from the 1920s. The following piece was a 1920s dress morphing into a 1930s and then a 1940s style silhouette. Then an hourglass dress reminiscent of Dior in the 1950s turned into a 1960s metallic sheath (Figure 5.1), and so on. As the show drew to a close, supermodel Leah De Wavrin entered the catwalk wearing a diaphanous dress that was slowly absorbed into a flying saucer of a hat. Paradoxically, Chalayan's technological trip down fashion memory lane ended with an *undressed* model.

Hussein Chalayan's time-traversing 'One Hundred and Eleven' collection is a trailblazing example of techno-fashion, also known as 'fashionable technology', 'wearable technology', or simply 'wearables', which consists of the integration of fashion and technology by embedding electronics, smart materials, microprocessors, solar cells, LED lights, and interactive interfaces into textiles or clothing (Quinn, 2002a, 2010; Seymour, 2009, 2010). We take this example as an illustrative case study to explore how the integration of technology reshapes processes of memory through fashion. It also serves to show how assemblages of



*Figure 5.1* Hussein Chalayan, Ready-to-Wear Women, One Hundred and Eleven Collection, Spring/Summer 2007. Courtesy of FirstVIEW.

technology and fashion help us to rethink the relation between sartorial memory and materiality.

Chalayan is a designer renowned for his ‘intellectual’ and conceptual approach to fashion and fashion shows (Anderson, 2000, pp. 229–230). The clothes that we discuss in this chapter are hence very much part of a system of haute couture and remain firmly within the field of art and performance, without ever making it to the world of mass consumption. Yet, it is in such thought-provoking ‘technological fantasies’ (Ryan, 2014, p. 156) that the relations between memory and materiality, fashion, and technology can be freshly addressed, raising, for example, new questions about the material agency of ‘things’. Moreover, we believe that techno-fashion such as Chalayan’s is at the vanguard of a new field in creative fashion design that will become more available and acceptable in the near future. The integration of fashion and technology will change the cultural value of fashion, especially in its transformative relation to the human body, identity, and memory (Smelik, forthcoming 2017).

Chalayan is a London-based fashion designer who works on the cutting edge between art, fashion, and technology. His work encompasses videos, art installations, and fashion designs, and makes extensive use of technologies ranging from memory wire and fiberglass to LEDs. He is also a politically engaged designer who combines modernist themes such as technological progress with reflections on migration, cultural identity, religion, social changes, and war (Evans et al., 2005; Violette, 2011).

With ‘One Hundred and Eleven’ Chalayan comments on time and history, creating an intricate game between past, present, and future (Golbin, 2011). Renowned fashion critic Sarah Mower described this collection as ‘fashion addressing the subject of fashion, a dissection of our contemporary habit of recycling “vintage,” and an embrace of high technology, all at the same time’ (Mower, 2006). Combining technological materials, including magnets, conductive wires, tiny circuit boards, and micro controllers with traditional textiles such as silk, Chalayan materially merges the old and the new in this collection. Of particular interest is the so-called shape memory material, which, as we will discuss, displays a specific kind of material agency by changing its shape from a temporarily deformed shape back to its programmed original shape (Cho, 2010, p. 189). For the purpose of this chapter, we foreground the particularly intricate relation between memory and the materiality of fibers, textiles, technologies, and clothes. We thus hope to reveal the dynamics of memory in and through the matter of fashion.

Wearables can function as body-mounted lifelogging gadgets, such as smart watches or the much-discussed Google Glass, or they may act as separate add-ons to fashion designs, such as the iPhone dress by Elie Tahari (Sumitra, 2014) or the Nokia skirt by designer Fyodor Golan (Skalnik, 2014), to give just a few recent examples. Whereas these instances of wearables remain firmly within the realm of mere gadgetry, Hussein Chalayan’s collection ‘One Hundred and Eleven’ is an altogether different example of working with memory technologies in fashion because it integrates, rather than just adds, the technology. By changing the shape of the six dresses through wearable technology, a cultural history of fashion emerges before the eyes of the spectator. It is in the material folds, patterns, textures, and outlines that a century-old history of fashion acquires shape. Referring to silhouettes from one hundred and eleven years of fashion history, the collection at the same time re-creates and redefines that past through innovative materials and futuristic technologies. ‘One Hundred and Eleven’ thus foregrounds, in a highly material way, a collective and cultural memory that recalls well-known fashion designs from earlier decades. The inherent materiality of the technology, the fiber, and the clothes interrelate in an assemblage ‘that reconfigures the authority of the past with that of the present’ (Miller, 2005, p. 12).

In this chapter, we explore how cultural memory—in this case, the recent history of Western fashion—is performed and mediated

by techno-fashion. Drawing on cultural studies and sociological and anthropological approaches, this chapter aims at unraveling the innovative connection between clothing, memory, and technology instigated by techno-fashion. We first focus on fashion's relation to time and history, then explore techno-fashion as a particular performance and technology of memory, and finish by discussing the particular force of technology's as well as fashion's materialism. We advance the concept of 'softness' as a material and aesthetic category at the intersection of technology, materiality, and memory.

### **Fashion Memory on the Move**

Many scholars have pointed to the particularly close, yet ambivalent, connection between dress, fashion, and memory. Ann Rosalind Jones and Peter Stallybrass have argued that clothing and textiles are by definition powerful memory systems because 'they are a form of material memory' (Jones and Stallybrass, 2000, p. 200). In addition, Stallybrass's seminal article 'Worn Worlds: Clothes, Mourning, and the Life of Things' (1993) has instigated studies of fashion that 'consider cloth as a type of memory "archive" in itself' (Hunt, 2014, p. 229). He reminds us that the wrinkles in clothes, for example in the elbow or in the crotch, are in fact called 'memory' in the 'technical jargon of sewing' (1993, p. 36). In other words, the technology of memory is deeply embedded in the technology of clothes. Fabrics and garments are perfect repositories for storing the wearer's experiences over time; as Prasad Boradkar poetically puts it, 'woven into the faded fabric and ripped seams are memories and stories' (Boradkar, 2010, p. 192). Clothes act as 'material remains', according to Carole Hunt (2014, p. 229); they are, Anja Aronowsky Cronberg writes, 'the material memories that ensure that the past is always carried with us into the future' (2009, p. 8; for another example of this approach, see Gibson, 2015).

Elizabeth Wilson claims that there is 'something eerie' about old clothes displayed in a museum or hanging in the closet of a deceased person because they 'are so much part of our living, moving selves' (Wilson, 2003, p. 1). Old clothes are a visual and material reminder of bygone styles and former fashions. At the same time, they betray a most intimate relation to the private body of the wearer because they materialize memories of the wearer's body—a lingering scent of perfume, creases, stains, and wear and tear. Clothes, Wilson writes, 'are congealed memories of the daily life of times past' (2003, p. 1). Even the mechanical dresses from Chalayan's 'One Hundred and Eleven Collection' that have exclusively been worn during the 2006 Paris Fashion Week, bear visual traces of their only wearer. While visiting the Boijmans Van Beuningen Museum depot in Rotterdam, where two of the designs now reside, we noted the material traces of that one-time event: the dresses showed discolored

spots from the models' perspiration as well as some creases and deformations. Chalayan's self-transforming creations thus echo Stallybrass's famous statement: 'Clothes receive the human imprint' (1993, p. 37).

Fashion has a privileged or perhaps, rather, a 'crumpled' relation to time and history, as Caroline Evans calls it (Evans, 2003, p. 22). The very definition of fashion is change and transformation: 'Fashion, in a sense *is* change', she writes (2003, p. 1). This idea of fashion as ephemeral and transitory came about at the end of the nineteenth century. In 1895, philosopher Georg Simmel referred to the inherent restlessness of fashion as follows: 'Fashion never is, but always becomes' (Simmel, 1895, p. 18). Walter Benjamin continued this line of thought in the 1930s, referring to modern fashion as satisfying the 'enigmatic need for sensation' and playing into the 'new velocities, which gave life an altered rhythm' (Benjamin, 1999, p. 65). Ulrich Lehmann argues accordingly that '*la mode*' is inextricably linked to the *modern* and *modernity* (Lehmann, 2000, p. 9). This may imply that fashion is always in the moment of the present, but Benjamin is the thinker who points out fashion's dialectical relation to time: the present always already contains the past. Fashion's relation to history is therefore 'particularly promiscuous', as Caroline Evans puts it, because of 'its brief life span and its incessant trawling through the old to refabricate the new' (Evans, 2003, p. 22).

Considering fashion's promiscuous browsing through history and dialectical relation to time, Chalayan's collection 'One Hundred and Eleven' falls into a familiar pattern of citing well-known designs and styles from earlier decades. Presenting a chronological succession of silhouettes from distant to recent past, and progressing from decade to decade, each outfit in the collection represents a new chapter in the history of Western fashion. This is reminiscent of Chalayan's earlier collection 'Medea' (S/S 2002), of which he said:

The garment is a ghost of all the multiple lives it may have had. Nothing is shiny and new; everything has a history. ... The design is a wish or a curse that casts the garment and its wearer into a time warp through historical periods, like a sudden tumble through the sediment of an archaeological dig.

(qtd. in Evans, 2003, p. 57)

Unlike Chalayan's earlier work, however, 'One Hundred and Eleven' goes beyond the static or successive representation of memory and time. It not only presents a memory of the past, but also enacts that memory by merging fashion with performance and technology. '[N]arrating several transformations within a single dress', Susan Elizabeth Ryan writes, the collection 'perform[s] changes in fashion occurring over the course of a century' (2014, p. 156). The collection's fashion show thus is

performative; it *performs* memory before the very eyes of the spectator. This means that the fashion designs are not only a memory trace or visual reminder of the past, but that the technological feat of morphing from past into present and future draws attention to memory as an act, a practice, or an event. Indeed, as Chalayan himself says in an interview, he was ‘looking at different shapes throughout the eras’ and wanted ‘to somehow demonstrate the change’ with this collection (Chalayan, 2006). This notion of metamorphosis, Judith Clark argues, is what makes Chalayan’s work so captivating, and suitable for a sequenced event like the catwalk show (Clark, 2011). In addition, Chalayan’s work imagines a future ‘matter-reality’ for fashion, in which technological and textile matter meet. ‘This way of thinking about fashion is still quite new to the fashion world’, Chalayan self-reflectively notes, ‘but it’s what is moving things forward’ (qtd. in Quinn, 2002b, p. 368).

The concept of transformation that lies behind ‘One Hundred and Eleven’ is reinforced by its remarkable soundtrack and decor. On the occasion of crystal company Swarovski’s hundred-and-eleventh anniversary, Chalayan turned the runway into a glimmering silver surface with a gigantic glass clock at the end (Figure 5.2). Symbolizing the ‘non-stop consumption of fast fashion, the cult of vintage and the feats of modern technology’, the clock’s time indicators light up as the pointer rhythmically rotates to the soundtrack (Doig, 2006). Having a nervous drum rhythm as its basis, the soundtrack combines unsettling audio fragments of jet engines, trench warfare, and aerial bombings (Golbin, 2011). Together with the metamorphosing dresses, these technological references to world history epitomize the ephemeral nature of fashion, as well as its ambiguous relation to time. As the clock of sartorial evolution ticks on, fashion moves in a perpetual cycle.

Liedeke Plate and Anneke Smelik argue that to think of memory as performance implies a ‘shift from memory as the trace of what once was to memory as the past’s present moment’ (Plate and Smelik, 2013, p. 6). Literally and gradually moving from one decade into the next, Chalayan’s collection historically morphs fashion’s past into something of the present. In the words of phenomenologist Maurice Merleau-Ponty: ‘At each successive instant of a movement, the preceding instant is not lost sight of. It is, as it were, dovetailed into the present’ (Merleau-Ponty, 2002, p. 162). Key to Chalayan’s performance of memory is the mechanical metamorphosis of the final five dresses. A complex system of microcontrollers, motors, battery packs, micro switches, and magnets allows these garments to move, twitch, unzip, contract, and transform of their own accord (Rob Edkins, qtd. in Ross, 2006). The shock of the new is thus not so much contained in the show’s retrospective chronology, but evoked by the technological transformation of the final six designs. The technology inside



Figure 5.2 Hussein Chalayan, Ready-to-Wear Women, One Hundred and Eleven Collection, Spring/Summer 2007. Courtesy of FirstVIEW.

the mechanical dresses is what truly caused the show ‘to astonish, provoke, and send a visceral sensation through its audience’ (Mower, 2006). The collection blurs the boundaries between fashion and technology in such a way that, as Ava Chin writes, ‘Indeed, technology *is* the fashion’ (Chin, 2010, p. 35). ‘Techno-fashion’, or the integration of fashion and technology, becomes the vehicle to collapse past, present, and future.

Important for our purpose here is that the notion of performance draws attention to agency and embodiment in relation to memory: memory is an act of recalling and remediating the past that bridges the gap to an imagined future. Hussein Chalayan’s fashion designs ‘do’ memory (Plate and Smelik, 2013, p. 4). To gain a better understanding of how and what the designs remember, we will now focus on the constitutive role of technologies and materiality in shaping memories.



## Soft Technologies of Memory

Chalayan's self-transforming garments are not just 'vessels of memory in which memory passively resides', but also 'objects through which memories are shared, produced, and given meaning' (Sturken, 1997, p. 9). Indeed, the high-tech dresses are the ultimate memory technologies because they perform and produce memory in a technological fashion. In other words, it is the technology itself that makes this peculiar (re-)collection possible.

As Plate and Smelik observe, 'both individual and cultural memory are more and more mediated by technology', which 'means that memories are not only collected and saved by media, but are also reproduced and represented by them' (Plate and Smelik, 2009, p. 6). We outsource huge amounts of data and information to numerous storage devices, caches, Internet archives and to 'the cloud'. In turn, countless technologies influence our individual as well as cultural memories (Neiger, Meyers, and Zandberg, 2011). Although human memory and technological memory have become inextricably intertwined, they are still distinctly different. Storage devices are wrongly assumed to accurately maintain their contents, whereas the human mind tends to select, revise, and forget (Van Dijck, 2007). Technological memory, Joanna Berzowska explains, 'acts more as a dumping group for data, as opposed to the rich, contextual space that makes up human memory' (2005b, p. 33). Technology does not forget things the way that human memory does, while memory cards, hard drives, or technological devices are unable to record the kind of embodied experiences that humans have (p. 33).

Chalayan's collection 'One Hundred and Eleven' involves cultural memory: through technology, it performs a limited selection of changing fashions, styles, and silhouettes that encompass a specific sociocultural and historical framework. Chalayan's designs can thus be understood as a conjunction of technology and culture in the way they shape memories. As such, the collection brings embodied, technological, and cultural manifestations of memory together. The five transforming dresses he designed to animate the changing shapes of fashion, however, also point to the pivotal aspect of materiality. That the history of fashion is acted out, indeed 'performed' through a combination of technology and fashion, was unconventional and innovative at the time (Clark, 2011, pp. 126–127). The physical carriers of technologically mediated memories are usually hardware, such as computers and laptops, digital cameras, hard drives, and smartphones. In contrast, what sets Chalayan's mechanical outfits apart from other technologies of memory is the fact that they fuse hard, technological materials with soft, textile materials. The combination of materials he used for 'One Hundred and Eleven' paves the way for softer, more wearable, memory technologies. Although the conceptual and philosophical nature of his catwalk shows may all too easily obscure

the physicality and ‘haptic element’ of Chalayan’s clothes, Caroline Evans points out, his designs are in fact compellingly wearable (2005, pp. 9–10).

Aside from circuit boards, wires, metallic sheets, magnets, and micro motors, the mechanical dresses are made of soft materials such as silk (H+F Collection). Here we want to draw attention to softness as both a material and aesthetic category. In order to create the self-transforming effects of the dresses, different kinds of hardware were carefully worked into softer components. Several ‘bum pads’ and wads of stuffing contain the tiny motors (of about a third of the size of a pencil and 9 millimeters in diameter) used to transform the dresses, as well as the batteries and circuitry required to control them. The cables connecting the micro motors to the wires in the outer layer of the garments are held in hollow tubes sewn into corsets (Edkins, qtd. in Ross, 2006). Chalayan’s mechanical dresses thus bring together the soft and flexible materials of fashion with the hard and rigid components of common memory technologies such as hard disks, photo cameras, or smartphones. Successfully merging the two fields, the designs are predicated on what Berzowska has termed ‘soft computation’: digital and electronic technology that is composed of soft materials (such as textiles and yarns) and based on traditional textile construction methods (such as sewing and knitting) (Berzowska, 2005a; 2006). By encasing most of the technological components in relatively comfortable and soft materials and fabrics, Chalayan managed to fine-tune the challenge of mechanizing fabric and applying an engineering idea to something soft (Huckbody, 2014). The hardware animating Chalayan’s trip down fashion memory lane is still present underneath and inside the fabrics, but in its encounter with fashion it is turned into something that both looks and feels softer and hence more wearable than other kinds of memory technology.

Chalayan’s creation addresses but also reaffirms one of the main concerns of wearables today, which too often remain in the realm of gimmicks or gadgets while not offering anything beyond their technological function (Smelik, Toussaint, and van Dongen, 2016). When functionality is merely added to the textile, it may create ‘smart textiles’ or ‘smart clothes’, but issues of body, identity, and memory of the wearer are frequently overlooked. A design that is merely functional will simply not be worn if it is not also aesthetically pleasing, physically and socially comfortable, and fits with one’s lifestyle (Dunne et al., 2014; Dunne, Profita, and Zeagler, 2014). This hampers the social and cultural acceptance of wearables and, hence, hinders them from finally conquering the streets. To be sure, this is also the case with Chalayan’s designs for ‘One Hundred and Eleven’, which were presented on a catwalk show and survived only as museum pieces—significantly with failing technological functions due to corrosion and damage. Having ‘nothing to do with function’, his work primarily ‘gives us a perspective on how [wearable

technology] can evolve as dress' (Ryan, 2014, p. 156). In our view, the perception and relevance of wearable technology for potential future users can only be advanced when new meanings and values are created through interactions with the design. Although Chalayan's futuristic designs are not exactly ready-to-wear, they do represent a serious attempt to invest cultural memory with new meanings and values by adding technological and material agency to fashion.

### **Making Memory Matter**

Daniel Miller has argued that openness to the materiality of fiber and cloth helps to understand the social domain, unraveling 'the warp of materiality and the weft of society', as he wittily puts it (2005, p. 17). Such attention to materiality reveals the connections between technology, innovation, and the end products—the garments (p. 6). For a focus on the agency of techno-fashion, we turn to the concept of materiality as it is theorized in what is known as 'new materialism' (Coole and Frost, 2010; Barrett and Bolt, 2013), 'renewed materialism' (Rocamora and Smelik, 2016, p. 14), or the many other terms that are currently available (for a fuller account of new materialism, we refer to the introduction of the present volume). From a new materialist perspective, matter cannot be thought of as merely passive and futile stuff on which humans act but should be considered as an active and meaningful actor in the world (Barrett and Bolt, 2012; Ingold, 2012). Taking this advice seriously, we look again at the technologies used by Chalayan in 'One Hundred and Eleven'. Usually, garments move along with the movements of the wearer's body, but here the wearable technologies enable the garments to move autonomously, irrespective or even in spite of the wearer. As Judith Clark describes it, Chalayan manages to give clothes 'a life of their own, their own trajectory' (2011, p. 127). The technologies embedded in the mechanical dresses display a specific and nonhuman kind of agency: they seemingly 'act' and remember by themselves.

The term 'agency' has different meanings in different contexts, yet we adopt Andrew Pickering's definition of agency as something that has to do with 'actions, human and non-human, in the material world and the interplay of those' (2010, p. 195). Transposed to fashion, agency pertains to quite different 'things': to the designer, the body of the wearer, the garment, but also to the materials such as fiber, fabric, and the hard and soft technological artefacts embedded in them. Kaori O'Connor aptly remarks: 'Man-made fibres are not inert, they have been created to *do*' (O'Connor, 2005, p. 53, emphasis in original). In the case of 'One Hundred and Eleven', the notion of agency highlights the fact that the technologies establish *interaction* between the garments and the body, between human and nonhuman entities. Material agency, in other

words, is not located exclusively in the technology, but in ‘the assembly’ of wearer, fashion, and technology (Verbeek, 2011, p. 64).

The fact that technologies are worn on and by the body increases the urgency not just to acknowledge technological agency, but also to take into account the body’s materiality. As Joanne Entwistle and Elizabeth Wilson argue, the body is not so much a submissive object to be draped in accordance with the whims of today’s fashion, but dressing is rather an active embodied practice (Entwistle and Wilson, 2003). This is particularly relevant for techno-fashion because it brings technology closer to the body. Fashion is by itself a bodily practice, which is further enhanced by the embedded technology in Chalayan’s designs. His application of technology to fashion is innovative in presenting memory, technological materials, and style as being closely connected to, and even literally worn by, the body. Causing garments to act, move, and metamorphose while worn by the wearer, the integrated technologies push the boundaries between body and technology. According to Fortunati, Katz, and Riccini, ‘the body continually abolishes the border between nature and technology by converting one into the other’ (2008, p. 216). It follows that the memories expressed by Chalayan’s mechanical dresses point to embodied memory; they bring memory and body closer together. The garment becomes a kind of interface, a platform where technological, embodied, and cultural dimensions of memory perform and interact (Seymour, 2008).

The material world, Tim Ingold reminds us, is not so much made up of objects but of ‘things’—a thing being ‘a certain gathering together of the threads of life’ (2010, p. 4). Interestingly, Ingold uses metaphors taken from the world of cloth and textiles, like ‘threads’ (p. 4), ‘woven fabric’, and ‘the tracery of lace’ (p. 12), in order to argue that ‘things’ are made up of ‘knots’ and ‘entwinements’ (p. 4). Ingold understands agency not as an act that is performed by an object (which would amount to an anthropomorphic view) but rather as an emergent flow that is inherent in the open-ended process of becoming that is ‘a thing’. This dynamic view of the material world may help us to understand Chalayan’s designs in ‘One Hundred and Eleven’ as unfinished products that illustrate the ‘entanglement of things’ (Ingold, 2010, p. 3). In changing shape continuously, the designs are never settled in one particular form but are always in the process of becoming in a Deleuzian sense (Smelik, 2016). By adhering to Ingold’s call to follow ‘flows of materials’ (2010, p. 4), we can see how Chalayan’s designs create alliances and encounters between fibers, fabric, and bodies; between garment and technology; and between between memory and materiality.

In the case of Chalayan’s self-transforming designs, one material plays a special role in shaping and reshaping the collection’s material flows of memory, the so-called shape memory material. Shape memory materials are materials that can change from a temporarily deformed shape

back into their original form due to external stimuli, mostly changes in temperature (Mattila, 2006, p. 85; Cho, 2010, p. 189). When heated above a certain transition temperature, shape memory material can be programmed to ‘remember’ its precise previous shape, and will consequently transform the shape of the garments without intervention of the wearer. Once the memory shape has been set during the high temperature phase, shape memory material will always and repeatedly return to that shape. No matter how deformed it becomes; as soon as the material is heated it will pop back into its original form. Always returning to their original form, shape memory materials thus literally and actively turn the future into ‘a thing’ of the past and vice versa.

Carole Hunt suggests that the ‘receptive surface of cloth makes it susceptible to deliberate inscription’, to ‘hold and trap information’ (Hunt, 2014, p. 216). As shape memory materials can be programmed to record and remember a particular shape from the past, they are a perfect example of inscribing a ‘thingly’, nonhuman memory into fashion. This technology not only foregrounds the materiality of the garments and of the human body, but it also materializes memory as a process, an act of doing. Chalayan’s dresses show how agency, as well as cultural memory, can be performed by technology in such a way that they can no longer be understood as a strictly human property. His designs have been programmed to ‘remember’ and ‘reenact’ particular shapes from fashion’s past and hence represent an ‘agentic’ yet nonhuman type of memory (Knappet and Malafouris, 2008). Allowing for a novel and less anthropocentric understanding of memory, the dresses highlight that ‘new technological products provide us with fresh metaphorical perspectives on memory’ (Jones, 2007, p. 43). ‘One Hundred and Eleven’ emphasizes the material, embodied, and self-transforming dimensions of cultural memory. It ultimately shows that, and how, objects can have memory (Berzowska, 2006, p. 452), revealing the dynamics of memory *in and through matter*.

So far we have explored how Chalayan’s collection materializes cultural memory in focusing on how the technology and new materials enable the designs to change shape and dynamically visualize the history of Western fashion. Yet there is another side to the issue of memory and materiality. Peter Stallybrass revealed the two contradictory aspects of the materiality of cloth: ‘its ability to be permeated and transformed by maker and wearer alike; and its ability to endure over time’ (1993, p. 38). In the case of Chalayan’s dresses, something different happens in relation to its temporality, which lies in its specific use of technology. Here we want to return to the notion of clothes as the ‘congealed memories of the daily life of times past’ (Wilson, 2003, p. 1).

As mentioned at the beginning of this chapter, the mechanical dresses were worn during a one-time catwalk show only. Coming back to the two dresses we studied at the Boijmans Van Beuningen museum depot,

we recall how these garments act as a textile reminder of the wearer's bodily presence. 'The magic of cloth', Stallybrass poetically writes, 'is that it receives us: receives our smell, our sweat, our shape even' (1993, p. 36). Indeed, in the museum depot we witnessed the perspiration spots, folds and creases embedded in Chalayan's once-worn designs. In addition to these material traces of wear, the materialized memory of these dresses also has its technological side, which in this particular case is revealed by its *failure*: damaged by corrosion, moisture, and use, the embedded technologies are no longer operable. These kinds of material memories show how, in the words of Tim Ingold, 'Materials are not in time; they are the stuff of time itself' (2012, p. 439). The passing of time shows the wear and tear, and results in the failure of once-innovative but now-obsolete technology.

## Conclusion

A perspective on the materiality of Chalayan's series of transforming outfits shows the possibilities of technology for fashion design. More importantly in the context of our study of cultural memory in fashion, the designs reveal the capacity to represent the dynamics of memory in and through matter: memory is encased in the very materiality of the garments. Another inspiring element of these technological fashion designs is their close connection to the human body; cultural memory and technology are literally worn by and on the body. Chalayan's designs thus ultimately reveal that technologies may amplify fashion's role as a vehicle of cultural, personal, and material memories (Berzowska, 2005b).

An analysis of Chalayan's mechanical dresses reveals that technologies may invade, yet also instigate and innovate, processes of memory through fashion. First, Chalayan's time-traversing 'robo dresses' resurrect the ghost of fashion's past through the use of advanced technologies and smart materials. The high-tech garments perform, embody, and generate the dynamics and transformations of one hundred and eleven years of fashion history as they literally move from one decade into the next. They therefore operate as the ultimate 'technologies of memory'. Moreover, 'One Hundred and Eleven' represents the ephemerality of modern fashion, and its complex relation to cultural memory.

Second, the way in which Chalayan combines the traditionally hard materials of technology with the softer structures common in fashion paves the way for the development of softer, even wearable, memory devices in the future. Encasing the hard materials of technology in fabrics, pads, pockets, and tubes, Chalayan took the first steps toward developing 'softwear', as opposed to hardware, memories. Softness is thus both a material and an aesthetic category that is fully played out at the intersection of technology, materiality, and memory in 'One Hundred and Eleven'.

Finally, approaching Chalayan's mechanical dresses from a new materialist perspective, we have argued that the combination of fashion and technology highlights the agency of matter. Techno-fashion offers a brand-new repository for memories and thereby allows for unprecedented forms and ways of understanding memory. Finally, our sustained focus on the 'matter' of fashion, technology, memory, and the body shows that Chalayan's collection 'One Hundred and Eleven' is a convincing and tangible proof of 'the force of materiality' at work in recording, shaping, and reshaping memories (Coole and Frost, 2010). As Chalayan's self-transforming garments are still neither robust nor wearable, they reaffirm the pivotal role—and failure—of materials in designing techno-fashion. Analyzing Chalayan's self-transforming designs within the context of memory studies helps us to rethink as well as imagine memory matters in techno-fashion.

## Note

An earlier and shorter version of this chapter will be published as L. Toussaint and A. Smelik, 'From Hardware to "Softwear": The Future Memories of Techno-Fashion' in D. Jaffé and S. Wilson (eds) *Memories of the Future* (Bern: Peter Lang, forthcoming).

## References

- Anderson, F. (2000) 'Exhibition Review: Hussein Chalayan', *Fashion Theory* 4.2: 229–234.
- Aronowsky Cronberg, A. (2009) 'Editor's letter', *Vestoj: The Journal of Sartorial Matters* 1, Special issue on 'Material Memories': 8–9.
- Barrett, E., and B. Bolt (eds) (2013) *Carnal Knowledge: Towards a 'New Materialism' through the Arts* (London: I.B. Tauris).
- Benjamin, W. (1999) 'B. Fashion' in *The Arcades Project* (Cambridge, MA: Harvard University Press). 62–81.
- Berzowska, J. (2005a) 'Electronic Textiles: Wearable Computers, Reactive Fashion, and Soft Computation', *Textile: The Journal of Cloth and Culture* 3.1: 58–75.
- Berzowska, J. (2005b) 'Memory Rich Clothing: Second Skins that Communicate Physical Memory', Proceedings of the 5th Creativity and Cognition Conference (London: Goldsmiths College, University of London, 12–15 April): 32–40.
- Berzowska, J. (2006) 'Personal Technologies: Memory and Intimacy through Physical Computing', *AI and Society* 20.4: 446–461.
- Blanks, T. (2006) 'Hussein Chalayan Resurrects the Ghost of Fashion Past with Revolutionary Morphing Robo-dresses' in Sally Singer (ed) *Vogue, The Transformer: View* 196.12: 160.
- Boradkar, P. (2010) *Designing Things: A Critical Introduction to the Culture of Objects* (Oxford: Berg).
- Chalayan, H. (2006) [video interview on 'One Hundred and Eleven'] (Paris: Cosmicsdiscomix) <https://www.youtube.com/watch?v=uTFI0rNNQrY> (Accessed on 7 May 2015).

- Chin, A. (2010) 'Technology Shapes Fashion' in R. Scapp and B. Seitz (eds) *Fashion Statements: On Style, Appearance and Reality* (New York: Palgrave Macmillan).
- Cho, C. G. (2010) 'Shape Memory Materials' in G. Cho (ed.) *Smart Clothing: Technology and Applications* (Boca Raton, FL: CRC Press). 189–227.
- Clark, J. (2011) 'Metamorphosis' in R. Violette (ed.) *Hussein Chalayan* (New York: Rizzoli). 125–126.
- Coole, D., and S. Frost (eds) (2010) *New Materialisms: Ontology, Agency, and Politics* (Durham, NC: Duke University Press).
- Doig, S. (4 October 2006) 'Hussein Chalayan', *Vogue UK* [www.vogue.co.uk/fashion/spring-summer-2007/ready-to-wear/hussein-chalayan](http://www.vogue.co.uk/fashion/spring-summer-2007/ready-to-wear/hussein-chalayan) (Accessed on 11 February 2016).
- Dunne, L. E., H. Profita, C. Zeagler, J. Clawson, S. Gilliland, E. Yi Luen Do, and J. Budd (2014) 'The Social Comfort of Wearable Technology and Gestural Interaction', *2014 36th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBC 2014*, Institute of Electrical and Electronics Engineers Inc. 4159–4162.
- Dunne, L. E., H. Profita, and C. Zeagler (2014) 'Social Aspect of Wearability and Interaction' in E. Sazonov and M. R. Neuman, (eds) *Wearable Sensors: Fundamentals, Implementation and Application* (New York: Academic Press). 25–44.
- Entwistle, J., and E. Wilson (eds) (2003) *Body Dressing* (Oxford: Berg).
- Evans, C. (2003) *Fashion at the Edge: Spectacle, Modernity and Deathliness* (London: Yale University Press).
- Evans, C. (2005) 'No Man's Land' in C. Evans, S. Menkes, T. Polhemus, and B. Quinn (eds) *Hussein Chalayan* (Rotterdam: NAI Publishers). 8–15.
- Evans, C., S. Menkes, T. Polhemus, and B. Quinn (eds) (2005) *Hussein Chalayan* (Rotterdam: NAI Publishers).
- Fortunati, L., J. E. Katz, and R. Riccini (eds) (2008) *Mediating the Human Body: Technology, Communication, and Fashion* (Mahwah, NJ: Lawrence Erlbaum).
- Gibson, R. (2015) *The Memory of Clothes* (Rotterdam: Sense Publishers).
- Golbin, P. (2011) 'One Hundred and Eleven' in R. Violette (ed) *Hussein Chalayan* (New York: Rizzoli). 132.
- H+F Collection, '111, Mechanical Dress 5' and '111, Mechanical Dress 2', Han Nefkens Foundation [www.hfcollection.org/hussein-chalayan](http://www.hfcollection.org/hussein-chalayan) (Accessed on 11 February 2016).
- Huckbody, J. (28 February 2014) 'Hussein Chalayan, the Designer's Designer', *iD Magazine, Interviews* [https://i-d.vice.com/en\\_gb/article/hussein-chalayan-the-designers-designer](https://i-d.vice.com/en_gb/article/hussein-chalayan-the-designers-designer) (Accessed on 11 February 2016).
- Hunt, C. (2014) 'Worn Clothes and Textiles as Archives of Memory', *Critical Studies in Fashion and Beauty* 5.2: 207–232.
- Ingold, T. (2010) 'Bringing Things to Life: Creative Entanglements in a World of Materials', ESRC National Centre for Research Methods, Realities Working Paper #15, 5.10: 1–15.
- Ingold, T. (2012) 'Toward an Ecology of Materials', *Annual Review of Anthropology* 41: 427–442.
- Jones, A. (2007) *Memory and Material Culture* (Cambridge: Cambridge University Press).



- Jones, A. R., and P. Stallybrass (2000) *Renaissance Clothing and the Materials of Memory* (Cambridge: Cambridge University Press).
- Knappett, C., and L. Malafouris (eds) (2008) *Material Agency: Towards a Non-Anthropocentric Approach* (New York: Springer).
- Lehmann, U. (2000) *Tigersprung: Fashion in Modernity* (Cambridge, MA: The MIT Press).
- Mattila, H. (2006) *Intelligent Textiles and Clothing* (Boca Raton, FL: CRC Press).
- Merleau-Ponty, M. (2002) *Phenomenology of Perception* (Trans. C. Smith) (London and New York: Routledge).
- Miller, D. (2005) 'Introduction' in S. Küchler and D. Miller (eds) *Clothing as Material Culture* (Oxford: Berg). 1–19.
- Mower, S. (4 October 2006) 'Chalayan, Spring 2007 Ready-to-Wear', *Style.com* [www.style.com/fashion-shows/spring-2007-ready-to-wear/chalayan](http://www.style.com/fashion-shows/spring-2007-ready-to-wear/chalayan) (Accessed on 11 February 2016).
- Neiger, M., O. Meyers, and E. Zandberg (eds) (2011) *On Media Memory: Collective Memory in a New Media Age* (Basingstoke, UK: Palgrave Macmillan).
- O'Connor, K. (2005) 'The Other Half: The Material Culture of New Fibres' in S. Küchler and D. Miller (eds) (2005) *Clothing as Material Culture* (Oxford and New York: Berg). 41–59.
- Pickering, A. (2010) 'Material Culture and the Dance of Agency' in D. Hicks and M.C. Beaudry (eds) *The Oxford Handbook of Material Culture Studies* (Oxford: Oxford University Press). 191–208.
- Plate, L., and A. Smelik (eds) (2009) *Technologies of Memory in the Arts* (Basingstoke, UK: Palgrave Macmillan).
- Plate, L., and A. Smelik (eds) (2013) *Performing Memory in Art and Popular Culture* (London and New York: Routledge).
- Quinn, B. (2002a) *Techno-fashion* (Oxford: Berg).
- Quinn, B. (2002b) 'A Note: Hussein Chalayan, Fashion, and Technology', *Fashion Theory* 6.4: 359–368.
- Quinn, B. (2010) *Textile Futures: Fashion, Design and Technology* (Oxford: Berg).
- Rocamora, A., and A. Smelik (2016) 'Introduction' in A. Rocamora and A. Smelik (eds) *Thinking Through Fashion: A Guide to Key Theorists* (London: I.B. Tauris). 1–27.
- Ross, R. (20 October 2006) 'Transforming Clothes: Computerized Motors Pulled the Strings at a Recent Paris Fashion Show, Dramatically Altering Dresses on the Runway', *Technology Review, Computing News* [www.technologyreview.com/news/406705/transforming-clothes/](http://www.technologyreview.com/news/406705/transforming-clothes/) (Accessed on 11 February 2016).
- Ryan, S. E. (2014) *Garments of Paradise: Wearable Discourse in the Digital Age* (Cambridge, MA: The MIT Press).
- Seymour, S. (2008) 'The Garment as Interface' in J. Lumsden (ed.) *Handbook of Research on User Interface Design and Evaluation for Mobile Technology* (London: Information Science Reference). 176–186.
- Seymour, S. (2009) *Fashionable Technology: The Intersection of Design, Fashion, Science and Technology* (Vienna: Springer).
- Seymour, S. (2010) *Functional Aesthetics: Visions in Fashionable Technology* (Vienna: Springer).

- Simmel, G. (1895) 'Zur Psychologie der Mode: Sociologische Studie' [www.modetheorie.de/Simmel-Georg.861.0.html](http://www.modetheorie.de/Simmel-Georg.861.0.html) (Accessed on 20 June 2015).
- Skalnik, J. (14 February 2014) 'The Latest in Wearable Technology: A Skirt Made of Nokia Lumia 1520s' [www.eyemobility.com/2014/latest-wearable-technology-skirt-made-nokia-lumia-1520s](http://www.eyemobility.com/2014/latest-wearable-technology-skirt-made-nokia-lumia-1520s) (Accessed on 11 February 2016).
- Smelik, A. (2016) 'Gilles Deleuze: Bodies-without Organs in the Folds of Fashion' in A. Rocamora and A. Smelik (eds) *Thinking Through Fashion. A Guide to Key Theorists* (London: I.B. Tauris). 165–183.
- Smelik, A. (2017) 'Cybercouture: The Fashionable Technology of Pauline van Dongen, Iris van Herpen and Bart Hess' in A. Smelik (ed) *From Delft Blue to Denim Blue. Contemporary Dutch Fashion* (London: I.B. Tauris). 252–269.
- Smelik, A., L. Toussaint, and P. van Dongen (2016) 'Solar Fashion: An Embodied Approach to Wearable Technology', *International Journal of Fashion Studies* 3.2 (Autumn). 287–303.
- Stallybrass, P. (1993) 'Worn Worlds: Clothes, Mourning, and the Life of Things', *The Yale Review* 81.2: 35–50.
- Sturken, M. (1997) *Tangled Memories: The Vietnam War, the AIDS Epidemic, and the Politics of Remembering* (Berkeley: University of California Press).
- Sumitra (2014) 'Apple Fans Rejoice—iPhone Dress Now Lets You Wear Your Favorite Smartphone', *Oddity Central: Collecting Oddities* (24 September) [www.odditycentral.com/news/apple-fans-rejoice-iphone-dress-now-lets-you-wear-your-favorite-smartphone.html](http://www.odditycentral.com/news/apple-fans-rejoice-iphone-dress-now-lets-you-wear-your-favorite-smartphone.html) (Accessed on 11 February 2016).
- Van Dijck, J. (2007) *Mediated Memories in the Digital Age* (Stanford, CA: Stanford University Press).
- Verbeek, P. P. (2011) *Moralizing Technology: Understanding and Designing the Morality of Things* (Chicago: The University of Chicago Press).
- Violette, R. (ed) (2011) *Hussein Chalayan* (New York: Rizzoli).
- Wilson, E. (2003) *Adorned in Dreams: Fashion and Modernity* (London: I. B. Tauris).