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Functional Aesthetics

Visions in Fashionable Technology

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Contents

QR code tags are everywhere. On my last visit to Tokyo, it was apparent that QR codes are ubiquitous. They merge physical space with the virtual space of the Internet by instantly retrieving a website.

To find out more about the project, scan the QR code using an appropriate reader on your mobile phone.

Preface

Fashionable technology calls for visions that spring forth from progressive thinking and contextualized experiences. This book captures the inspiring breadth of topics engaged in the process of crafting fashionable technology as a creative practice, an industry, and a valid research area. The year 2010 appears to be the juncture when fashionable technology is elevated from the phase of experimentation. Currently, it is experiencing a boost from the fashion world's interest to be part of an exciting and exploratory field that bares many possibilities for creative investigation. Additionally, significant advances in technology and material science afford the creation of fashionable wearables that work in their proposed context of use and balance aesthetics and function.

The selected projects show the importance of interdisciplinary synergies, whether they are based in art or design, are commercial products, or seem to be explorations into wonder worlds. But at their core, they are professional, functional, aesthetically pleasing, and convey a story. The comprehensive encyclopedia of projects and lists of materials, publications, blogs and websites, institutions, and events in my previous book are extended with a supplementary bibliography, kits and DIY resources, and inspirations accumulated from the contributors.

This book is an attempt to solicit a collection of inspiring projects and resources, and stimulate a critical discourse.

Garment Graffiti by Thomas Voorn

Theoretical Discussion

Functional aesthetics

"Fashionable technology refers to the intersection of design, fashion, science, and technology."[1]

Functional aesthetics describes the concept of merging a fashionable technology object deemed aesthetically pleasant with technically enhanced functionalities.

"Fashionable wearables are 'designed' garments, accessories, or jewelry that combine aesthetics and style with functional technology."[2]

A synergy between the fields of fashion, design, science, and technology will create a future already envisioned in movies and science fiction stories, one that is rapidly becoming reality. The potential for collaboration between the worlds of fashion and technology has been omnipresent since the initial explorations of Hussein Chalayan ten years ago, notably the Remote Control Dress from 2000, and expanded into scientific experiments with the spray-on fabric Fabrican by trained fashion designer Manel Torres. The excursions into technology by another fashion designer, Gareth Pugh for a HSBC's advert from 2008, revealed the potential for further advances.

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1 Seymour (2008a:12)

2 Seymour (2008a:12)

It is important to recognize the value of the word 'fashion', pointing out that aesthetics and style have been an obvious tool for the communication of values, culture, status, and mood individually over time. "Garments are the immediate interface to the environment and thus are constant transmitters and receivers of emotion, experiences, and meaning."[3] The issue of beauty, style, and aesthetics is important for the acceptance and commercial success of fashionable wearables. Regardless of the tremendous communication aspects of fashion, it has rarely enjoyed a very good reputation in the past. "Despite its undeniable success as a social and commercial phenomenon, it remains the very exemplum of superficiality, frivolity and vanity."[4]

The success of fashionable wearables relies on professional execution, from design to manufacturing to diffusion. Technically enhanced pants cannot be taken off on the street to be rebooted. Fashionable wearables have to work. The wearer simply does not expect it to fail. The technical integration needs to be seamless and invisible for the wearer. However, the inherently human desire to control and fear of abuse need to be revisited in this process, providing the ability for the user to consciously turn it off. Technology and scientific advances modify or enhance functions like heat regulation, impact protection, communication, antimicrobials, fire protection, etc. Technology is adding another layer of functionality to the garment, informed by craftsmanship and the exploration of novel materials. Thus, a closer collaboration with materials companies is necessary to enable the dissemination of know-how and to create stylish and functional fashionable wearables.

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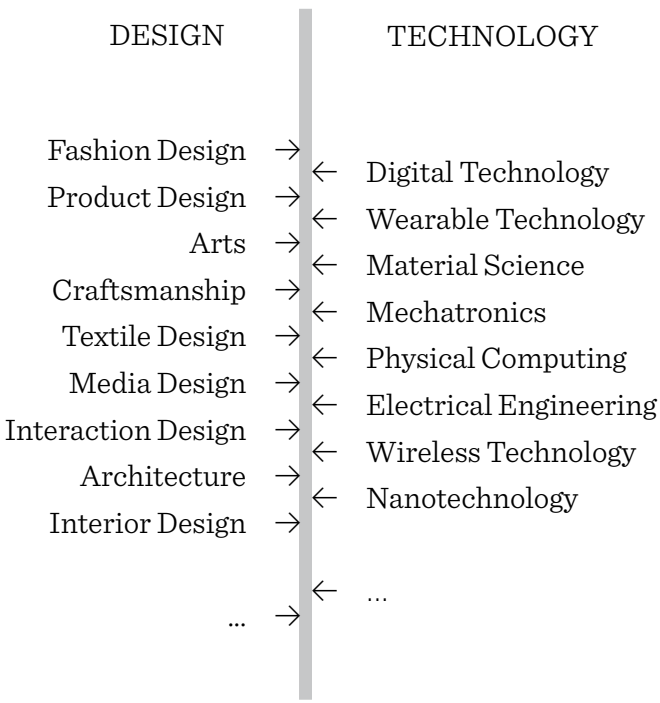
3 Seymour (2008a:12)

4 Vinken (2005:137)

Fashion'able' technology & fashionable wearables

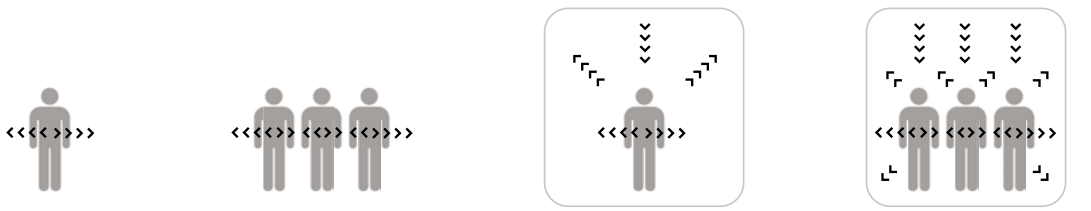
The term fashion'able' technology refers to technology with an aesthetic appeal. The geek chic of the mid to late 90s and the appearance of wearable computing on a larger scale called for style, fashion, and aesthetics. The focus of the term is on 'able' with the intention of making technology fashionable and aesthetically pleasant. Particularly, the merging of virtual and physical spaces demands stylish avatars that live in both realities. Fashionable technology is associated with an array of disciplines in the fields of design and technology that frequently intersect. The significance of fashionable technology as an emerging field is apparent.

The use of the word 'technology' in fashionable technology needs clarification. Technologists coming from electrical engineering

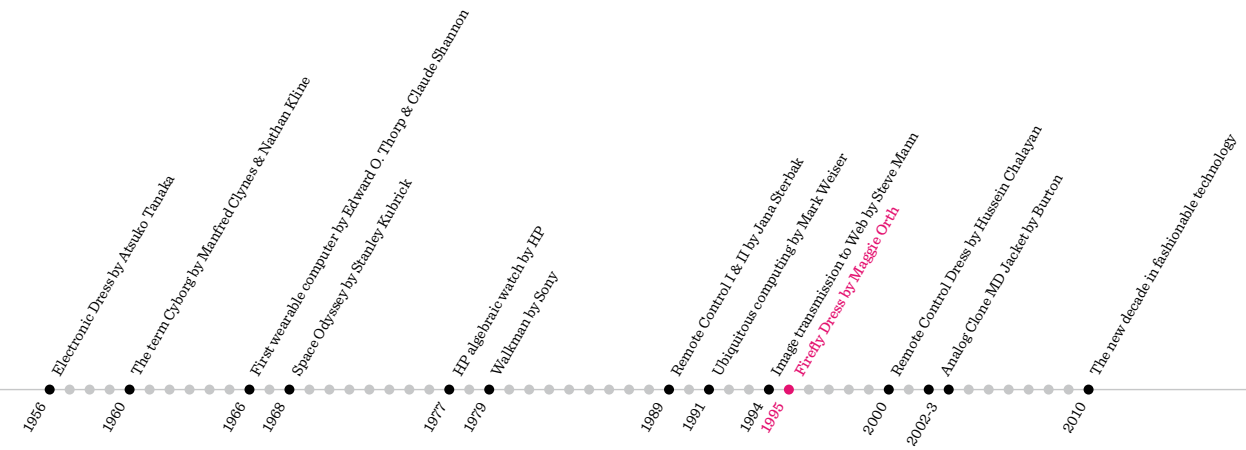


or multimedia often use the term with reference solely to digital technology, whereas a biotechnologist might see the definition of technology in a broader material-based sense. Fashionable technology refers to all technologies interlinked with the body like biotechnology, nanotechnology, digital technology, textile technology, etc. Additionally, it refers to tools and software applications associated with textile technologies and fashion design.

The necessity to engage the fashion world with the creation of fashionable wearables that capture the market and create a new set of high quality products is apparent. They can be a product (in private economy), an art piece or commission (in arts/cultural economy), or a prototype (in research). Fashionable wearables are the intermediary between the human body and the spaces we navigate. Our clothing, accessories, and jewelry are the epidermal interfaces with which we can experience the world. Data exchange is possible through the advances in wireless technologies, enabling communication among bodies and the space in which they reside, namely with reference to smart architecture. Fashionable wearables thus extend to architectural objects.



BODY BODY/BODY/BODY BODY—SPACE BODY/BODY/BODY—SPACE



An attempt at a timeline

The timeline of fashionable technology is strongly intertwined with the history of wearable computing. The potential for collaboration between the worlds of fashion and technology has been ever-present since the initial explorations by Hussein Chalayan ten years ago with the Remote Control Dress in 2000. It marked the extension of 'soft computation' into garments – a field that previously seemed solely a computing and engineering domain not engaged in issues of the body or wearability. Soft computation is described by Joanna Berzowska as the "design of digital and electronic technology that is composed of soft materials such as textiles and yarns, as well as predicated on traditional construction methods to create interactive physical designs."[5]

Electronically enhanced garments as artistic expression were developed much earlier. In 1956, the Japanese artist Atsuko Tanaka created the Electronic Dress. The first mention of a human being augmented with technological attachments was by Manfred Clynes and co-author Nathan Kline who coined the term 'cyborg' in 1960. In 1966, Edward O. Thorp and Claude Shannon developed the first

5 Berzowska (2005:67)

known battery-run, mobile and wearable computer for predicting gambling results.[6] In this period, visionary depictions of fashion were provided by films such as Stanley Kubrick's 2001: A Space Odyssey from 1968.

A decade later, in 1977, Hewlett-Packard released the HP algebraic watch. It was followed by Sony's introduction of the Walkman in 1979: the first portable music player, a phenomenon that extends up to the MP3 format today. In 1980, Steve Mann, the creator of wearable computing, built a head-mounted CRT (cathode ray tube) prototype. The sculptural artistic works by Jana Sterbak often took the form of garment-like constructions. The projects Remote Control I & II from 1989 consisted of a motorized metal crinoline operated with a remote control.

In 1994, Steve Mann began transmitting images from a head-mounted camera to the Web. This was made possible by the overwhelming developments in ubiquitous computing, which Mark Weiser described in 1991 as a world in which most everyday objects have computational devices embedded in them.[7] The Firefly Dress & Necklace by Maggie Orth with Emily Copper and Derek Lockwood in 1995 marks the beginning of fashionable technology. "As the wearer moves, the Velcro contacts the conductive fabric and causes the LEDs to light."[8] However, this project was still developed by an artist and engineer rather than conceived by a fashion designer.

For the 2002–2003 winter season, Burton released the Analog Clone MD Jacket with an integrated Sony MP3 player. The fabric of the jacket had electronic switching capabilities made possible by combining conductive textile materials and flexible composites.

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6 Seymour, Beloff (2008)

7 Seymour (2008a)

8 Seymour (2008a:76)

It marked the introduction of fashionable technology in noticeable consumer products.

2010 proclaims the beginning of a new decade in fashionable technology with the launch of numerous commercially successful products, highly visible commissioned projects and installations, and advances in technologies and materials.

Fashionable wearables as viable artifacts

Experimental projects represent a test bed for fashionable wearables. Hussein Chalayan tapped into technology as a means of expression as a fashion designer. The inspiring pieces are conceptual and have a performance character. They demonstrate the need for innovative design and fantasy in the creation of fashionable wearables to excite the wearer. The main focus of researchers, designers, and artists has long been on advances in technologies rather than creating appealing propositions for consumers. Today, technologies have matured and range from mechatronics to nanotechnology. These innovations will shape the future of clothing. Much of the essential technology is already available to create meaningful and commercially viable products.

Clothing with embedded technologies is evident in the realms of sport, work wear, healthcare and rehabilitation, rescue services, elderly care, and security. Consumer interest in fashionable wearables is steadily increasing. Their success is determined by a product's ability to capture human emotion by meeting a need and its aesthetic performance. Personalization of fashionable wearables allows for new modes of self-expression, which is an

essential factor in making fashion items that appeal to the public. The expertise needed to successfully bring products to the market is a unique skill set that combines market know-how, product development, user aspirations, available technology, manufacturing resources, legal ramifications, and cost structures. Designers must have a comprehensive understanding of the purpose, the user, the interaction, and – for commercial applications – the right price point. An appealing design in combination with an intuitive interface and suitable materials will make for a successful fashionable wearable.

The design of an intelligent garment is complex because of the breadth of disciplines needed in its development. Most projects that are currently being developed on a larger scale use various subcontractors. A consolidation would reduce costs, simplify the communication and project management process, and have only one or a few suppliers to monitor quality and deal with warranty issues. Thus, specialized design and production studios need to be established. Additionally, a common vocabulary is evolving to allow efficient and fruitful collaboration between disciplines, such as physical computing, fashion design, industrial design, wireless networking, software engineering, and graphic design.

The three main modules for creating marketable fashionable wearables are strongly intertwined.

› Collection
Information about materials, technologies and technical feasibility, trends, user aspirations, context of use, precedents and competition, recyclability, energy supply, wearability, manufacturing resources, sustainability, legal ramifications, etc. is assembled.

› Configuration
The assembled knowledge is then configured for the creation of the defined products. This includes the actual design and preparations for the production, the creation of mood boards and fashion illustrations, through to the technical design adaptation by defining and producing the software and hardware modules.

› Integration
The configured technology and materials are integrated. This production process ranges from the prototype to the final product. Concurrent engineering takes place after usability analysis, the testing of the technical functionality, and the evaluation of the wearability until a golden sample for the final manufacturing is derived.

The diffusion of a fashionable wearable is dependent on the perceived usefulness and technical ease of use. Thus, users need to experience its functionalities and receive informed explanations.

Novel forms of display for fashionable wearables

Fashionable wearables need to be exhibited differently to reveal all of their features and stimulate the audience's senses in immersive experiences. The following description acts as a proposal:

> ***London's Dover Street Market &***
> ***Paris' L'Eclaireur meet***
> ***Apple's Genius Bar***

Dover Street Market is a multistory fashion store conceived by Rei Kawakubo in London's posh Dover Street setting. The visual appearance of each floor is different with a distinct interior design fitting for the garments on sale. Posh, trendy, punk, rather slick, you name it. The music changes from rock in the basement to a more pop sound on the upper floor. There is a subtle smell of perfume on the first floor whereas the top story has the scent of fresh baked goods. It is a multisensory experience.

Set in trendy Marais in Paris, L'Eclaireur is not a modest shop rather a remarkable interactive installation created by Arne Quinze with 147 animated video screens. The Room Book by Electronic Shadow is a separate space within the shop with digital projects that are like chapters of an evolving book. Through personal attention every visitor undergoes a specific experience. It is a great balance of shop and gallery.

The Apple Genius Bar in Apple Stores offers comfort, advice, and expertise and reduces the aggravation users of technical devices often experience.

The new form of display for fashionable wearables requires a multisensory, tangible user experience with personalization and explanation by educated personnel. A retailer of fashionable wearables needs to provide an immersive experience with no real delineation between a store and a gallery.

CHAPTER 01

Body Sculpture

Body modifications and augmentations are a cultural phenomenon. In medicine, the line between necessary modifications and implants is blurred by cultural and social implications. Pace makers, screws and plates, and implanted hearing devices are well received, and ethical issues are little discussed due to the direct impact on one's well-being. The debate starts over beauty surgery and body augmentations. The physique of the body might inspire the shape of a garment or an accessory. The advent of aging and advances in rehabilitation spur the need for prosthesis support in the form of designed objects that fulfill a very specific physical function but are aesthetically appealing and have a modest psychological impact for the wearer.

Stelarc's Ear in Arm, Engineering Internet Organ project from 2008 blurs the boundaries with the mediated implant. For the project, Stelarc surgically implanted an ear, which will be further equipped with a microphone to allow the wireless transmission of sounds captured by the ear to a distant location. According to Stelarc, "the final procedure will re-implant a miniature

microphone to enable a wireless connection to the Internet, making the ear a remote listening device for people in other places"[1].

The subsequent projects provide aesthetic inspirations, using the body as a basis for the created sculptures. Most of the projects do not employ any digital technology but provide visions for the design of a human robot through examining and styling the human physique.

1 www.stelarc.va.com.au/projects/earonarm/index.html

Hussein Chalayan
Inertia 2009 / Earthbound 2009

The implications of architecture on the body are illustrated with concrete structures, enabling a new conceptualization of 'soft'.

Hussein graduated in 1993 from London's Central St. Martins School of Art and Design and launched his own label in 1994. He uses film, installations, and sculptural forms to explore perception and realities of modern life, with particular interest in cultural identity, migration, anthropology, technology, nature, and genetics. His work is presented at his shows and in art galleries, while his clothing is available in boutiques worldwide. Sponsored by Turquality, he represented Turkey in the 2005 Venice Biennale with Absent Presence featuring Tilda Swinton. The Groninger Museum in the Netherlands and the London Design Museum hosted a massive retrospective of his work in 2005 and 2009 respectively.

Inertia

Keywords: fashion, architecture, sculpture, speed

"Finally the body became the 'event' of a crash where garments caught in the midst of speed simultaneously embodied the cause and effect of a crash in one moment." (Hussein Chalayan) The final pieces of Inertia 2009 are sculpture dresses made from molded foam and wrapped with flexible heat transfer prints of car bodywork and molded to look as though they are crystallized in motion.

Architecture, structures, and building processes and materials all play an integral role in the translation from concept into clothing. In the Earthbound collection, bright turquoise and coral embellished prints of scaffolding and stone move into a section of specially created, vibrantly