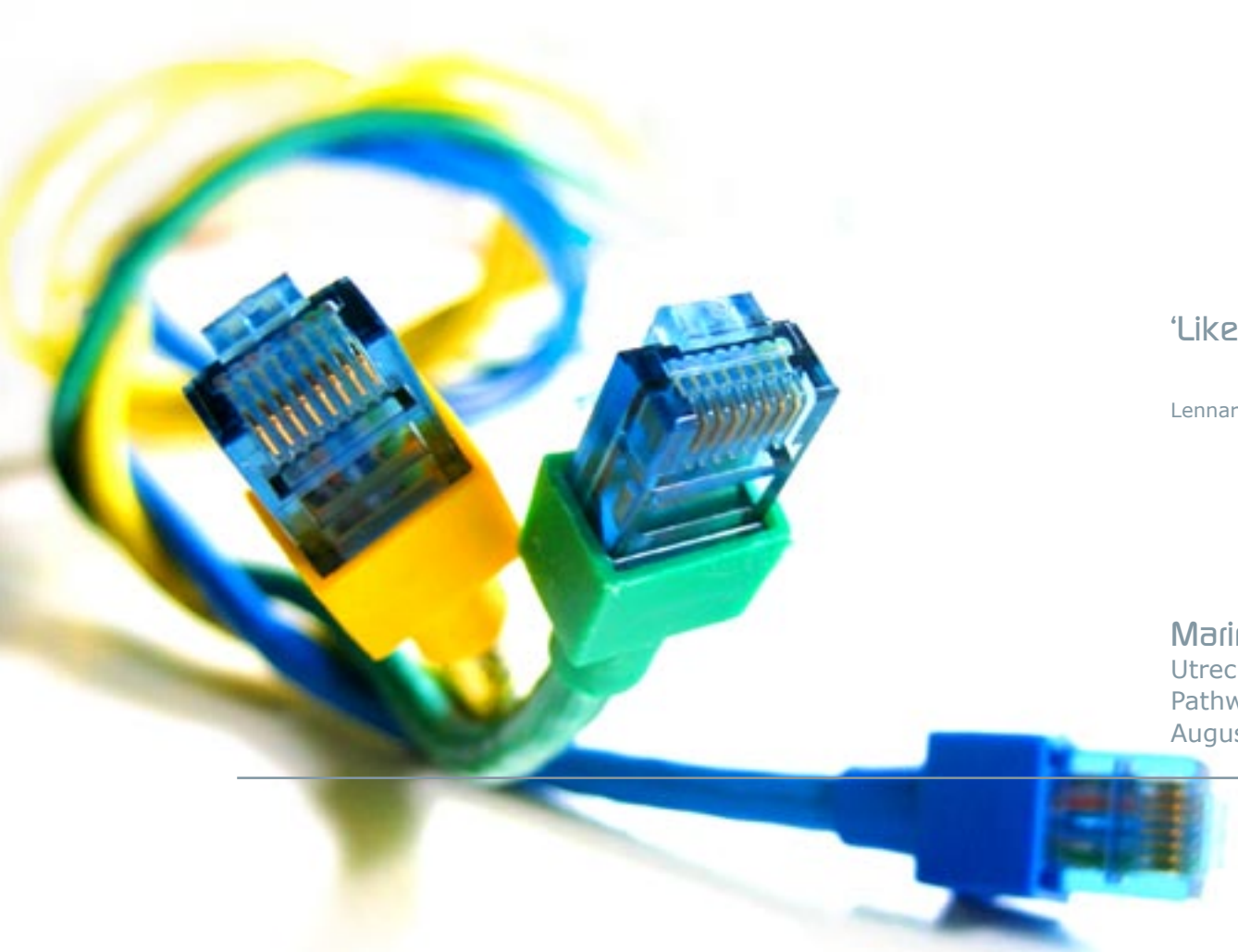
by-wire.net

collaboration in fashion & technology



'Like a bird on the wire,
I have tried in my way to be free.'

Lennard Cohen, 1969

Marina Toeters, MaHKU

Utrecht Graduate School of Visual Art and Design

Pathway: fashion design

August 2007

‘Fashion designers aren’t about innovation, they are about fantasy’.

Despina Papadopoulos, Studio 5050, 20070619 blog

but.....

‘The vogue world can hardly ignore environmental impact of the production of clothing, and with that, its technical innovations.’

Arie Vervelde, Studio Commandeur, 2007

This printed thesis is the pre-publishing of my digital thesis. Reed the research online:
www.by-wire.net/html/t_research.html [1]

Summary

What are the conditions to implement more techno garments and processes on the commercial fashion market?

Collaboration between fashion designers and technicians is needed for more fashionable technology on the commercial market. Before successful collaboration can be achieved, some pitfalls need to be solved. This can be done with a collaboration platform. by-wire.net continues the research and collaboration projects by creating a virtual place where technicians and designers liquidly fuse together and start truly interdisciplinary projects with added benefits to society. Make fashion innovative again and take responsibility in environmental issues by the implementation of fashionable technology on the commercial market.

History

Technical innovations influenced fashion in history, especially in the production processes and, with that, textiles. But implementation of technical improvements takes much time since the 70's. Watanabe memorize the fact that 'in the 40 years after the invention of polyester, the audiovisual technology developed extremely, but fashion delivered nothing new.'[1] It is likely that the next innovation wave will include synergy between all different branches and developments. I like to call it the wave of connections. This will influence the fashion world yet again.

Future potentials

There are major opportunities for technology in fashion for environmental issues, re-think fashion as communication tool and improved human protection. But there are some pitfalls that need to be cleared out before big-scale-implementation in the consumer world is possible.

1 Watanabe 2006 p233 citated by: Ginger Gregg Duggan 2006

Pitfalls for implementation of technology in the fashion market

Technical and economical problems need to be solved by technicians and their managements. The uninteresting aesthetics and a lack of social relevant design concept in techno garments are also problematic. These two pitfalls together create the main pitfall: social acceptance. Fashion designers are educated from social perspective. Fashion designers think from the consumer's point of view. How mankind emotionally adapts things through positive aesthetics, interesting design and placing it in a surrounding that fits in this time. The fashion branch has a tradition of stretching people's minds to look more than up-to-date by consuming 'newness'. That's why they can create a much wider social acceptance.
So, collaboration between the fields of fashion and technology can solve the pitfalls.

Pitfalls in collaboration between fashion & technology

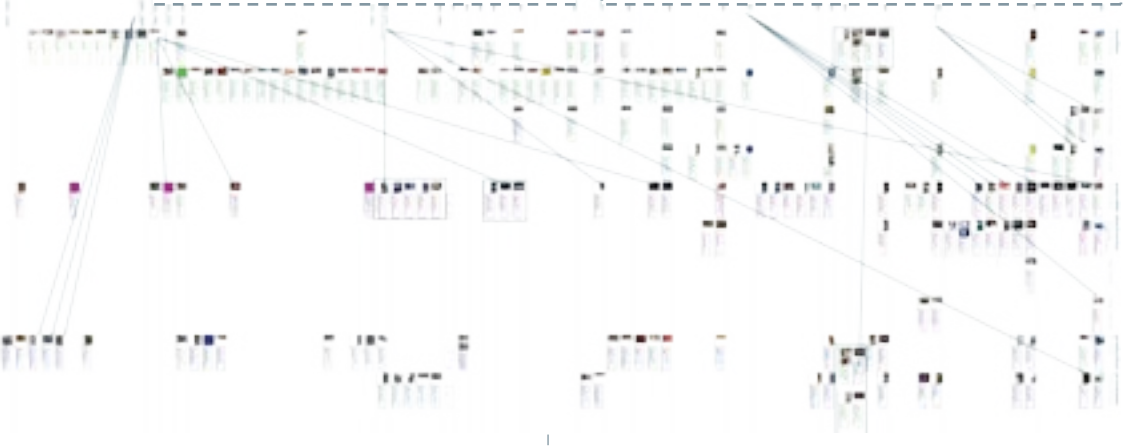
Collaboration is difficult. Some experiments identify problems that appear along the way. Communication is hard. 'For a successful collaboration you have to speak the same language.'[2] This can be created by shared experiences and references or learned by education, but 'understanding of technology is rapidly disappearing at design training institutions,'[3] said Ed van Hinte.
'Fashionable clothing hyperventilates.'[4] Technical companies produce slower. They experience time completely different. Knowledge about this is essential without ending in a disappointment. Technical companies don't like to work with several partners. Secrecy is everything! Last pitfall is that most companies focus either on (fashion) design or technical developments. It is difficult to create a collaborative design if you don't physically work together.
A collaboration platform can solve some pitfalls. by-wire want to create a place where technicians and designers fuse together and start truly interdisciplinary projects with added benefits to society.

2 Matthijs Vertooren 2007
3 Ed van Hinte 2006 p246
4 Joke Robaard 2004 p10

Research summary in scheme

[historical overview] 1 Have technical innovations influenced fashion throughout history?

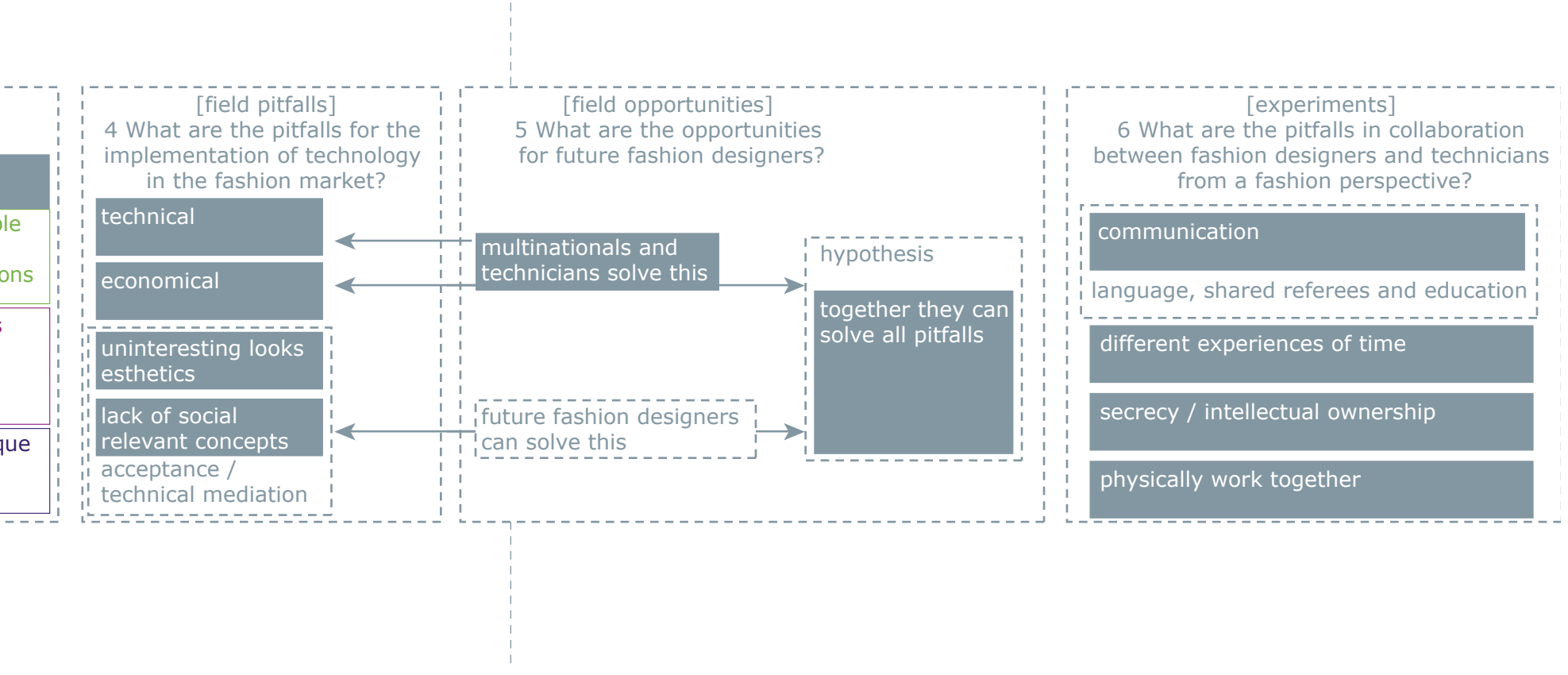
[field research in a timeline] 2 What happened the last decade in fashion & technology spillovers?

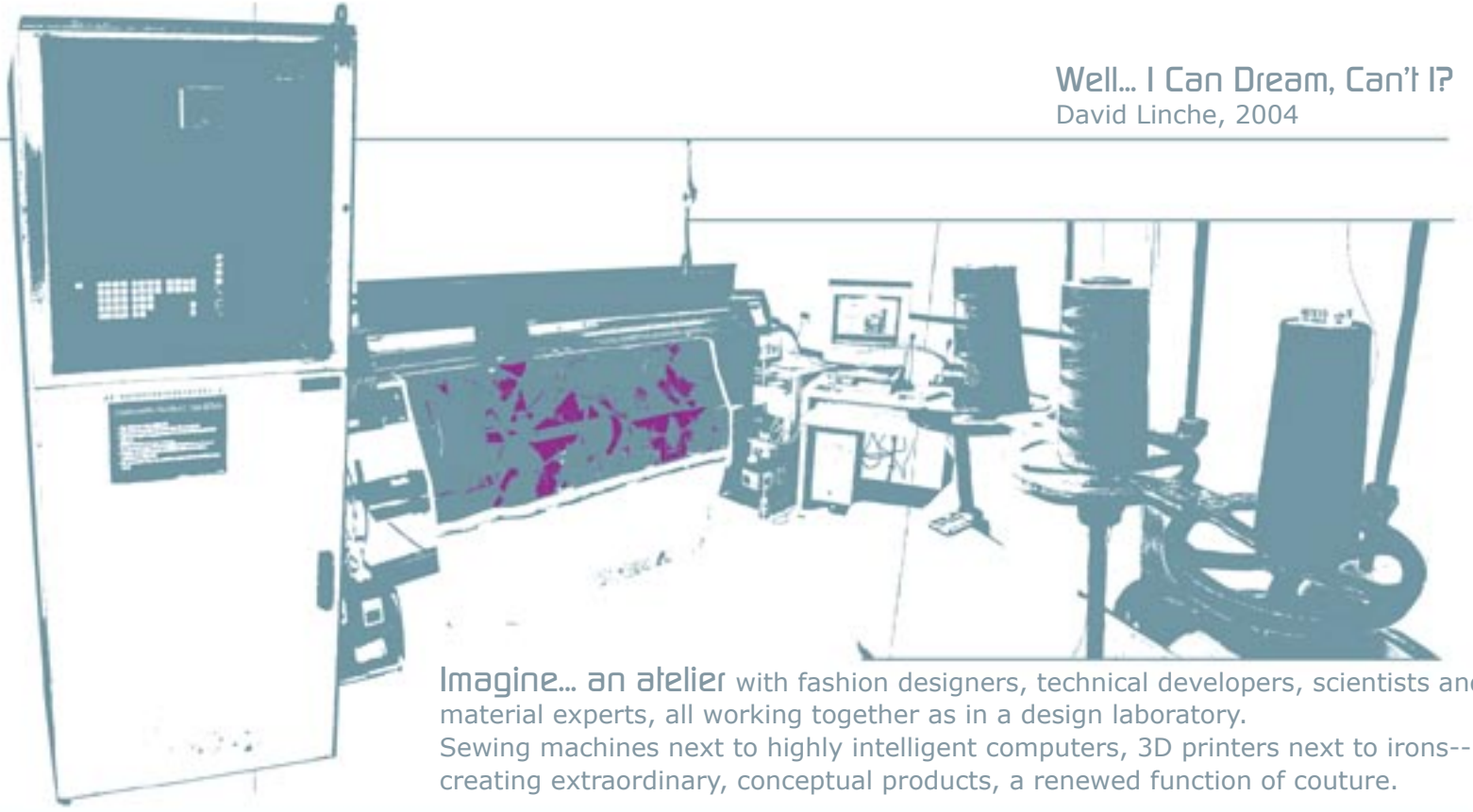


[extrapolation of the field research] 3 What are the future opportunities of technologically fashion?

environment	protection	communication individualization
bio degradable victimless skin	multi-risk fabrics	dynamic / changeab showing your emoti
self supporting and energy production to reduce your footstep	body and environment monitoring	onlineness of things 100% integration of devices
less waste custom made		custom made / unic

by-wire.net
collaboration in fashion & technology





Well... I Can Dream, Can't I?

David Linche, 2004

Imagine... an atelier with fashion designers, technical developers, scientists and material experts, all working together as in a design laboratory.
Sewing machines next to highly intelligent computers, 3D printers next to irons--creating extraordinary, conceptual products, a renewed function of couture.

Content

_Inuits

1000_IQC.gif

_Indian

1000_TD.gif

Intro >> Clothing-- from technology to fashion

'Technology is a systematic treatment of an art, that deals with a usage and knowledge of tools and crafts, and how it affects an ability to control and adapt to its environment.'[1]
The pre-historical discovery of how to make garments out of skin- created the ability to survive in colder environments- so that mankind could even inhabit the circumpolar region, like Inuit's. So clothing is a technology which adapts to the physical environment.
But while clothing industry was developing [industrialization] and renewed technology changed our environment, -building houses, cultivate land for food, cars, house warming, air conditioning- the need for protection 'is now relegated to a very minor role'.[2] Clothing became a method of for expressing oneself, of showing off status- of communicating. At that point clothing became fashion.

Intro >> The fashion paradox

Fashion developed as a metaphor for consumer culture, a paradox industry. 'Fashionable clothing hyperventilates,'[3] growing sales by giving people the identity of that moment. Quickly changing just because commerce taught people that if you want to be successful in life, you have to dress up-to-date, and fashionably.
The last few decades has seen a fashion design loop. Different parts of the 20th century saw different eclectic shapes. 'Soon fashion will run out of retro and have to find new ideas.'[4] To let fashion again develop to what it pretends to be- always more than up-to-date, [new sources of inspiration are needed. >>]

New sources of inspiration
[>>] 'Consumers force designers to change. People have seen enough retro. They want to look at the future.'

1 M. Webster 2007
2 James Laver 1937 p 150
3 Joke Robaard 2004 p 10
4 Jeffrey Grübb 2002 p 194 creater of Fashion Active Laboratory (FAL)

Intro >> Fashion needs technicians

Advancements in technology have provided fashion inventors with much inspiration. In this ever-changing postmodern world, when communication tools quickly develop and natural sources become low, we have to rethink the function of clothes and engage fashion ideas in regard to social and environmental issues- 'The vogue world can hardly ignore environmental impact of the production of clothing, and with that, its technical innovations,'[5] said Arie Vervelde of Studio Commandeur.

Most times innovative products appear when disciplines start working together. Collaboration with scientists and technicians[6] will improve fashion in function, sustainability and capability. Look for new meanings and representations. 'We need new technology for a better and sustainable world.'[7] Recent developments in textiles, wearable electronics and innovative production processes can greatly help.

Intro >> Problem

I'm curious about big companies with innovative (secret) processes. In the second and third year of my fashion design study I tried to start collaboration projects. [GRIP] [Burberry] [Indust] Because these projects did not succeed, I decided to spend a total year to research this topic to find out why. Although lots of designers, artists and companies start projects to integrate technical developments in fashion- [Event analysis >>] there still isn't much fashionable technology on the commercial market.

5 Arie Vervelde 2007 design and styling, Studio Commandeur
6 All individuals and organisations pioneering the technical aspects of clothing include a wide range of researchers, scientists and technicians. These terms are used loosely and interchangeable as a definitive professional title has not yet been established.
7 Louise Fresco 2007 hoogleraar Amsterdam p 40

yakwool and hemp garments
[>>] Ecological textiles hemp fabric is 5 times as strong as cotton and better for our environment, durability on top.

yak wool jacket
_ecological suited by-wire.net
eco hemp shirt
_ecological suited by-wire.net
blue shiny top
_Filippa K
gray trousers
_Lio.Jo
buckle shoes
_Frankie Morello

credits_model_nina
photography_BobVanRooijen.com


back


seat


production_process


fabric_information

Intro >> Hypothesis

From own experiences I see that several reasons prevent fashionable technology from breaking through. Acceptance in society is one reason. There are opportunities for future fashion designers but then designers must collaborate with technicians.
I noticed that it is very hard to create a good spillover with technicians. Maybe cause of our different backgrounds and communication methods.
To position my inter-disciplinary design concepts more securely in the commercial fashion world, I need to explore the creative gap between fashion designers and technicians.

Intro >> Research questions & content

The main question of my research is:
What are the conditions to implement more techno garments and processes on the commercial fashion market?
More specific information is needed to answer this question:
1 Have technical innovations influenced fashion throughout history?
'Historically, fashion designers have embraced new technologies in the fabrication and fashioning of clothes.'[8] Said Suzanne Lee. An overview of technical influences in fashion is predicted in the first chapter. [History >>]
2 What happened the last decade in fashion & technology spillovers?
A field research was made about the development of fashion and technology during the last couple decades. More than one hundred collaboration projects will be placed in a timeline and classified in three fields: [textiles] (materials), [wearable electronics] and new [production processes].
3 What are the future opportunities of technologically fashion?

8 Suzanne Lee 2005 p. 15

The world of the others, brickolager [>>] Step into their heterotopian world, the world of the others. Still forbidden for fashion girls, like me, private for people who understand and speak the technical language. Technology is a construction, a system, a way of thinking, and a language that I only partly understand. Deconstruct the term in little parts so I can learn the different meanings of at least some parts of technology and understand there meanings, maybe I can build something out of my fashion and technical knowledge, cooperate inter disciplinary. A brickolager, looking around in the world of technology and fashion, find elements, which are useful for our society. Hopefully I can build something that I'm proud of and add something to the world. Be a post-modern designer with a strong vision on design and society.

The field research will be extrapolated to estimate future developments. [Opportunities >>]

4 What are the pitfalls for the implementation of technology in the fashion market?

3 examples of technical implementations in the different fields will be explained and analyzed. This will identify the above-mentioned pitfalls.

5 What are the opportunities for future fashion designers?

6 What are the pitfalls in collaboration between fashion designers and technicians from a fashion perspective?

Some experiments- with the following goal: to collaborate with technicians to create a garment where fashion and technology merge into an innovative setting, and identify problems that appear along the way. [Experiments >>]

Intro >> Goal

The goal is to make this research a source of inspiration for designers and technicians, allowing them to implement more technology in the commercial fashion world; and to advise how to create successful collaboration between designers and technicians. I hope to motivate more spillover between fashion and technicians to make fashion innovative again. by-wire.net will continue the research by creating a collaboration platform. My role will be an intermediary between the technicians and designers. A bricolager; make connections between individuals and companies, start and motivate interdisciplinary projects. [the world of the others, brickolager >>]

But before this can happen we must examine the patterns in past collaborations and the pitfalls that will appear during present collaboration with technicians.

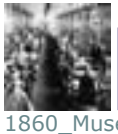

_Technician
textile company
Enschede Twente NL
1685_WeavingLoom_GN


_TechPionier
_ElectricMovement
1821_Faraday_TG.jpg


_TechPionier
_SewingMachine
1830_TG.jpg


_TextileCompany
Enschede Twente NL
1840_MuseumJannink

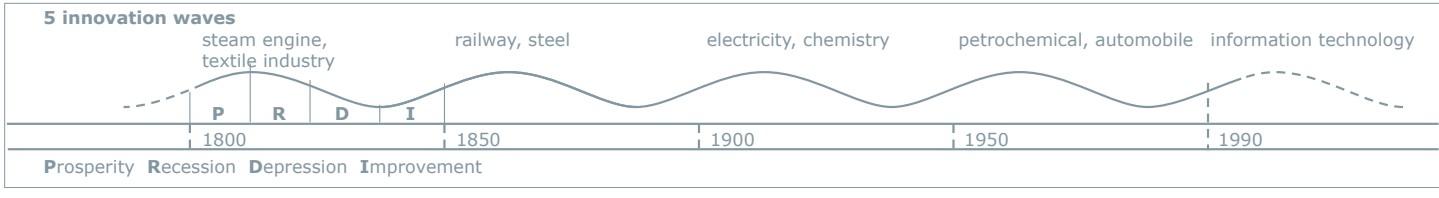

_Fashion Company
_FirstJeans
1850_LeviStrauss_TG.jpg


_TextileCompany
Enschede Twente NL
1860_MuseumJannink_online

History

'Textile industry is metaphor for industrialization,' as Florian Pumhöst mentioned Wednesday 6 September 2006 at the DARE-symposium[1]. Textile production and technical developments flowed together adding improvements to the weaving machine. The start of mass production in textiles, and thus the industrial revolution- 1771,[2] made commercializing of clothing possible. The Netherlands's first experience with this mass production standard began in Twente. Because I was born and raised in Twente, it is no surprise that I am interested in this subject. Twente still boasts textile companies in my neighborhood, such as Royal Ten Cate[3] [textile industry in Twente >>]

Freeman noticed that there has been rhythm to innovation since the eighteenth century, which has huge influences on society.[4] [innovation waves >>]



The industrial revolution marks the first wave of innovation. Industrialization made fashion marketable. In the next paragraphs I hope to find out if, and how, the other technical innovations influence fashion. **1 Have technical innovations influenced fashion throughout history?**
I am looking for specific technical changes, like the use of new textiles and production processes, and not social changes.

1 Florian Pumhöst [20060906 blog]
2 F. van Waarden 2006
3 Koninklijk Ten Cate Nijverdal
4 C. Freeman & F. Louca 2001

_Crinoline

1860_CKG179.JPG

_Crinoline

1865_KCI275.JPG

_Bustle

1870_KCI274.JPG

_Bustle

1870_KCI283.JPG

_FirstAutomobile

1886_KarlBenz_TG.JPG

_AutomobileOutfit

1900_KCI318.JPG

_Tournure

1870_CKG201.JPG

_HealthTournure

1880_CKG201.JPG

_LangtryTournure

1880_CKG201.jpg

_WirelessTelegraphy

1906_Punch_FF16.jpg

_Strompelband

1910_CKG226.JPG

_Tech Pioneer
_RadioHat

1922_FF166.jpg

History >> Crinolines 1860-1880

Historically, fashion designers have embraced new technologies in the fabrication and fashioning of clothes;[5] Design techniques used to create crinolines. Corsets were also considered a technical innovation.[6] [crinolines >>]

crinolines [>>] Mid 19th century wood and wires were used as construction. But in the late 19th century even crinolines or Tournure became dynamic by difficult mechanisms.

History >> Stretching the world 1880-1920

At the end of the nineteenth century the automobile was invented. 1900_KCI318.JPG [Automobile outfit] This is a direct reaction on 'one of the most influencing social innovation of the last centuries': automobiles.[7]

Around 1900 electronic engineering began. Mankind started to dream more about society instead of just work. Inter local communities began to exercise their free time.1906_Punch_FF16.jpg [wireless telegraphy] Unfortunately most people could hardly move in their outfits! 1910_CKG226.JPG [stumble robe worn underneath the skirt to protect against stretching the fabric]

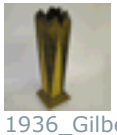
Silly as it might sound, the inventor of the radio hat was one of the first wearable electronic devises.

5 Suzanne Lee 2005 p. 15
6 Bradley Quinn 2002 p. 3
7 David Gartman 2004 p. 71-96


_MaleFuturistDress
1913_GiacomoBalla_FF114.jpg
1914_Balla_Morf623.jpg


_DesignMensuit
1914_Balla_morf625.jpg


_Evening Cape
Neptune Fountain
1934_schiaparelli.com.gif


_UmbrellaStand
1936_GilbertRohde_cmordern.com

examples Bradley Quinn [>>]
'Jules Verne writes in his publication 'From the Earth to the Moon' in 1865, that spacesuits characters a nineteenth-century fashion fantasy.'[10] An example some decades later depicts 'traveling in space, wearing an amour-like metal suit with a glass helmet, carrying radio transmitters and oxygen tanks,'[11] said Quinn.
In 1936, Elsa Schiaparelli presented fashion exhibits that included prints of thermometers that gauge a wearer's passion and celebrated contemporary technologies such as the telegraph and radio.[12] She also collaborated with industry, working with French textile producer Colcombet to create a 'glass cape' from their Rhodophane material in 1934.

History >> Inspired by technology 1920-1930

'A passionate call for rebellion against the establishment.'[8] Designers start looking for new materials and colors, such as the anti-neutral Suit. The embrace of modern living and the products of the 'machine era' is an important contribution of Futurism as explained in the Manifesto of Futurism[9].
Fashion designers also used the imagery of science and technology to express modernity and progress. [Bradley Quinn gives some examples >>]

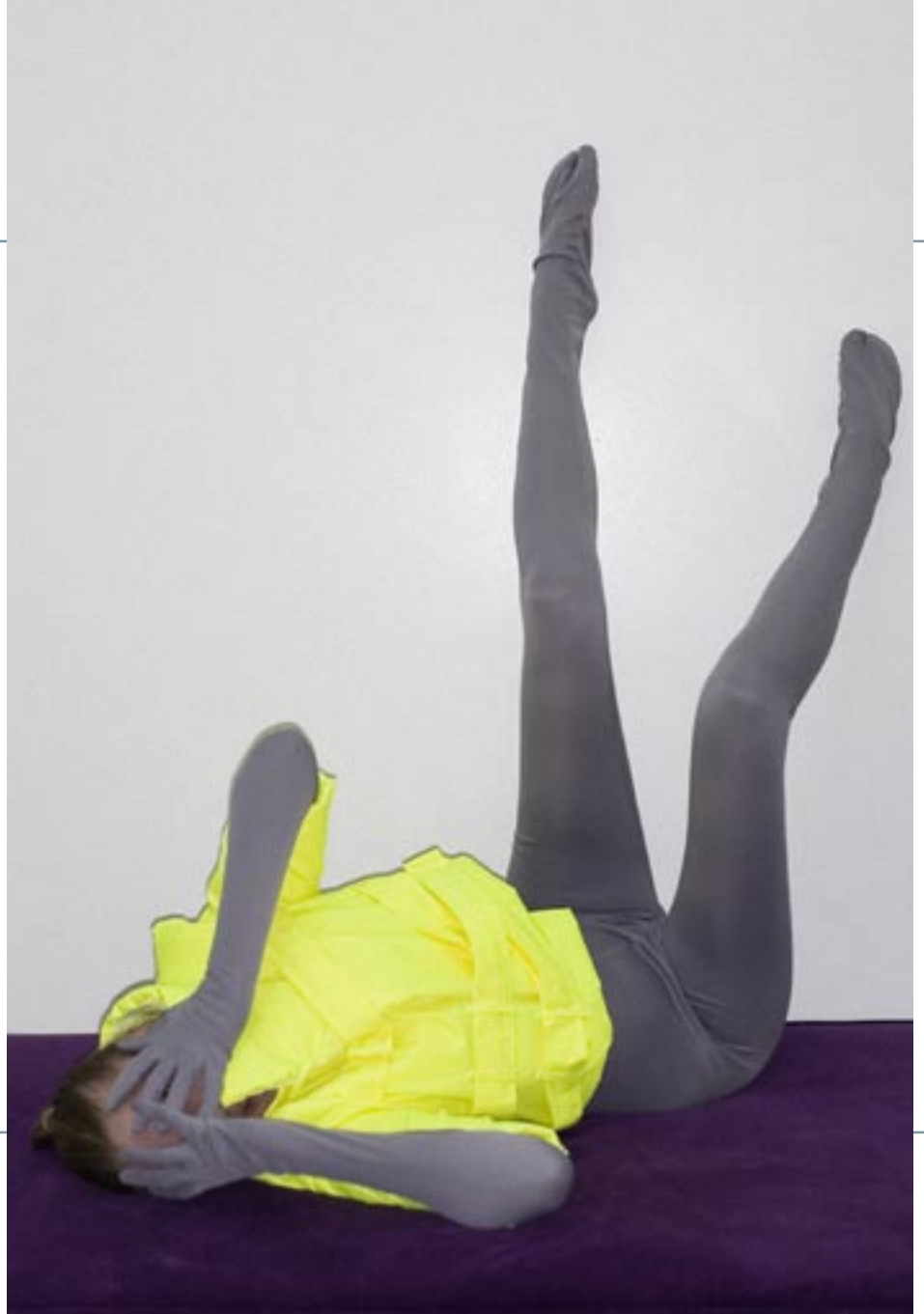
Late 1930ies, the American designer Gilbert Rohde devised a spacesuit-like Solosuit. 'It was at this point, that techno fashions began to emerge. As a pioneer of industrial design rather than a fashion designer, Rohde's engagement with fashion heralded the many interdisciplinary collaborations.'[13] Later in this research I will compare industrial designers to fashion designers and find out how industrial designers adapt technical innovations faster.

10 Bradley Quinn 2002 p. 2
11 Bradley Quinn 2002 p. 3
12 Suzanne Lee 2005 p. 15
8 Giacomo Balla 1914 p 204
9 Filippo Tomasso Marinetti 1909 p 202
13 Bradley Quinn 2002 p. 4

a spacesuit-like solo-suit [>>] inspired on technical developments. For the production of the HV jacket, by-wire needed to bring two companies together; Ten Cate Advanced Fabrics and Dynafoam

gray catsuit
_by-wire.net
HV yellow jacket
_by-wire.net

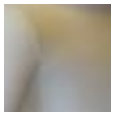
credits_model_jocelyne
photography_BobVanRooijen.com




hide


suit


movement


production_process


fabric_information

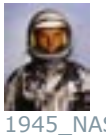


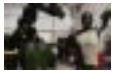
_DayEnsemble
1927_Chanel_KCI395.JPG


_EveningDress
1930_MadeleineVionnet_KCI461.JPG


_SkiSuit
1930_KCi483.JPG


_WarTimeClothing
1940_CKG252.JPG


_AstronautJohnGlenn
1945_NASA_FF15.jpg


_ElectroSpinning
1930/50_USArmy_FF34.jpg

History >> Comfortable clothing 1930-1940

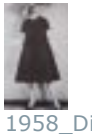
'Practicality plays a very minor part in the formulation of fashion (…) otherwise they would have adopted something like the fashion of 1927, and kept to it for ever.'[14] Said James Laver in his book Taste & Fashion. Chanel is one of the first companies bordering about the comfort of clothing.[15] Improvements in textile industry made it possible to produce softer and comfortable materials.

History >> Wartime 1940-1960

Comfort- as well as functionality became important now. 'The outbreak of World War II focused most designers on finding the means to survive despite the restrictions of wartime clothing rations.'[16] Technology was largely absent from fashion until the 1960s, when the U.S. space program fused technology with clothing in the development of the spacesuit. 'The new materials and design techniques that evolved as a result have had a significant impact on the evolution of techno clothing.'[16]
The U.S. Army is still the main investor in wearable technology and textile developments. [tencate: for US Army>>]


_DayDress
1957_Dior_KCI518.JPG


_retro1920Japon
1958_JacquesGriffe_CKG259.JPG


_TheNewLookAlijn
1958_Dior_CKG259.JPG


_TrapezeDress
1958_Dior_KCI519.JPG


_CocktailDress
1962_Balenciaga_KCI535.JPG


_KabukiDress
1963_RudiGernreich_KCI660.JPG

14 James Laver 1937 p 149
15 Guus Beumer [20070522 blog]
16 Bradley Quinn 2002 p. 6

_Fashion Design
_BraniffStewardess

1965_Pucci_FF15.jpg

_Fashion Design
_SunVisors

1965_Genreich_FF14.jpg

_Fashion Design
_Electroluminescent-Dress

1966_DianaDew_FF96.jpg

_Fashion Design
_ModernMensSuit

1966_PierreCardin_KCI568.JPG

_Fashion Design
_SouperDress

1966_American_KCI579.JPG

_Fashion Design
_AlineDress

1967_AndreCourreges_KCI550.JPG

_Fashion Design
_AluminiumDiskOutfit

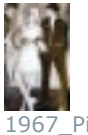
1967_PacoRabanne_KCI571.JPG

_Fashion Design
_AluminiumPlates-Dress

1967_PacoRabanne_KCI570.JPG

_Fashion Design
_FutureSpaceMaroc7

1967_Clive_CKG266.JPG

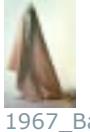


_Fashion Design
_L'Officiel

1967_Pierre Cardin_KCI564.JPG

_Fashion Design
_MiniDress

1967_AndreCourreges_KCI548.JPG

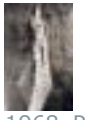


_Fashion Design
_WeddingDress

1967_Balenciaga_KCI528.JPG

_Fashion Design
_GeometricGarments

1968_PierreCardin_KCI566.JPG



_Fashion Design
_MetalSquars

1968_PacoRabann_google.jpg

_Fashion Design
_Mini

1968_MaryQuant_CKG267.JPG

_Fashion Design
_TranceparentMini

1968_Courrege_CKG264.JPG

_Fashion Design
_TranceparentMini

1968_Gernreich_CKG264.JPG

_Fashion Design
_PlasticDisksTop

1969_PacoRabanne_KCI573.JPG

History >> Building in synthetics 1960-1970

'A good couturier has to be an architect for the plans.'[17] The invention of nylon and polyester[18] introduced a new world of possibilities to twentieth-century fashion. These innovations influenced the material use as well as the shapes of garments. The material directly influences the shape- not only for the wearer, but also for production process and marketing of the products. Nowadays synthetics are produced in Asia.
By the invention of all these new materials the space look appeared again in outfits from the French designers Genreich, Courreges, Cardin and Rabanne. Lots of experiments with plastics and other unconventional materials modernized fashion-
A colorful use of simple forms and A-lines.

17 Balenciaga 1965
18 wikipedia.org 2007 first commercial production by DuPont, 1953 and open-end spinning developed in Czechoslovakia 1963

_Tech Company
_BarCode
1970_TG.jpg

_Tech Company
_MicroProcessor
1971_Intel_TG.jpg

_Fashion Design
_Romantics
1974_JeffBanks_CKG269.JPG

_Tech Company
_VideoRecorder
1975_TG.jpg

_Tech Company
_MobilePhone
1978_TG.jpg

_Tech Company
_WearableComputer
1983_TG.jpg

_Fashion Design
_Bodice
1980_IsseyMiyake_KCI599.JPG

_Technician
_wearablecomputing
1980_Steve Mann_FF16.jpg

_Tech Design
_GrowingCostumes
1982_Tron_FF17.jpg

_Technician
_AudioJacket
1983_BenoitMaubrey_FF167.jpg

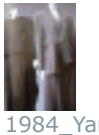
_Fashion Design
_Jacket
1983_Yamaomoto_KCI625.jpg

_Fashion Design
_Sweater
1983_ReiKawakubo_KCI626.jpg

History >> Japanese invention 1970-1990

In the 1970's fashion development slowed. Romantics and sweet flower patterns were still present, but less technical innovation in fashion. Meanwhile Japan was cranking out new products like microprocessors and mobile phones.
At the beginning of the 1980's Japanese designers came to Paris. 'Designers like Rei Kawakubo en Yeohlee Teng often work with concepts that appear to have more in common with architecture than fashion.'[19] The principles of architecture, furniture design and technology were fusing together in a variety of garments collapsing many of the traditional boundaries between them.

The invention of computers made technicians experiment again with wearable electrical devices. Some production processes were reconsidered, but it was too early for any huge innovations and synergy in techno fashion.



_Fashion Design
_Pantsuit
1984_Yamamoto_KCI631.jpg

_Fashion Design
_Dress
1989_IsseyMiyake_KCI634.jpg

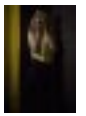
19 Bradley Quinn 2002 p. 5

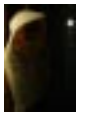
dynafoam bodywarmer [>>]

yellow bodywarmer
_dyna by-wire.net
blue body
_Modström
purple skirt
_Patrizia Pepe
panty's
_H&M

credits_model_sarah
photography_BobVanRooijen.com


back


hands


backlight


chair

History >> Conclusion

1 Have technical innovations influenced fashion throughout history?

Absolutely- especially in the production processes and textile production. However, since the 1970's the implementation of these technical improvements took much time, even though the production of clothing has never been prolific as it has been the last few decades. Watanabe recalls the fact that 'in the forty years after the invention of polyester, the audiovisual technology developed extremely, but fashion delivers nothing news.'[20]

It is likely that the next innovation wave will include synergy between all different branches and developments. I like to call it the wave of connections. This will influence the fashion world yet again.

In the next chapter the field analyses will encompass the decades up to and including 2007. I thereby hope to find more cohesion between fashion and technology.

20 Watanabe 2006 p233 citated by: Ginger Gregg Duggan 2006

Fashion & technology field research

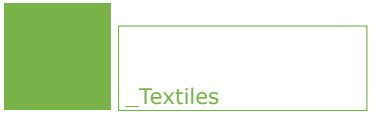
2 What happened the last decade in fashion & technology spillovers?
This question is best answered using a timeline. Past projects have influence on later projects. With an analysis of the field research in a timeline, structures, trends and patterns will appear. Lines can be extrapolated to the future and opportunities for next decennia can be found.
3 What are the future opportunities of techno fashion?
The collected projects will bring some pitfalls to light.
4 What are the pitfalls for the implementation of technology in the fashion market?
To answer this question a list of pitfalls will appear- and analyzed in literature.

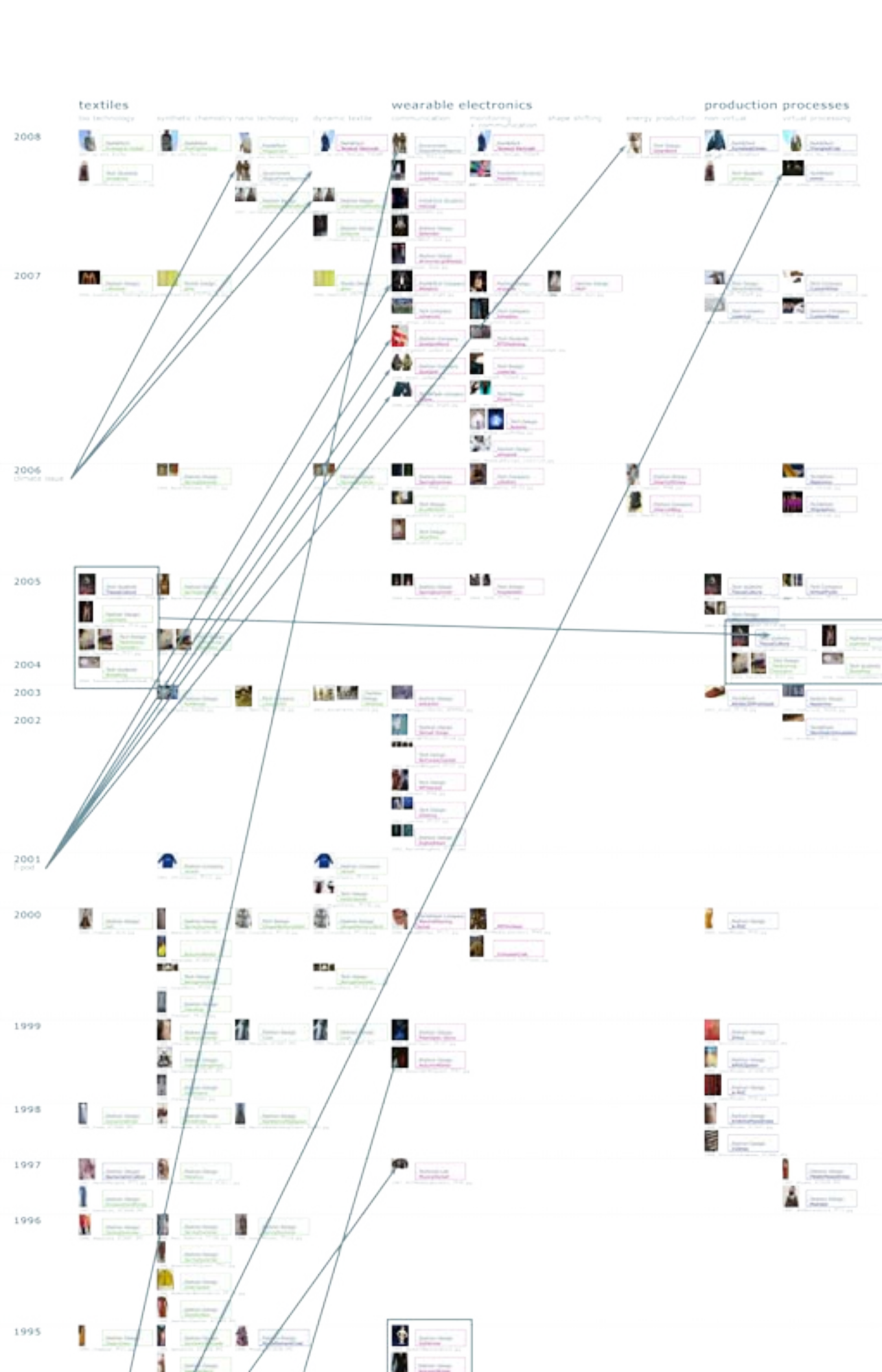
The state-of-the-art research will be published [online] with the goal of inspiring future projects and creating more references for both technicians and designers. [shared referees >>]

Fashion & technology field research >> Methodology

Selected projects all are concerned with technical developments applied into clothing and fashion. This is the empirical date of this research. I have found these projects on internet, in several sources of literature, lifestyle magazines and at exhibitions. With this collection the second question will be answered. **2 What happened the last decade in fashion & technology spillovers?**

All projects will be placed in a timeline and classified in three fields: textiles (materials), wearable electronics and new production processes. Each field will contain several sub-fields. The next paragraphs explain the classification, followed by one example of a technical implementation in that field with a short analysis thereof.
From the information provided by the timeline and analysis questions 3 & 4 can be answered. **3 What are the future opportunities of techno fashion? 4 What are the pitfalls for the implementation of such technology in the fashion market?**
The pitfalls will be analyzed to answer question **5 What are the opportunities for future fashion designers?**




textiles
wearable electronics
production processes
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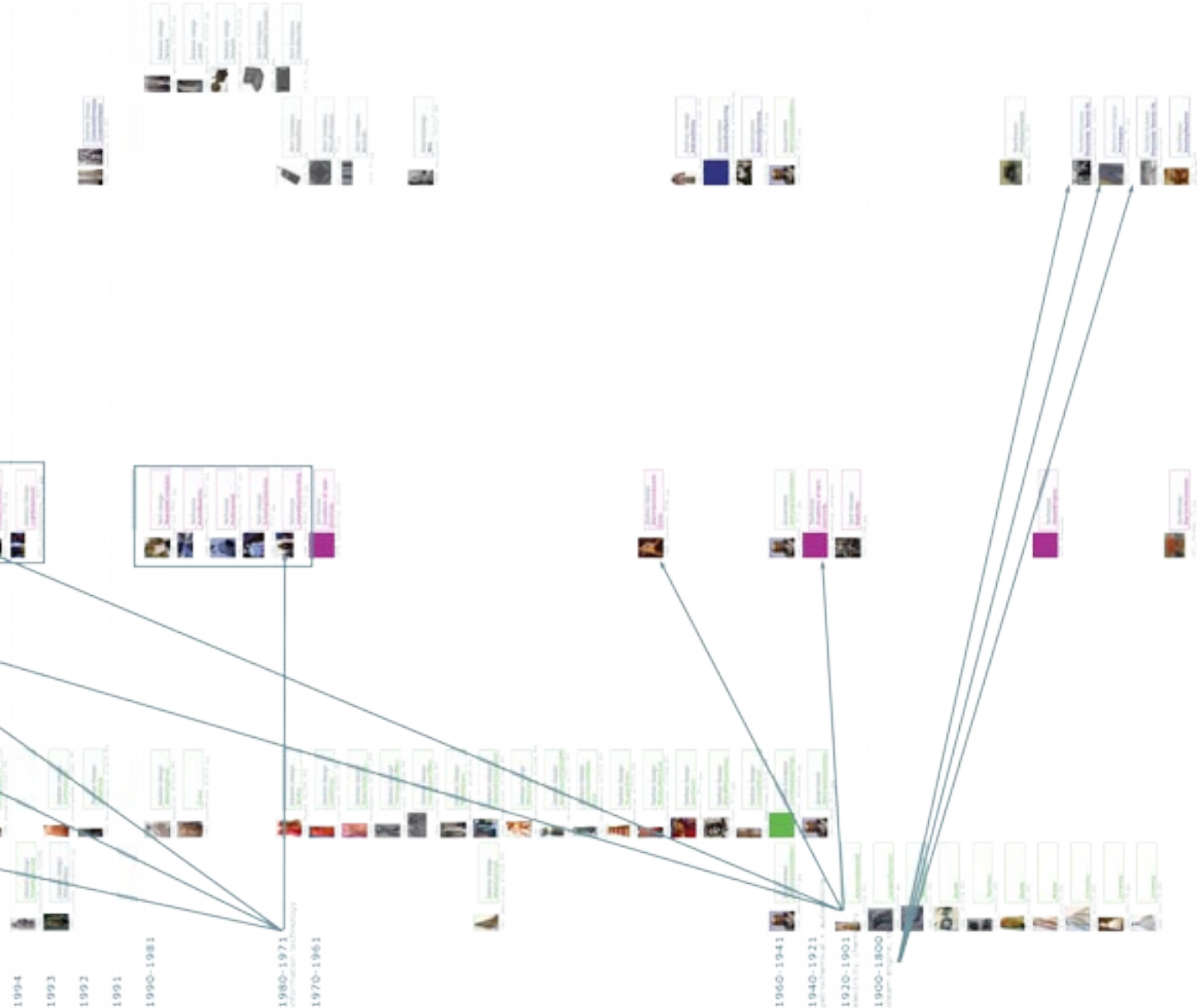


Fashion & technology
field analysis >> Timeline

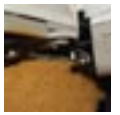
Kwintet KLM huggycare [>>]
antibacterial dress as inspiration of future care wear that must become more careful-looking. The kintting is made out synthetic yarn. Nanotechnology is used to produce the silver yarn.

dark coat
_Isabel Morant
antibacterial dress
_huggy care, by-wire.net
bracelets
_H&M
over knees
_H&M
shoes
_Frankie Morello

credits_model_sarah
photography_BobVanRooijen.com


face


mounth


production_process


fabric_information

•**biotechnology** [>>] This refers to textiles made form natural fibers. Lots of new bio fibers are produced with artificial processes. Biotechnology is focusing on natural solutions reproduced with high-tech processes. Designers and scientists can learn much from nature. An example is Corn Fiber. It is made from a polyactic acid fiber prepared from the lactic acid obtained through the fermentation of corn starch. Derived from a plant, Corn Fiber is an entirely new type of synthetic that biodegrades safely.[1]

•**synthetic chemistry** [>>] Synthetic materials do not rely on agricultural markets. Since the upcoming chemistry after World War II and the first commercial Polyester fiber production by DuPont in 1953, many improvements were made. 'It is a surprising fact that synthetic and regenerated fibers create fewer toxic by-products than organic materials.[1] This field contains all artificial fibers from plastic throuth highly defined brocades.

•**nanotechnology** [>>] 'Fashion fabrics made from 'fabricules' are 'thinner than soap bubbles', describes Neal Stephenson in his cult-science-fiction novel The Diamond Age (1995)[2]
'Nanotechnology, or molecular manufacturing, deals with the world of the small: the atomic or molecular level.'[3]
Antibacterial clothes or scented dresses hit the market. Electro spinning (to produce fibers) is also a type of nanotechnology, but this application is placed in the production process field.

•**dynamic textile** [>>] these 'smart' textiles are reactive textiles. This can be the environment, body, movement, etc. Most times this reaction is made possible by nanotechnology so more fields become one. Projects are placed in the Wearable Electronics area if electronics are used to generate a reaction.

Fashion & technology field research >> Textiles

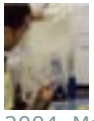
Textile is a flexible material comprised of a network of natural or artificial fibers often referred to as thread or yarn. Yarn is produced by spinning to produce long strands. Textiles are formed by weaving, knitting, crocheting, knotting, or pressing fibers together.
Some designers experimented with lightweight metals, reinforced plastics, glass fibers or industrial mesh. These are also classified in this field as long as electronics are not involved.
The textile group is divided into four groups.
•biotechnology [>>]
•synthetic chemistry [>>]
•nanotechnology [>>]
•dynamic textile [>>]

Because it came out as a renewed application textile in the timeline, biotechnology will be analyzed further.

1 Bradley Quinn 2002 p164
2 Suzanne Lee 2005 p185
3 Suzanne Lee 2005 p197

_Government
_AstronautJohnGlenn
1945_NASA_FF15.jpg

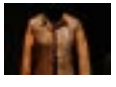
_Fashion Design
_BacteriaOnCotton
1997_MartinMargiela_FF72.jpg



_Tech Design
_Fashioning-Chemistry
2004_ManelTorres_FF27.jpg

_Tech students
_BoneRing
2004_TobieKerridge&NikkiStott_FF66

_Tech students
_TissueCulture
2004_OronCatts&IonatZurr_FF69.jpg



_Fashion Design
_cellulose
2006_SuzanneLee_FleshingOut.jpg

Fashion & technology field research >> Textiles >> Biotech for textile production

Textile produced out natural sources. The first biotechnological material is Viscose, made form wood- but produced with artificial technological processes. 'Biotechnology means any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use.'[4]
The American government invested much in textile research and development.[1945_NASA_FF15.jpg] This includes both- synthetics and natural materials. Since the 1950's, for economical reasons, interest in textile innovation shifted to synthetics as future textiles. Because of the climate and environmental issues, materials are reconsidered. The production of synthetics is nature friendly, but hardly biodegrades. That's why biotechnology is re-discovered.
Martin Margiela experimented with bacteria just for the looks,[1997_MartinMargiela_FF72.jpg] and Manel Torres experiments with chemicals and biomaterials to find new textiles.[2004_ManelTorres_FF27.jpg]
Tobie Kerridge & Nikki Stott (industrial design, Central St Martin) let rings grow out of human teeth.[2004_TobieKerridge&NikkiStott_FF66] This created lots of commotion even for the Tissue Culture experiments from bio-artists Oron Catts and Ionat Zurr.[2004_OronCatts&IonatZurr_FF69.jpg] They made a miniature coat of Victimless Leather grown from cultured cells. 'The artist intentions are to confront people with the moral implications of wearing parts of dead animals for protective and aesthetic reasons and to raise the possibility of wearing 'leather' without killing an animal.'[5]
Suzanne Lee experimented with cellulose.[2006_SuzanneLee_FleshingOut.jpg] She created a garment grown out of cellulose. This would biodegrade completely. 'Nature can grow things for us to make exactly what we want with no waste.'[6] [A previous project about the no-waste culture of intuits: GRIP]

4 United Nations 1992
5 Suzanne Lee 2005 p68
6 D. Hepworth 2004, published in Suzanne Lee 2005 p65

_Tech Students
_winedress
2007_UniOfAustralia_twenty1f.jpg

The latest experiment is also intended to provoke some discussion about future fashion products. Bacteria turn wine into vinegar, and then produce cellulose. They lifted the layers of slimy cellulose off and laid them over an inflatable doll. After each dress was complete, they deflated the doll and removed it, leaving the dress intact. 'It's the bacteria that are weaving all these fibers together,' says Gary Cass. 'We're not using any machines, sewing machines and so forth.'[7]
This is a new production process as well as a new textile, and subsequently is not on the commercial market yet, but it won't take to long before people are wearing cellulose skirts or eating victimless meat. The methods are already in place. All that is needed now is a public willing to buy.

Fashion & technology field research >> Textiles >> Biotech for textile production >> Short Analysis

This is an overview of notes that emerged out of the biotech research.
•'Environmental issues have strong impact on the types of textiles being developed today.[8]
•Most consumers don't know how poisonous cottons and other naturals are.
•Designers experiment with new fabrics to create social interest and acceptance.
•Textile producers have to react to textile innovations.
•Material improvements and processes must evolve with each other to create new textiles.
•Technical problems, investments and conservative companies can delay these innovations.
•Lots of technical knowledge is needed to create new fibers. (textile technologists)
•Technicians don't care much about esthetics, so the look of fabrics isn't important. (semiotic)
•Interaction is needed between technicians and designers for the aesthetics to be realized.
•Designers must adapt innovative textiles to make them commercially successful.

7 twenty1Fashion, by email newsletter, 21 maart 2007
8 Bradley Quinn 2002 p164

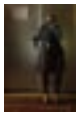
Ten Cate & TUDelft reflecting raincoat [>>] fabric for safety in traffic and applied electronic features for user comfort

reflective blue raincoat
_tecatud by-wire.net
black body
_Modström
black skirt
_Mads NØrgaard
purple legging
_United Colors of Benetton
lak shoes
_Melissa by
Alexandre Herchcovitch

credits_model_nina
photography_BobVanRooijen.com


blur


head


stands


production_process


fabric_information

•**communication** 'To fashion technicians, a dress is no longer a dress, but a wearable computer interface'[1] Communication is the main function for fashion since ages gone by, but now it is extended by electronic features. This can be a phone or wearable computer, but also a light pattern, Despina Papadopoulos predicted on the wearable conference in Arnhem (20 June 2007) that useless technology is the best interaction tool. Try to walk in a cafe with tiny lights underneath your shirt and you'll receive many comments.

•**monitoring + communicating** electronic body monitoring was introduced a few years ago in the healthcare and sport markets. Emotional sensing is coming up. 'In the future, technology needs to be able to anitcipate our needs and act on them just by feeling what we want.'[2] Philips started the skin project; this is all about emotional sensing.

•**shape shifting** is one of the functions tied to electricity. The latest designer experimenting with this was Hussein Chalayan with his incredible morphing dresses. This shape shifting is quite. Imagine your coat reacting to the climate and then covering more or less of your skin depending on how warm or cool it is. The adaptation of alloys like Nitinol for fashion fabrics will enable garments to automatically lengthen and shorten with fluctuations in temperature.

•**energy production** has always been one of the main problems of wearables. Think of the heavy batteries and cumbersome wires. Now attention is moving to self-supporting energy production. Environmental issues are hot. Our climate is changing and the public knows it. This is a good shift of attention. It can only offer the fashion world more opportunities.

Fashion & technology field research >> Wearable electronics

All electronic devices worn in garments are identified as wearable electronics. I divided this field into four different functionalities:
•communication [>>]
•monitoring + communicate [>>]
•shape shifting [>>]
•energy production [>>]

The implementation of electronics is an important development that has major influences on all the other wearable electronic projects in the future.

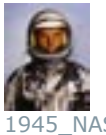
1 Bradley Quinn 2002 p97
2 Lucy McRea [20070222 blog]

_Technician
_Electricity

18--_Technicians???

_Tech Pioneer
_RadioHat

1922_FF166.jpg



_Govenment
_AstronautJohnGlenn

1945_NASA_FF15.jpg

_Technician
_AudioJacket

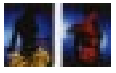
1983_BenoitMaubrey_FF167.jpg

_Technician
_wearablecomputing

1980_Steve Mann_FF16.jpg

_Technician
_AudioBalerina

1989_BenoitMaubrey_FF167.jpg



_Fashion Design
_LightExtension

1993_ErinaKashihara_FF97.jpg

_Fashion Design
_AutumnWinter

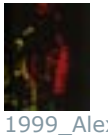
1995_Chalayan_FF98.jpg

_Fashion Design
_FallWinter

1995_WalterVBeierendonck.jpg

_Technical Lab
_MusicalJacket

1997_MITMediaLaboratory_FF49.jpg



_Fashion Design
_AutumnWinter

1999_AlexanderMcQueen_FF97.jpg

_Tech&Fash Company
_ElectroMooring Jack

2000_Levis&Philips_FF171.jpg

Fashion & technology field research >> Wearable electronics >> Implementation of electricity in commercial garments

It took more than a century to introduce a technical innovation into the commercial fashion world- mentioning that the discovery of electricity is a major innovation. [innovation wave] 'The less radical an innovation the more easily and quicker it becomes accepted and disseminated'[5]. The implementation of the first wearable electronic device is divided in lots of preceding marginal innovations as summarized in the accompanying pictures.

After the discovery of electricity, technical pioneers experimented and explored its possibilities.[1922_FF166.jpg] The government (space/army) invests in research and development.[1945_NASA_FF15.jpg] Conceptual and industrial designers experiment with the possibilities. And the next step, (many years later in this example) is that conceptual couture designers implement technology in their shows.[1993_ErinaKashihara_FF97.jpg] This creates public awareness and a starting point for technical mediation and social acceptance. With that, they clear the way for commercial clothing companies to place a product on the market. Levi's & Philips collaborated in the first wearable technology on the retail fashion market; 5 coats with electronic devises like phone and mp3 plug-ins.[2000_Levis&Philips_FF171.jpg]

_Tech&Fash company
_Ijeans

2006_Levis&Philips_bright.jpg

At last the first wearable electronic device was implemented. But even after lots of publicity the project more or less flopped. The sales figures were disappointing. Philips and Levi's decided to stop the collaboration.
Apparently society wasn't ready for electronics near their skin. Also the prices of the coat and devices were quite high and the electronics seemed to have quite a few technical problems. The designs aren't very interesting either, for that matter.
In 2006 Levi's & Philips tried a new collaboration by producing the I(Pod)jeans.[2006_Levis&Philips_bright.jpg] The look is much better, but the added functionality is doubtable. The IPod is pluggable in the jeans, but you still have to wear it in your pocket. What's the benefit? What's the relevance? But starting a new collaboration is praiseworthy. They learn while working together.

Fashion & technology field research >> Wearable electronics >> Implementation of electricity in commercial garments >> Short Analysis

This is an overview of notes that emerged out of the wearable electronics research.

- Social acceptance needs to grow in little steps [technical mediation >>]
- Technicians don't care much about esthetics, so looks aren't important.
- It takes lots of time before fashion designers start experimenting with new technical possibilities. Industrial designers start years earlier. [education >>]
- Fashion designers have to experiment with innovations to create social acceptance for new products.
- High costs must be considered.
- Lack of social relevance must be considered.

Triangled coat with TNO, HKU and Printed Unlimited [>>] inspired on the 3D body measuring system of TNO. Digital printed on the new full width jet printer at the HKU and fixated by Print Unlimited in Horst, Limburg

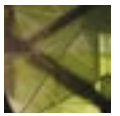
digital printed canvas coat
_triangled by-wire.net
black dress
_Bruuns Bazar
purple legging
_United Colors of Benetton
black boots
_Donna Lisa Tucci

credits_model_sarah
photography_BobVanRooijen.com


back_open

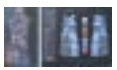

silhouette


production_process


fabric_information

•**non-virtual** [>>] sewing used to be the main way for fashioning clothes, but new processes appear, like 3D knitting and weaving introduced by the Japanese designers. Textile Museum Tilburg experiments with these techniques. [GRIP] Or more advanced techniques, like stereo lithography for 3D prototyping. Items can be built by computers through layering, creating a kind of 3D printing in resin.

_Fash & Tech
_Knitted_bodysuit
2005_textielmuseum&Marina.jpg



_Fashion Design
_Hypermix
2003_PiaMyrvold_FA058.jpg

_Fashion Designer
_SecondLifeDesigner
2007_NicolaEscher.com.jpg

•**virtual processing** [>>] Your virtual self becomes more important. Nicola Escher produced a virtual collection for Second Life. Virtual processing can also be used for cat-walk presentations. But the most relevant and the biggest opportunities for the near future are in custom made garments which can be virtually chosen or combined on internet, for example.[3] When synergy with 3D measuring systems includes, customizing would be perfect. These processes can give a completely new meaning to consumer culture and personal identity. 'I also realized that a truly interdisciplinary universe could be linked by technology to the clothes and from the clothes into practical reality,'[4] Pia Myrvold says.

Fashion & technology field research >> Production Processes

Since industrialization, the textile industry had repeatedly improved itself. Materials and processes meshed with each other in a perfect balanced innovative union. 'Permanent combining of knowledge forms spillovers between various areas is a major factor in innovation.'[1] Since the late 1960's, Japanese designers have influenced fashion. 'Their concepts and reverence for the application of technology and their search for new paradigms has had a resounding impact.'[2] The production processes are divided in two parts- non-virtual and, because of the ubiquitous internet, virtual production processes.

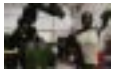
•non-virtual [>>]
•virtual processing [>>]

The implementation of 3D prototyping is used as an example because it is an upcoming technology that offers lots of opportunities for individualized production.

3 www.cybercoulture.com
4 Pia Myrvold 2003 p 59 cited by Bradley Quinn 2003

1 Dany Jacobs 2005 p274
2 Bradley Quinn 2002 p143

_Government
_AstronautJohnGlenn
1945_NASA_FF15.jpg



_Government
_ElectroSpinning
1930/50_USArmy_FF34.jpg

_Tech&Fash
_Adidas3DPrototype
2003_ZCorp_FF136.jpg

_Tech Design
_3dPrintedTextile
2004_FreedomOfCreation_FF134.jpg

_Tech&Fash
_3dShapedFoam
2007_bwr&Dynafoam_by-wire.net.jpg

Fashion & technology field research >> Production Processes >> Implementation of 3D prototyping in commercial garments

This started in the American Army as well.[1945_NASA_FF15.jpg] Technicians tried to create seamless couture military uniforms from 3D body scan data with electro spinning.[1930/50_USArmy_FF34.jpg]
Using technology from the automobile and product-design industries, unique detailed instant garments, designed on computer, are mapped to 3D body scans and printed out. This requires a radical rethink of the fashion industry, but it is already possible. A prototype for an Adidas shoe; 3D color printed.[2003_ZCorp_FF136.jpg]
The designers of Freedom of Creation design their products using CAD and output their 3D files to be rapidly manufactured using stereo lithography. A garment can be created with an intricate textile structure. Moving parts or logos can be integrated and printed out as an individual finished product.[2004_FreedomOfCreation_FF134.jpg]
Here by-wire produced a 3D shaped skirt out of foam, [experiment 3] [2007_bwr&Dynafoam_by-wire.net.jpg] but in stead of building up, this process more or less shapes by cutting out. This produces lots of residuals.

Fashion & technology field research >> Production Processes >> Implementation of 3D prototyping in commercial garments >> Short Analysis

•U.S. Army influences all fields because of its huge investment.
•innovation in production processes are very technically orientated, that's why it is hard to understand and influence by designers
•corporate production processes is shifting from mass-production to individualized production.

_Tech Students
_winedress

2007_UniOfAustralia_twenty1f.jpg

_Tech Design
_SolarBikini

2007_AndrewSchneider_andrewjs.com

_Tech students
_TissueCulture

2004__OronCatts&IonatZurr_FF69

environment

bio degradable

victimless skin

self supporting and energy production to reduce your footstep

less waste

custom made

Fashion & technology field research >> Extrapolation >> Future potentials

3 What are the future opportunities for techno fashion?

'The future is in history'[1] as the managing director of Royal Ten Cate, Look de Vries mentions in 'De Twentse Courant Tubantia. That's why I created an historical timeline. Now we can extrapolate these data to estimate future opportunities.

Future potentials >> Environment

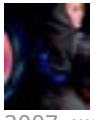
Most new innovations come from our passion for saving the environment. As you can see in the timeline there is a renewed interest in biotechnology, energy producing garments and personalized production processes. This will develop further. 'The vogue world can hardly ignore environmental impact of the production of clothing, and with that, its technical innovations.'[2]

Lots of money is spent in research and development for textile processes. Consider nanotechnology and digital processing as reaction on environmental issues, for example University of Twente is rethinking how cotton production can be cleaner.[3]
The environment becomes a most important, especially in a paradoxical industry like fashion.

1 Look de Vries 2007
2 Arie Vervelde 2007
3 Proffessor Warmoeskerken [20061108 blog] Proffessor UTwente
4 Pia Myrvold 2003 p59

_Fashion Design
_Airborne

2007_Chalayan_Style.jpg



_Fash&Tech Students
_myCoat

2007_wearableHKU_HKU.jpgcom.jpg

_Tech&Fash
_mirror

2007_adidas_computeridee.nl.jpeg

communication
individualization

dynamic / changeable

showing your emotions

onlineness of things

100% integration
of devices

custom made / unique

Future potentials >> Communicate identity / Individualization

Communication is the main function of today's clothing. It needs to be rethought in this post-modern time when social communication methods develop so extremely fast. Technical developments can improve the function of fashion by the use of smart- or dynamic textiles. These are textiles that react to their environment or to the emotion of the wearer.

'In future, technology needs to do whatever we want by just feeling what we want.'[5] From this we can conclude that emotional sensing devices will become very important. Plus, you have to decide if you want to show or hide your emotions. And what about your friends? Do you want to show them to everybody? These questions spawned form the myCoat project.[>>][6]

Wearable electronics focus mainly on how we communicate. 'The vision of fashion technologists promises a future so rich in wireless systems that we may not even realize the technology is there at all.'[7]

The introduction Web 2.0 allows consumers to interact directly with companies or even allows them to design the garments themselves.[8] This will have huge impact on the production and fashioning of clothes. It won't be mass made anymore; production will be individualized with uniquely made products tailored for each consumer's needs.

People are now quite familiar with communication tools like internet: Every aspect of our life has to be online. But also the internet of things is coming up. 'Not only people have to be online 24 hours a day, also things can't be missed anymore.'[9] This will influence fashion, read more about it in the next paragraph.

5 Lucy McRea started at Philips the skin project, this is all about emotional sensing. [20070222 blog]
6 myCoat project where I worked in collaboration with HKU students Fashion, Interaction Design, Media Management and Design Technology, finished Januari 2007
7 Bardley Quinn 2002
8 For example Nike and Pia Myrvold, www.cybercouture.com
9 Rob Kranenburg 2006 lecture

_Fashion Design
_watherproofknitting

2007_JanTakahashi_Trouw10May2007

_Tech Company
_Sensatex

2006_smartshirt_bright.jpg

_Fash&Tech Students
_FatsShoe

2007_wearableHKU_fats-shoe.jpg

protection

multi-risk fabrics

body and environment monitoring

Future potentials >> Protection

The textile industry has always been improving itself. The industrial revolution started in textiles, as I have already discussed. [Ten Cate >>] Royal Ten Cate is the leader in the field of protective fabrics used in work wear.
Multi Risk fabric look and wear like textile but act like a barrier between the person and his environment. Protective qualities can be implemented in fashion more easy because of these textile improvements. I assume fire resistant fabrics [fire fighter suit] will soon be required for children's clothing, just like invisibly reflective clothing. [Tecatud raincoat] People want to be in control of every aspect of their lives. That's why body monitoring is becoming more popular. Originally used in the health care and sports industries, it is now obtainable everywhere. Its implementation into clothing has already started and will continue to grow in the near future. 'In fashion there is the movement toward RFID-chips and the interrelated data mining, chasing a dream of super-predictability and super control.'[10] This is how terrorism fighters work: They constantly know where everything is.
The fashion industry can use this is a tool to measure consumer habits, but at what costs? Consider the protection of our privacy?

•innovation in textiles: Ten Cate [>>]
Last month Ten Cate advanced textiles won the Dutch award for most innovative company. Their textile is still used in clothing but also to build airplanes, dikes and bridges.

Having said that, there are major opportunities for fashion technology as related to environmental issues, communication issues and improved human protection uses.
But as the following list shows, there are some pitfalls that need to be overcome before big-scale-implementation in the consumer world is possible.

Ten Cate firefighter body suit
[>>] Future vision made out of moisture management fabric; chemical resistant but breathable. In the extrapolation we find the development to multi-risk fabrics.

moisture management suit
_fire figter by-wire.net
pumps
_Zara

credits_model_jocelyne
photography_BobVanRooijen.com


window


corner


production_process


fabric_information

Fashion & technology field research >> List of pitfalls

4 What are the pitfalls for the implementation of technology in the fashion market?

We have already seen that there are major opportunities for fashionable technology in the future. But why isn't it already on the commercial market?
These pitfalls are generated from the field analysis and the implementation researches of biotechnology, wearable electronic and 3D prototype examples.

•technical problems: When new products appear they need to be tested in society to see if and how they work. With technical innovations a learning process is needed. Technicians are already familiar with these issues.
•economical problems: New products are always initially expensive. This is a marketing strategy that creates more profit and makes research and development investments more interesting. Only problem is that it takes some time before average consumers can buy those products.

•Technical mediation [>>]
'The cultural process in which technique extends our perception capacity, social relations rethinks and thereby appropriate new imagery and meaning granting required, is called technical mediation.'[3]
'Mankind is excentric; it sets himself in the center. If new techniques are made available for the first time to public, a period of off-centering occurs, this means that the users stand strange compared with technique and the world which is excluded by it. But soon re-centering strategies are brought in, as a result of which technique in question becomes domesticated.'[3]
Mankind has to experiment with new techniques to become re-centered and domesticate the innovation. Technicians and designers are re-centering systems. To make lots of techno garments people get used to it and start using and experiencing the ads.

•uninteresting looks / esthetics: Most parts used in techno garments are currently designed and produced by technicians. They start experimenting with the newness of it all while fashion designers sit and wait. Most technicians care about function and performance, not about feeling, aesthetics or the emotional aspects.
•lack of social relevant concepts: The absence of social relevance concepts is problematic. If projects don't have an added (social) function (problem solving), they are bound to fail. Technicians don't think this way. Hein Daanen, TNO says: 'We think from previous technical developments and scientific researches,'[1] and leave the implementation for later. These two pitfalls together; uninteresting aesthetics and a lack of social relevant concepts create the main pitfall: social acceptance.

•acceptance: Innovation needs to be done in little steps, as shown in the wearable electronics example about implementation of electricity in garments, 'the more an innovation ties in with the existing culture --and is compatible with existing norms and values-- the more easily it will be accepted and disseminated'[2] This is technical mediation [>>].
By creating lots of techno garments people get used to it and start experiencing and responding to the ads. Designers also need some time to accept the changes. Ellen from Print Unlimited told me that, '10 years after introduction, fashion designers get used to digital textile printing. Most of the times it takes three years before designers use the specific qualities of a new technique.'[3]

[implementation digital print example >>]


_FirstYear


_SecondYear


_ThirthYear

3 Petran Kockelkoren 2003 p8
4 Petran Kockelkoren 2003 p14

1 Hein Daanen [20070302 blog] TNO Human research
2 Dany Jacobs 2005 p274
3 Ellen [20070504 blog] Print Unlimited

Fashion & technology field research >> List of pitfalls >> 5 What are the opportunities for future fashion designers?

Technicians work on technical improvement. Their management thinks about the economic factors. So in time they will solve these two pitfalls, but what about the other pitfalls?
Fashion designers are educated from social perspective. They 'aren't about innovation, they are about fantasy,'[1] said Despina Papadopoulos from Studio 5050. Fashion designers think from the consumer's point of view. How mankind emotionally adapts things through positive aesthetics, interesting design and placing it in a surrounding that fits in this time. Design education is 'based on social idealism'.[2] said Ed van Hinte.
'Technology is developing, but people stay the same.'[3] Consumers want clothing from designers they are used to, not from technicians. The fashion branch has a tradition of stretching people's minds to look more than up-to-date by consuming 'newness'. That's why they can create a much wider social acceptance.
So the pitfalls can disappear if fashion designers embrace technical developments and stay active in collaboration projects to introduce more technology in the commercial fashion world.
'The world of design will benefit from specialists with more technical and more cultural expertise, who preferably are willing to talk to each other.'[4] Says Danny Jacobs and Bradley Quinn is saying: 'the key to making this possible depends on the extent to which the industries of fashion (…) and technology can force an alliance and work towards the same goal.'[5]
Technicians are developing their skills.[6] If fashion designers don't embrace technology, technical developers will become the designers of the future.
But it is hard to create succesfull collaboration between fashion designers and technical developers. That's why some experiments are done. Read more about that in the next chapter. [>>]

1 Despina Papadopoulos [20070619 blog]
2 Ed van Hinte 2006 p243
3 Suzanne Lee [20070619 blog]
4 Dany Jacobs 2005 p274
5 Bradley Quinn 2002
6 Excellent design in the skin project of Philips & O'Neill prefers Industrial Designers as garment designers.

Experiments

There isn't much information in literature about collaboration in fashion with technicians or scientists. Only some field notifications of contemporary techniques applied in clothing like Techno Fashion from Bradley Quinn[1] and Fashioning the Future[2] from Suzanne Lee. They give a nice overview about fashion innovations but nothing about the synergy--or the lack of synergy- between designers and technicians in the fashion field.

That's why a theory has to be created by doing some experiments to identify the pitfalls that will appear during collaboration between designers and technicians.

I began some collaboration projects between me, as a fashion designer, and technicians (technical companies), with the goal of create a garment where fashion and technology become one in an innovative setting. Then I can experience the pitfalls in collaborations from fashion perspective.

6 What are the pitfalls in collaboration between fashion designers and technicians from a fashion perspective?

If pitfalls are identified, solutions can be found. The results can be used in the field analyses and as inspiring references for future projects.

1 Bradley Quinn 2002
2 Suzanne Lee 2005

•A theory from Michael Bierut about this subject [>>]
'Changing in the 21st century, characterizing it as a shift from an industrial economy to an information economy, from physical work to knowledge work, this asks for another way of working: The collaborative arts, or Artful making, (…) allowing solutions to emerge in a process of iteration, rather than trying to get everything right the first time; and then accepting the lack of control in the process, and letting the improvisation engendered by uncertainty help drive the process.'[3] Rob Ausin & Lee Devin cited by Bierut call this artful making 'any activity that involves creating something entirely new.'[4]

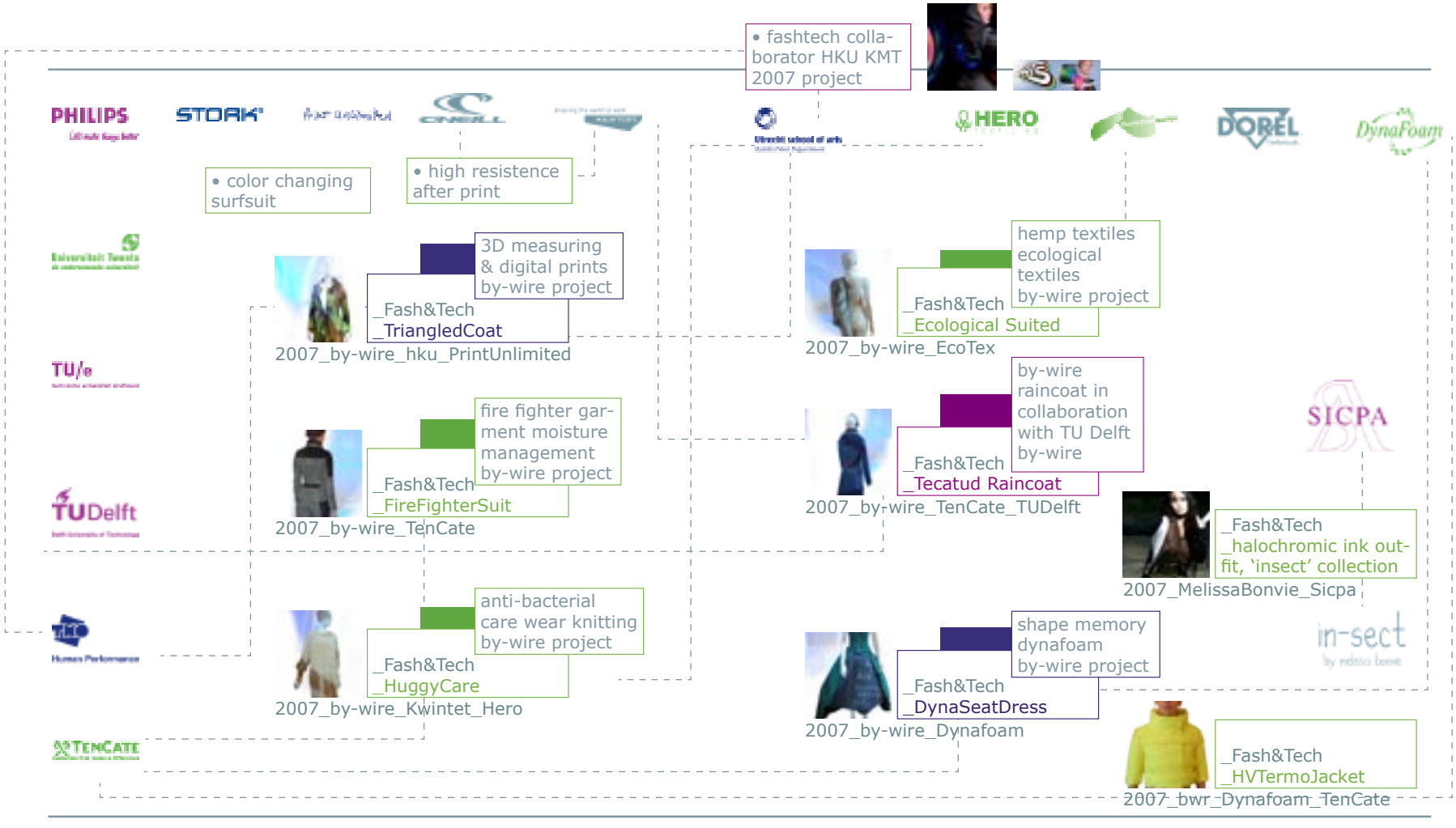
Experiments >> Methodology

The first method was to design a collection of fashion items and noted the steps that were needed to produce them. Soon I experienced that it isn't easy to push collaboration in a system. This approach is based on industrial thinking and reduces technicians' influence down to executers. From the field analyses I noticed that the projects which are the most balanced are the ones with synergy in fashion and technical quality. So this isn't the way to create new products and innovative collaboration.
[A theory from Michael Bierut about this subject >>]

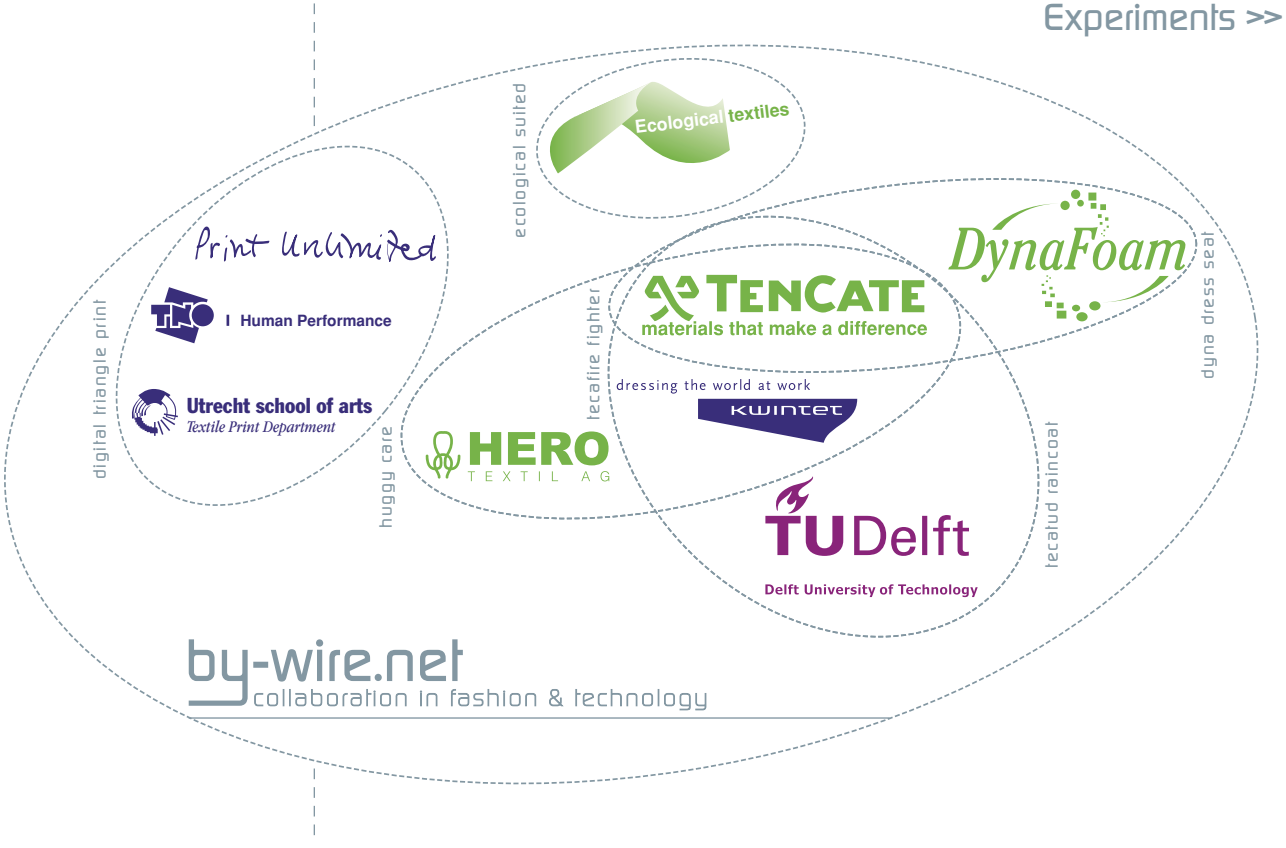
The new approach was to come in contact with companies without a project proposal and get inspired by the interviews and in-house techniques. Balance is the key. The proposals came during and after the interviews with the technicians. The experiments started concurrently at several different companies. This way of working gives the capability to switch companies and projects if it seems to fit better. The roles of designer, initiator, executer, can fluctuate every moment.

6 products are explained. What is produced and which steps had to be taken?
Each stage will be classified by the 3 I's; inspiration, implementation and irritation. The encountered pitfalls are noted from each company. Some of these are analyzed with literature.

3 Michael Bierut 2007 p59
4 Michael Bierut 2007 p59


• fashtech colla-
borator HKU KMT
2007 project
PHILIPS
STORK
ONEILL
HERO
DOREL
DynaFoam
• color changing
surfsuit
• high resistence
after print
3D measuring
& digital prints
by-wire project
_Fash&Tech
_TriangledCoat
2007_by-wire_hku_PrintUnlimited
hemp textiles
ecological
textiles
by-wire project
_Fash&Tech
_Ecological Suited
2007_by-wire_EcoTex
TU/e
fire fighter gar-
ment moisture
management
by-wire project
_Fash&Tech
_FireFighterSuit
2007_by-wire_TenCate
by-wire
raincoat in
collaboration
with TU Delft
by-wire
_Fash&Tech
_Tecatud Raincoat
2007_by-wire_TenCate_TUDelft
TUDelft
SICPA
_Fash&Tech
_halochromic ink out-
fit, 'insect' collection
2007_MelissaBonvie_Sicpa
anti-bacterial
care wear knitting
by-wire project
_Fash&Tech
_HuggyCare
2007_by-wire_Kwintet_Hero
shape memory
dynafoam
by-wire project
_Fash&Tech
_DynaSeatDress
2007_by-wire_Dynafoam
in-sect
TENCATE
_Fash&Tech
_HVTermoJacket
2007_bwr_Dynafoam_TenCate

Experiments >> Collaboration scheme



by-wire.net

creating succesful collaboration in fashion & technology

development **triangled coat**

070507_triangled_by-wire_TNO HKU Print Unlimited_marina toeters

inspiration

meeting Hein Daanen

3D body measuring

MAX results: Bouwze

polygonal human

implementation

tri-pattern design

dessin & fabric

digital printing

steaming for fixation

irritation

TNO couldn't help me to implement the 3d body measuring system in my process.

difficult and expensive devices are needed for the configuration of 3D measure data.

the HKU steamer to fixate the digital ink was broken. I had to go to Limburg to finish the fabric.

'Customization of clothing and equipment will take on a whole new meaning, as designers not only customize the fit but also the 3-D location of different materials within a single item, and try items out on users before the items exist.'[2]

1 Hein Daanen et. al. 1996
Hein Daanen [20070302 blog]
TNO Human Research

add a product / project in the by-wire.dossier

project name: Triangled coat

digital printed coat with triangle dessin inspired on the 3D body mearuring system of TNO.

produced by (all companies or individuals): TNO Human Performance; Utrecht School of Arts; Print Unlimited

finished date: 07052007

dossier

- [ ] event
- [x] product / project

- [ ] new textiles
  - [ ] bio technology
  - [ ] synthetic chemistry
  - [ ] nano technology
  - [ ] dynamic textile
  - [ ] other
- [ ] wearable electronic
  - [ ] communication
  - [ ] monitoring
  - [ ] shape shifting
  - [ ] energy production
  - [ ] other
- [x] production process
  - [x] modeling
  - [x] virtual processing
  - [ ] other

more info: by-wire.net/triangledcoat

by-wire.net

creating succesful collaboration in fashion & technology

irritation

project couldn't be produced in Ten Cate as proposed.

materials had to be shifted.

I can't test the technical quality

anti micro biotic fabric: 'Biosafe is a nylon filament yarn embedded with microscopic ceramic spheres (chemically bound to the fibers) that release a constant stream of silver ions, which has a powerful antibacterial effect. The fabric is ideal for sportswear, high-performance gear, underwear and hospital gowns. Since the antimicrobial deodorant in Biosafe is kneaded into the fiber itself, its properties are highly durable and withstand repeated washing. Tests have shown the fabric will destroy some harmful bacterial and inhibit the growth of others, making the fabric ideal for hospitals or clinical environments.'[2]

2 Bradley Quinn 2002 p165

add a product / project in the by-wire.dossier

project name: Huggy Care

anti-bacterial, knitted care-wear dress

produced by (all companies or individuals): Ten Cate; Kwintet; Hero textil

finished date: 07052007

dossier

- [ ] event
- [x] product / project

- [x] new textiles
- [ ] wearable electronic
- [ ] production process

- [ ] bio technology
- [x] synthetic chemistry
- [x] nano technology
- [ ] dynamic textile
- [ ] other
- [ ] communication
- [ ] monitoring
- [ ] shape shifting
- [ ] energy production
- [ ] other
- [ ] modeling
- [ ] virtual processing
- [ ] other

more info: by-wire.net/huggycare

by-wire.net

creating succesful collaboration in fashion & technology

development **dyna-seat-dress**

0700621_dyna seat dress_by-wire dynafoam_marina toeters

inspiration

DynaFoam

meeting Mark v. Beurden

taking some left-overs

shape experiments

project proposal

implementation

3D digital cutter

foam shape result

hand shaping

mesurment reflection

re-design

irritation

expensive

lack of synchro-nization in digital systems

not everything could automatic be shaped, I had to fi-nish things by hand.

'Shape memory is one of the characterizes of PU foam. The type polyether, possibly combined with other materials, stipulates the advancement of this material and the comfort of the eventual product.'[3]

3 Mark van Beurden [20070209 blog] Dynafoam

add a product / project in the by-wire.dossier

project name: Dyna-Seat-Dress

Skirt of PU-foam with shape memory. Is also usable as chair.

produced by (all companies or individuals): DynaFoam; Ten Cate Protect

finished date: 21062007

dossier

- [ ] event
- [x] product / project

- [x] new textiles
- [ ] wearable electronic
- [x] production process

- [ ] bio technology
- [x] synthetic chemistry
- [ ] nano technology
- [ ] dynamic textile
- [ ] other
- [ ] communication
- [ ] monitoring
- [ ] shape shifting
- [ ] energy production
- [ ] other
- [x] modeling
- [ ] virtual processing
- [ ] other

more info: by-wire.net/dynaseatdress

by-wire.net

creating succesful collaboration in fashion & technology

development **tecatud raincoat**

070613 tecatud raincoat, by-wire TUDelft, Ten Cate Kwintet, in toeters

inspiration

TUDelft
Delft University of Technology

meeting Sonja van Grinsven, Industrial Design, work-wear TU Delft

concept decision: raincoat with electronic features.

style.com

design proposal

implementation

technical drawing

TENCATE
materials that make a difference

Silhoflec: reflecting Hydro-Control®

dressing the world at work
KWINTET

seam sealing with tape

electronic feature to implementate in future

irritation

no implementation of electronics as proposed

less production time; Sonja (TUDelft) couldn't help me further in this short time

'Bad visibility is the cause of much personal lesion in traffic and at the work. To see and seen, is thus the motto. Ten Cate Protect contributes to that optimum with the introduction of Silhoflec®. With Silhoflec®-fabrics clothing becomes entirely reflecting. Wearers of this clothing are optimally visible.'[4]

4 Martine Kok Ten Cate [20070514 blog]

add a product / project in the by-wire.dossier

project name: Tecatud Raincoat

raincoat made out of high quality dynamic reflective fabric

produced by (all companies or individuals): TU Delft; Ten Cate Protect; Kwintet

finished date: 13062007

dossier

- [ ] event
- [x] product / project

- [x] new textiles
- [x] wearable electronic
- [ ] production process

- [ ] bio technology
- [x] synthetic chemistry
- [x] nano technology
- [x] dynamic textile
- [ ] other

- [x] communication
- [ ] monitoring
- [ ] shape shifting
- [ ] energy production
- [ ] other

- [ ] modeling
- [ ] virtual processing
- [ ] other

more info: by-wire.net/raincoat

by-wire.net
creating succesful collaboration in fashion & technology

development fire fighter suit

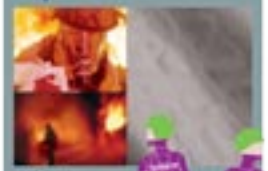
070612_firefighter_by-wire Ten Cate_marina toeters

inspiration

TENCATE materials that make a difference

meeting B. Heesink (R&D) and E. Brummelhuis (Marketing); asking for vision fire fighter wear

researching todays fire fighting garments



vision:
more mobility
small shapes
attainability

project proposal: A body-suit gives best mobility, it can be worn underneath your clothes. Taking of clothes costs less time than getting them up.

implementation

fabric composition tests

TENCATE materials that make a difference

moisture management fabric; chemical proof, breathable, fire resistance

testing the fire resistance

cutting with a special armide scissor (TenCate)

irritation

it took a very long time to receive the materials I needed for production

I imagined a better quality of fabrics

the outcome is to renewed for Ten Cate to present it on their exhibition.

'Turnout gear is comprised of three layers (…) The moisture barrier is the middle layer. (…)
Its protective role is of critical importance to a fire-fighter's safety. The moisture barrier prevents liquid moisture from passing through to the inside of the garment. Moisture barriers help keep firefighters dry and protect them from hazardous liquids, such as chemicals and body fluids. At the same time, they may help to reduce heat stress by facilitating the outflow of heat and vapor.'[5]

5 Ten Cate.com 19-07-07
http://www.tencate.com/smartsite.dws?lang=en&id=3476

add a product / project in the by-wire.dossier

project name: Fire Fighter Suit

bodysuit out of moisture management fabric used within firefigher outfits

produced by (all companies or individuals): Ten Cate Protect; Ten Cate Advanced Textiles

finished date: 12062007

dossier
- [x] event
- [x] product / project

- [x] new textiles
  - [ ] bio technology
  - [x] synthetic chemistry
  - [x] nano technology
  - [x] dynamic textile
  - [ ] other
- [ ] wearable electronic
  - [ ] communication
  - [ ] monitoring
  - [ ] shape shifting
  - [ ] energy production
  - [ ] other
- [ ] production process
  - [ ] modeling
  - [ ] virtual processing
  - [ ] other

more info: by-wire.net/firefighter

irritation

no balance and spill-overs between me and the company

not very innovative; more renewed.

'Artificial fertilizers and pesticides aren't needed for the growing of hemp. Cannabis tends to grow very quickly. Hemp sheds many of its leaves before harvest, thus returning nutrients to the soil for the next crop. It is also fairly disease. So from many points of view, hemp seems to be an ideal candidate for organic textile production.'[6]

6 Eco textiles 19 Juli 2007
http://mojo.calyx.net/~olsen/HEMP/IHA/iha02109.html date

add a product / project in the by-wire.dossier

project name: Ecological Suited

3 sporty garments made in ecological hemp fabric

produced by (all companies or individuals): Ecological Textiles

finished date: 11062007

dossier
- [ ] event
- [x] product / project

- [x] new textiles
- [ ] wearable electronic
- [ ] production process

- [x] bio technology
- [ ] synthetic chemistry
- [ ] nano technology
- [ ] dynamic textile
- [ ] other
- [ ] communication
- [ ] monitoring
- [ ] shape shifting
- [ ] energy production
- [ ] other
- [ ] modeling
- [ ] virtual processing
- [ ] other

more info: by-wire.net/ecosuited

Dynafoam 3D cutted PU foam [>>] here presented in the dress-seat. This garment can be used as dress, as well as seat. If you build on history, you will never get lost in the future. That's why I have chosen a baroc shape constructed in innovative materials.

dress with over-skirt
_dyna-dress-seat by-wire.net
panty's
_H&M
wooden lace plateaus
_TMK

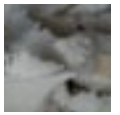
credits_model_jocelyne
photography_BobVanRooijen.com


light


jump


crob


production_process


material_information

•quote [>>] part of a sentence in the conversation with Kees Bastiaanse [>>] '…bistability of gelled films has been utilized in building a reflective bistable chiral nematic ink that…'[5] Which ink?

•Language, shared references and education [>>] influence collaborations. 'Fine Art, and with that design, are placed in the alpha side, while technique is proposed as applied beta-knowledge.'[8] In literature there is a split between scientific or technological knowledge (used by technicians) and skills (used by designers). 'Skills are only in the heads of people, we can't summarize it in formulas, technical drawings or rules.'[9] I think that's the main difference between designers and technicians.
•shared references [>>] Sometimes designers have to communicate their ideas when they can make no assumptions about what their audience knows or understands, they don't have shared references. In the fashion industry designers often have problems because they cannot justify their designs to non-designers. 'Many characteristics of designs cannot easily be expressed in any absolute terms without reference to examples and variations from them. The language of design biases new designs towards existing ones, named example-driven thinking. 'The more a design differs from the stock of old designs, the harder is it to imagine or express it.'[10] Wearable technology implemented in garments is new. Collaboration projects between fashion designers and technical developers are exceptional. There isn't much fashionable technology on the commercial market so we have a lack of existing garments, or the so-called shared referees. It is important that all experiments and prototypes come in public to 'furnish a vocabulary both for thinking about new designs and for describing designs to others.'[10] Marielle Weghorst says: 'we have to talk a lot inter disciplinary to create a shared language.'[11]

Experiments >> Experiences & literature

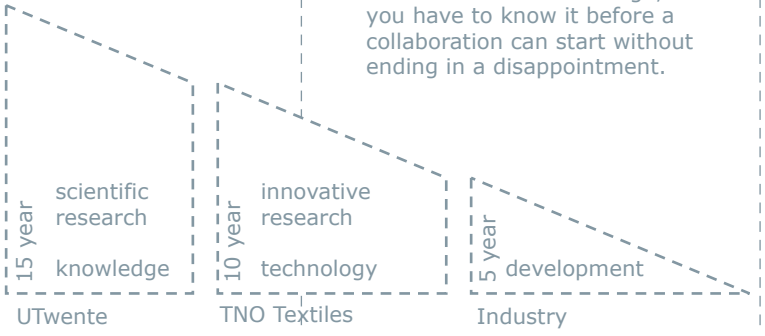
To create a successful collaboration is difficult, I discovered. Being a student has positive effects. Initiation comes from my side, I don't have to make profits and most of them like the freshness and enthusiasm students have. But I don't have a known reputation yet, not in fashion and not in the technical world. I think that, for example, Hussein Chalayan can count on much more positive reactions out of the professional world. But later collaborations started easier because I could name Ten Cate and TNO as preceding collaborators. In July a company took even initiative [Dorel, Maxicosi, Quinny>>] Therefore I am developing that part.

While I am pretty technical, or beta, for a fashion designer, I am not technically educated and have to learn the jargon used in that field. After one hour of conversation with Prof. Bastiaansen, TU Eindhoven[5] I left without understanding anything he told me. [quote>>] 'For a successful collaboration you have to speak the same language.'[6] This can be created by shared experiences and references or learned by education, but 'understanding of technology is rapidly disappearing at design training institutions,'[7] says Ed van Hinte [Communication; Language, shared referees and education >>]

5 Kees Bastiaansen [20070301 blog] prof TU/e
8 P. Kockelkoren 2003 p9
9 CPB 2002 Quoted from Vertooren 2007
10 Claudia Eckert 2000
11 M. Weghorst [20070130 blog] TNO working as designer between technicians
5 Kees Bastiaansen [20070301 blog] professor of chemical engineering at the Technical University of Eindhoven
6 Matthijs Vertooren 2007
7 Ed van Hinte 2006 p246

•education [>>] Isn't it strange that almost all design educations are also taught at Universities (Industrial Design, Country Planning, Architects) but not for fashion design? Garments are also produced industrially. Textile technologists are educated at universities. In Asia there are universities teaching fashion technology.[12]
If fashion designers get more technical education and technicians learn more about designers we can easily communicate.
At our academy (HKU) the only thing we learn for communicating with other branches is a technical drawing, which must look nice instead of giving detailed information. 'In recent years, there has been a gradual shift of attention among architects and designers from function and industrial production based on social idealism, to visual styling. This change suggests their reduced attention for technological and operational dimensions, (…) It is enough to turn a series of thoughts into an image, but understanding of technology, in the broadest sense of the word, is no longer needed,'[13] argues Ed van Hinte about design education.
I spoke about this with Christiaan Roos, WE designer at Oniell. For their sportswear they like to work with Industrial Designers from the technical universities because of their technical communication skills. Isn't it time for academies to learn to communicate with a wider audience?

•different experiences of time [>>] The Textile Technology Group of the University Twente is researching production processes used, hopefully within 15 years.[15] The students of the Technical University Eindhoven can spend two years (or even more if it seems to become really new) with one meter of fiber as end result. Also the commercial companies like Ten Cate can have their fabrics in collection for five or more years with a minimum of change in looks or quality. Receiving the fabrics I needed to produce the prototypes for Ten Cate took over two months. This is a difference in work ethics. It is hard to change, but you have to know it before a collaboration can start without ending in a disappointment.



Time scheduling was problematic for some collaborations. I had a strict deadline and wanted to finish everything in less than a year. In this time I had to create a research method, search for companies, contact them, start the collaboration, produce a prototype and analyze it all. In the fashion world we are used to fast production. 'Fashionable clothing hyperventilates.'[14] Brands produces at least two collections a year, H&M even about 10 or more.
I noticed total different experiences with the concept of time in the technical companies I worked with. [different experiences of time >>]

12 niftindia.com 2006
13 Ed van Hinte 2006 p246
15 txt.tnw.utwente.nl
14 Joke Robaard 2004 p10

•secrecy / intellectual ownership [>>] Fashion doesn't care much about secrecy,[18] it even created a tradition of legal copying catwalk outfits (H&M) Technical companies think differently about that. 'They are afraid that others will profit from there competitors' knowledge.'[19] But Teece says that most times the profit of an innovation is going to the owner of 'complementary assets'[20] instead of to the owner of the intellectual property. In other words: 'complementary assets' are the possibilities of applying knowledge in a relevant way. The ability to use knowledge more efficiently than their competitors gives them a destinct advantage. 'Permanent combining of knowledge forms spillovers between various areas, and is a major factor in innovation.'[21] So there must be an interaction between knowledge fields to create potential future developments. You have to trust each other otherwise you can't collaborate.

•physically work together[>>] While I brainstormed with Sonja van Grinsven, TUDelft[22] lots of relevant design concepts appeared. But while working in detail, alone, I missed the interaction and added technical knowledge she possesses. That's why the balance between fashion and technical quality disappeared. With Kwintet I produced some material experiments. First I sent them some materials by post and phoned to explain which results I expected. The results were disappointing. The second time I went to Enschede to see how they did it. It took more time, for me as well as for the technicians and confectioners at Kwintet, but the results were better.[23] Also was it nice to actually meet the people. They told me what they could produce more and inspired me to add some of there practical solutions in other designs. [Artful thinking >>]
While discussing a project, designers experience it as essential to be in the same room.[24]
So more 'in-between' companies are needed.

Lucy McRae of Philips Design Research couldn't tell me about projects she was working on,[16] only about previous projects. They want to hear from me when I finish my study for a possible job, but they couldn't start a 'short time' collaboration. Also Bert Heesink,[17] Ten Cate, insist and entirely private presentation lest another company steal our ideas! Secrecy is everything. [secrecy / intellectual ownership >>]

Most companies are focusing either on (fashion) design or technical developments. I experienced that it is difficult to create a collaborative design if you don't physically work together. [Physically work together >>]

Four pitfalls are identified. Reed more about a solution that can solve some of these pitfalls in the conclusion.

18 Cecile Elffers 2006
19 M. Vertooren 2007
20 Teece 1986 citated by Vertooren 2007
21 Dany Jacobs 2005 p274
22 S. vGrinsven [20070423 blog]
23 Kwintet [20070613 blog]
24 M. Vertooren 2007
16 Lucy McRae [20070222 blog] Philips Design Research
17 Bert Heesink [20070221 blog] R&D manager Ten Cate

rayon printtop [>>] digital printed.

digital printed rayon top
_triangled by-wire.net
legging
_J'LL
bracelets
_H&M
shoes
_Frankie Morello

credits_model_nina
photography_BobVanRooijen.com


back


sleep-closet


fabric_information

•**gatekeeper** [>>] 'An individual who maintains consistent, ongoing contact outside the organization, who understands the way in which outsiders differ in their perspective from their organizational colleagues, and who is able to translate between the two systems.'[4] or: 'A gatekeeper is a person with a communication task. He understand two different cultures and strives for durable communication between two cultures by transferring knowledge and connecting people.'[5]
I had the pleasure of meeting two such gatekeepers Ed van Hinte[6] [Lightness building >>] is working as intermediary between lightness material developers and architects. Mariëlle Weghorst[7] is working as designer in a technical research institute TNO [TNO >>]

•**by-wire.net** [>>]
'Like a bird on the wire, I have tried in my way to be free.'[8]
Lennard Cohen, 1969

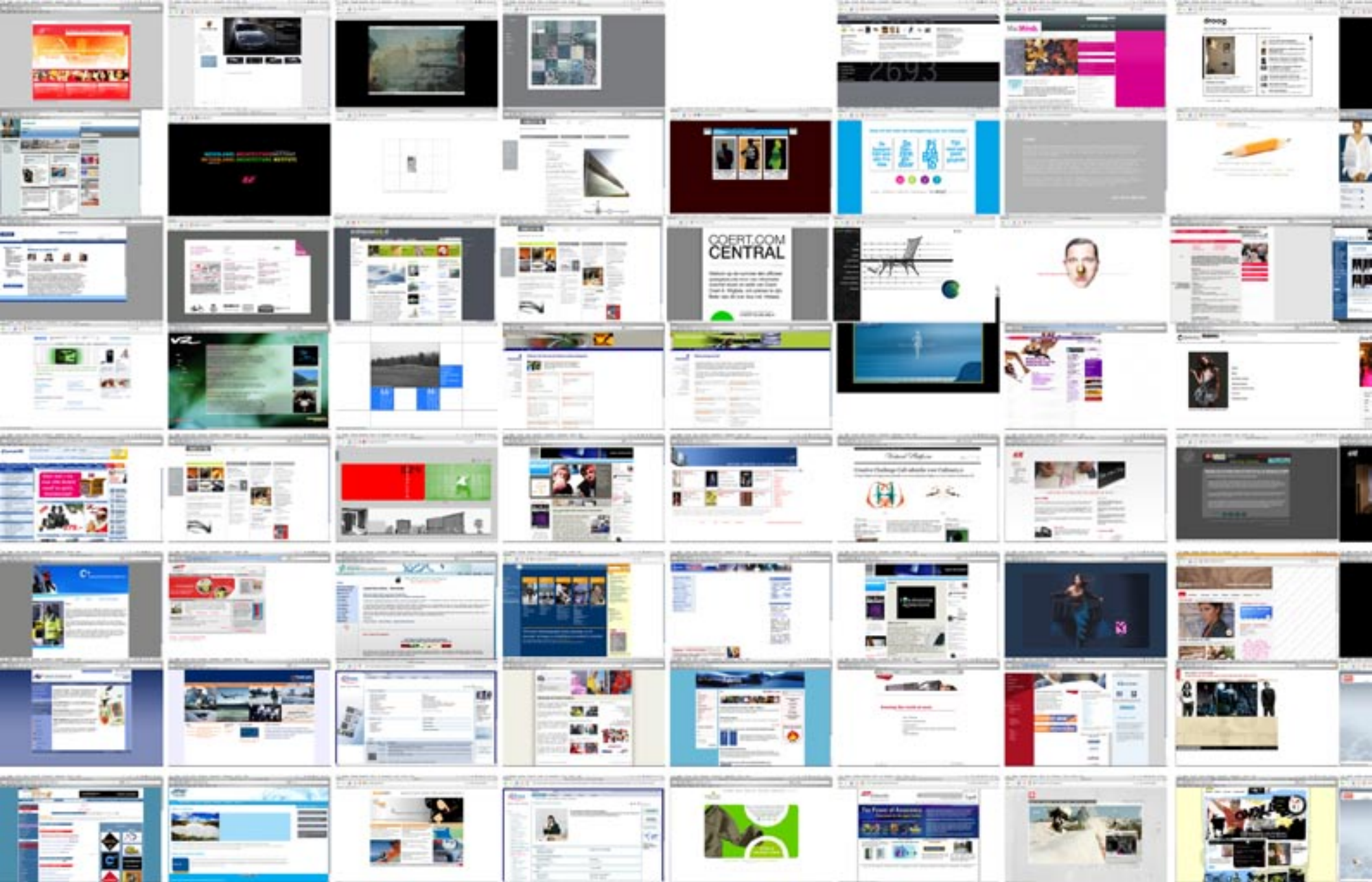
Conclusion

What are the conditions to implement more techno garments and processes on the commercial fashion market?

To position my inter-disciplinary design concepts more securely in the commercial fashion world, I explored the gap between fashion designers and technicians. There is less fashionable technology on the commercial market because of technical, economical and acceptance issues. If fashion designers and technicians work together, these pitfalls can be solved. This seems an easy solution, but I experienced that it is very hard to create positive spillovers. The two groups have totally different backgrounds, study methods and references. It is hard to understand and 'find' each other. More technical education on fashion design institutes[1] can change this, but gatekeepers are also needed. [gatekeeper >>]
While doing the experiments I made contact with technicians and experienced working as gatekeeper between the fields of technology and fashion. I would love to expand and share these experiences by creating a collaboration platform, containing information for fashion designers and technical developers. By designing such a platform[2], my role will be as an intermediary between technicians and designers. A bricolager makes connections between individuals or companies, starts and motivates interdisciplinary projects.
The field research and experiments will be publicized in this platform and is intended to become an inspiration for future projects and create more references for both technicians and designers. All participants of the by-wire.network[3] can add new projects and proposals to the existing timeline.
by-wire.net continues the research and collaboration projects by creating a virtual place where technicians and designers liquidly fuse together and start truly interdisciplinary projects with added benefits to society. Make fashion innovative again and take responsibility for environmental issues by the implementing of fashionable technology on the commercial market.

4 Allen 1977
5 M. Vertooren 2007
6 Ed van Hinte [20070427 blog]
7 M. Weghorst [20070130 blog]
8 L. Cohen 1969

1 Fashion design inside Industrial Design Department of technical Universities or technical education in academies
2 A semiotic site research to find out what differs in digital communication between technicians and designers [>>]
3 by-wire= automatic, by conducting electic current, elegance, be wired= using computers and information technology to transmit and recieve information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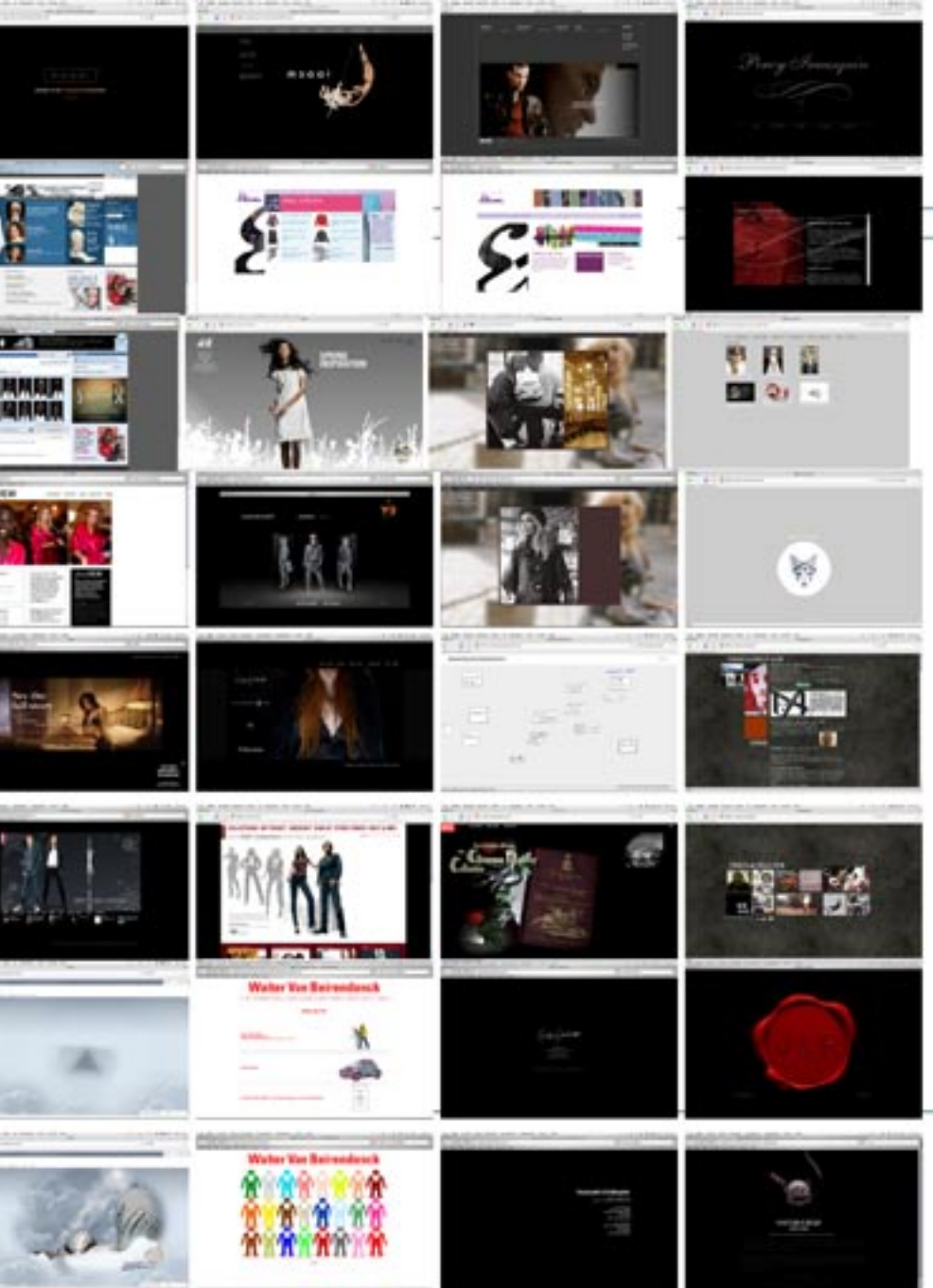
COERT.COM
CENTRAL



Semiotic site research >> technicians - fashion

What are the main differences in online communication between technicians and designers?
I needed to do this research cause by-wire.net must become an 'in-between space'. Both, designers as technicians must understand it. [>>]

I printed 150 homepages of designers and companies in fashion, technical developers and educational institutions, which already collaborated in fashion and technology. Lay them out from most technical till most fashionable and discovered the following differences:
Fashion sites are very up-to-date; around Christmas-time everything looks like Christmas. The color use is changeable, just like fashion, but a lot of black and gray (because that's fashionable this season: 2007). The balance pictures/text is 50/50, maybe even more pictures.
Most fashion sites use only one frame and try to create a comfortable feeling with visuals, while technical sites use lots of frames, cells and columns. This gives a more restless but informative and structural atmosphere.
Technical sites use lots of blue, green and red, colder and brighter colors. The balance pictures/text is 80/20.

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collaboration in fashion

Blog

yyyymmdd	company	name	summary of happening
20060123		Giene Steenman	interview about my future developments as designer
20060129	Modefabriek		as VIP to Hans Ubbink's cat-walk-show
20060207	Burberry	Linn stagiar	interview by phone about job opportunities
20060209	Kwintet	Yvonne Hillebrand	fashion field orientation / influences of fashion in work wear
20060209	TNO	Herman Lenting	future textile research & developments
20060209	Saxion	P.J. Linde	textile management education
20060210	Ten Cate compo	Willy	company tour
20060211	Droog Design		expo Conny Groenewegen
20060309	Kwintet	Yvonne Hillebrand	contract possibitities
20060309	Ten Cate tex	Inge v.d. Heiden	interview future of advanced textile & company tour
20060322	Kwintet		presentation Arriva
20060324	Romy Smits		internship interview
20060410	Kwintet		presentation McDonalds
20060419	Stijl Instituut	Marcel van Doorn	fashion field orientation
20060421	Kwintet		presentation Radboud
20060514	MOMU		exhibition Yohji Yamamoto
20060521	Antwerpen	Fashion students	cat-walk-show
20060722	Kwintet		presentation & design Gall&Gall
20060808	Industiele week		exhibition Jaarbeurshal
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20060905	Central Museum		exhibition 'This is America'
20060905	HKU KMT	Willem-Jan Renger	introduction wearables project Augustus – December 2006
20060906	Dare-symposiu	o.a. Florian Pumhöst	introduction MaHKU, Central Museum Utrecht
20060907	MaHKU		presentation project proposal
20060919	HKU KMT	Willem-Jan Renger	grouppresentation wearables
20060919	HKU KMT	Willem-Jan Renger	lecture context / content analisis
20060921	Textile Museum		exhibition high-tech low-tech Tilburg
20060928	Kaldic		tour in sculpture garden
20060929	TNO	Emiel den Hartog	introduction & assigement description
20061003	HKU KMT	Rob Kranenburg	'het is absurd als je bezig bent met nieuwe technologien om te gaan denken in functionaliteit omdat er nog een nieuwe functionaliteit to ontwikkelen is.'
20061009	MaHKU	Klaas Hoek	interview about social needs for technology
20061011	Nano research		congress Nanotechnologies and Smart Textile for Industry & Fashion
20061012	Nano research		The Royal Society, London
	Unilever	Theodora Deneva	interview about 'when fashion designers embrache polyesters?'
20061019	Red Bull	Bas Rotgans	brainstorm lesson for wearable project
20061023	TuDelft		contacting / email
20061024	Desgin Academie		final exhibition Eindhoven
20061025		Rick Claassen	material ecologist emailed his book about wasting energy
20061030		Arjan Mulder	mail interview about fashion as hot or cold medium
20061101	TNO	Emiel & Marielle	first project presentation
20061108	UTwente	Pro Warmoeskerken	interview about future textile research & developments
20061109	Fleshing Out		seminar: Wearable Interfaces, Smart Materials, Living Fabrics

		Lucy McRae	interview: seminars and future developments technology in clothing
20061110	Fleshing Out		workshop: Pakhuis de Zwijger, Amsterdam
		Rene Wansdronk	interview with architect: zero energy building
		Hermen Maat	interview: education in technology at academies
20061119	Art Attack		cat-walk-show with o.a. INDUST
20061121	Green textile	Marjan van Weert	lecture about bio textiles (cotton)
20061122	Premsela		textile lectures about technology applied in clothing, Rietveld
20061123	Kite-lite	Kees	man how sells light treats Rotterdam
20061201	Bright Live		exhibition about innovative lifestyle, Amsterdam
20061226	HKU KMT		Final judgement wearable project
20070108	HTNK	Carlo Wijnands	lecture portfolio and sollicitation presentation
20070109	Ursula Pelt		lecture: posisioning in the fashion market
20070112	TuDelft		contacting
20070115	Monique v Heist	design workshop	
20070116			contaction 22 companies for interest in collaboration projects
20070118	Kwintet	Yvonne Hillebrand	interview about technological adds in work wear
20070119	Gabriel Lester		lecture visualize suggestion
20070122	TuDelft		contacting
20070125	HKU KMT		project market; public presentation myCoat & Fats shoe
20070130	TNO	Marielle Weghorst	interview about working between technicians as designer
20070205			contacting over 30 companies for interest in collaboration projects
20070206	TuDelft		contacting
20070206	MaHKU	Chris Vermaas	interview how to presentate projects online
20070209	Dynafoam	Mark van Beurden	interview about spillovers between technicians and designers
20070209	Bouwbeurs		exhibition o.a. Materia, Jaarbeurs Utrecht
20070221	Ten Cate tex	Bert Heesink	& Esther Brummelhuis look for collaboration possibilities
20070221	Hot 100	Virtueel Platform	debat about media influences and governmental responsabilities
20070222	Philips Design	Lucy McRae	interview about my project & future apply of technology in society
20070227	HKU	Koen Witlox	technical side of building a online platform
20070301	TU/e	Prof C. Bastiaansen	collaboration opportunities and discovering of comunication differs
20070302	TuDelft		contacting
20070302	TNO	Hein Daanen	explenation 3D measuring system & collaboration possibilities
20070303	fire fighters	Dinie Dijk	interview about fire fighter outfits and the problems of them
20070305	Ten Cate	Esther Brummelhuis	phonecall fabric prototypes
20070307		Bas Koopmans	linterview about my project and how to presentate online
20070309	Dynafoam		shape experiments
20070311		Tineke Terlouw	interview care wear and the problems of them
20070313		Gerjanne Journee	interview care wear and the problems of them
20070324		Sarien Hesselink	photo shoot & interview care wear and the problems of them
20070327	Ten Cate tex	Bert, Ester & Chris	collaboration project presentation ‘furture care and fire fighter wear’
20070403	TuDelft	Sonja van Grinven	contact reaction
20070407	Dynafoam		project proposal
20070411		Hein Eberson	interview my project & how to presentate this online
20070420	TuDelft		contacting
20070420	M&M Wolpost		buying polyester treats
20070423	TuDelft	Sonja van Grinsven	interview collaboration possibilities & brainstorm rain wear

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20070426	HKU	textile department	digital print on textile
20070427		Ed van Hinte	group brainstorm about lightness building
20070420	HERO textil		receiving antibacterial treat
20070502		Maurice Bouwze	converting MAX results out of the scan
20070502	Dynafoam		cutting the foam
20070503		Derkje Wolfkamp	machine knitting lesson
20070504	Dynafoam	Mark van Beurden	Receiving PU foam skirt
20070504	Print Unlimited	Ellen	fabric steaming & interview: working with designers as technician
20070505	Dynafoam		playing foam
20070506	Dynafoam	Matthijs Vertooren	foam shaping
20070508	TuDelft		design research raincoats & design
20070511		Sini Kelder	machine knitting lesson
20070510	TuDelft		contacting
20070514	Ten Cate	Martine Kok	receiving fabrics
20070515	TuDelft		design proposal
20070516	Eco Tex	Myrthe	contact data ecological textiles
20070518	Eco Tex		research hemp textiles
20070518	Eco Tex	Marita Bartelet	contacting Marita Bartelet
20070518	Eco Tex	Marita Bartelet	project presentation
20070521	TuDelft		contacting & desicion to find a other collaborator
20070522	Exam comsie	i.a. Guus Beumer	About comfort in cloting and development of techno garments
20070530	Eco Tex	Marita Bartelet	textile order
20070602	Eco Tex		receiving the eco textiles
20070605	MaHKU		entry review
20070607	Kwintet		sealing rain coat (wrong)
20070611	Ten Cate	Chirs Corner	receiving fabrics
20070611	Lightness Studi	Ed van Hinte	seminar Lightness Building Delft
20070612	Ten Cate comp		borrowing a scissor for the fire fighter fabric
20070613	Kwintet		sealing rain coat & finishing touch other garments
20070618	Gem Utrecht	Monique van Veelen	arranging the exhibition space for the by-wire presentation
20070619	Modebiennale		lecture & presentation myCoat & Fats shoe Arnhem
			interview with Suzanne Lee & Despina Papadopoulos
20070622	Jaap v Triest		digital presenting of thesis & clothing collection
20070622	Etalatepop.nl	Jasper Holla	getting 6 figures out of Hoorn
20070623	HKU		cat-walk show Beat The Fashion Drum & presentation by-wire.net
20070701	Kwintet		presentation Q8
20070704		Bibi	writing in France
20070713	Dorel		email collaboration opportunities maxi-cosi & quinny
20070717	Dorel		appointment collaboration opportunities maxi-cosi & quinny
20070720	Dorel		conversation possible collaboration maxi-cosi & quinny, Helmond
20070727	Bob van Rooijen		photoshoot by-wire.net garments
20070830	MaHKU		final exam
20070901	NEGEN		conceptstore
20070906			seminar future care wear

Ecological textiles [>>] hemp fabric is 5 times as strong as cotton and better for our environment, durability on top.

eco-hemp caper trousers
_ecological suited by-wire.net
blue body
_Modström
bracelets
_H&M
over knees
_H&M
buckle shoes
_Frankie Morello

credits_model_sarah
photography_BobVanRooijen.com


hanging_around


back


chair


production_process


fabric_information

Acknowledgements

Matthijs Vertooren
Janny, Henk, Judith en
Erik Toeters

MaHKU:
Bibi Straatman
Annette Heinen
Mascha v. Zijverden
Jenneke van der Wal
Karel Bakker
Ramon Goedvree
Koen Witlox
Evelien Delfsma
Monique van Heist
Jaap van Triest
Bas Koopman
Wim
Henrik
Chris Vermaas
Hein Eberson
Klaas Hoek
Arjan Mulder
and my class mates

Workwear inspirators:
Tineke Terlouw
Gerjanne Journee
Sarien Hesselink
Dinie Dijk

Companies & producers
Ten Design
Alfabet Belettering
Sini Kelder
Derkje Wolfkamp
Marita Bartelet, Eco Tex
Lucy McRae, Philips
Sonja van Grinsven, TU Delft
Yvonne Hillebrand, Kwintet
Jori Verdouw, Kwintet
Renate Bolster & collega's
Karin Lohuis, Kwintet
Chris Corner, Ten Cate
Martine Kok, Ten Cate
Esther Brummelhuis, Ten Cate
Mark van Beurden, Dynafoam
Hein Daanen, TNO
Marielle Weghorst, TNO
Emiel de Hartog, TNO
Maurice Bouwze
Ed van Hinte
Christiaan Roos, O'neill
Jasper Holla, Etalagepop.nl
Moniek van Veelen, Gem. Utrecht
Ellen, Print Unlimited
Gert Kleinjan

Photoshoot team:

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Maite Catti	stylist
Saskia Wagenvoort	visage
Sarah Nuiver	model
Nina Wormer	model
Jocelyne Norbruis	model

Quality management:
Antonie Bouman
Joost Vertooren
Todd Wiese

And all the ones I didn't listed, but inspired me last year.