DIVERSITY MOVEMENT

using discriminatory elements to individualise design

Carolina Reis Design Academy Eindhoven IM Master course 2010

Morthor

Discrimination carries two contradictory definitions; one that relates to an intellectual operation as in distinguishing things and another to the prejudicial treatment of individuals or groups. This can be summed up by distinguishing *discrimination between* from *discrimination against*.

Clothes are an attribute of constant individual discrimination against. The best antidote to discrimination against is individuality and valuing diversity.

Each person has 99,94% DNA in common. We grow distinct from each other through life experiences. In the same manner, the clothes become individual through the wearing. My design effortlessly adapts to the body's movement. By using the movement as a catalyzer of change in the object, the garment will take its final shape once each person has used it. Since movement is as individual as our fingerprints, a design that takes into account the motion would become singular for each person. By promoting difference, I aim to promote tolerance towards it.

This is not another customisable design. This is a movement promoting diversity and diversity achieved through movement.

Since I will be speaking of design, fashion and dress in relation to culture and society, it is important to define where they all stand. Culture is the shared ways human beings behave, feel and think inside a group. Society relates to a group that shares many cultural values inside an organised political and economical structure. Design applies to the processes of conceiving and producing manufactured material culture from everyday objects to buildings and urban landscape. Fashion can be interpreted in three ways. First, there is fashion as a social phenomenon involving the cyclic mutations of all material and non-material aspects of culture. Secondly, fashion as a part of design that concentrates only on dress. Third, the fashion industry, which has its own very specific dynamics, operates within the fifth biggest world industry working within the merchandising and marketing of dress. Dress is all the body modifications and body supplements displayed by a person from clothing to grooming[1]. Whereas design can be fashion as a social phenomenon, fashion design has its own particularities (unlike other types of design) because of its industrial dynamic and the psychological and social implications of dress practices.

Discrimination:
1. Discrimination against is the unequal treatment of one person or group based on irrelevant or unfair criteria.
2. Discrimination between is an intellectual operation that allows for making fine distinctions.

Culture:
The shared ways human beings behave, feel and think inside a group.

Society:
A group that shares many cultural values inside an organised political and economical structure.

Design:
The processes of conceiving and producing manufactured material culture from everyday objects to buildings and urban landscape.

Fashion:
The first idea of fashion appears in 1482 in France, mode *defining a* collective way of dressing. *It has its roots in the latin word* modus *(way, measure), it relates to way (*manière*) and then* façon *which then led to the English word "fashion". It is interesting to note that contemporary fashion ideology stresses individual expression whereas it is ethymologically linked to a collective expression.*[2]
1. A social phenomenon involving the cyclic mutations of all material and non-material aspects of culture.
2. A design discipline concentrating on creating wearable products.
3. An industry comprising the producing, merchandising and marketing of dress and part of the textile industry, the 5th biggest world industry.

Dress:
The term "dress" will be referred through the anthropological definition as "an assemblage of body modifications and supplements displayed by a person. Thus, we use the term dress to cover the full range of things we do to the body to get dressed. Dress includes clothing and accessories as well as grooming practices such as bathing or dyeing the hair."[3]

Individual:
A single human being as distinct from a group. Originates from Latin *individuus* which means not divisible.

Individuality:
The quality or character of a particular person or thing that distinguishes it from others of the same kind.

Individualism:
A social theory favoring freedom of action for individuals over collective or state control.

Uniform:
The distinctive clothing worn by members of the same organization or body.

Customised:
The modification of something to become individual.

Made-by-measure:
The adjustment of something to the measures of the individual need.

Bespoke:
The production of something from scratch for an individual purpose. Bespoke tailoring is the male equivalent of Haute Couture.

When I pursued my studies at the Master level, it was an opportunity for me to take a step back and reflect on my profession. My aim was to acquire knowledge outside of my main field. I examined the place of fashion in design and the place of design in society and how it can contribute to the course of humanity. The recurrent intolerance of differences worldwide motivated me to investigate the idea of discrimination and see whether design could contribute something positive to the issue. As a designer of clothing, I mainly don't like fashion as it exists; its image, its cycles, its industry and mechanisms. To escape the dictates of the fashion industry, I decided to follow my postgraduate studies in a design research-based programme that allowed for more experimentation. Still, I am fascinated with the whole of fashion as a social phenomenon. The relationship it nurtures of both the perception of the individual and collective representations interests me very much. Clothes are our first home, and link the inner being with the outside world.

I chose to start with discrimination, which I considered the rejection of differences and the denial of diversity. This behaviour is not sustainable in a world of growing communication and transportation where humans increasingly face divergent cultures and mentalities. Everyone has been both victim and perpetrator of discrimination at least once in their lifetime. A survey conducted by Adviespunt Discriminatie[4] shows that 1 in 5 people in the Netherlands had to deal with discrimination in the last 12 months. However, discrimination is a word that carries another, practically contradictory meaning. It consists of an intellectual operation of making fine distinctions between elements. The ability to discriminate skillfully requires proficiency in observation, discernment and knowledge.

The concept of discrimination most often used is "the unequal treatment of equals". Hence, the two definitions can be summed up by distinguishing *discrimination between* from *discrimination against*. In society, discrimination between can promote the richness of differences whereas discriminating against creates exclusion and does not sustain social growth.

In its own way, the fashion industry has a history of perpetuating discrimination against. This occurs in all aspects where it is involved. First, on the communication level, it portrays images and showcases models that have unrealistic physical characteristics, causing a range of psychological ills in society. Secondly, by targeting specific types, products are inherently discriminatory. The latter aspect is not necessarily pejorative, however, as focusing allows for more meaningful products and ensures they are fulfilling their objectives. Nevertheless, size availability and choices in shape follow particular standards that do not reflect population diversity, and therefore discriminate against people on the grounds of unjustified motives.

A favourable form of discriminatory fashion might comprise the omission of ideal models and standard products while maintaining focus on individual types. This questions whether design can positively discriminate between without discriminating against.

To answer this question, this paper will examine different manifestations of discrimination in both society and in design. The first part will deal with the effect of discrimination on global diversity and the construction of the individual in society. The second part will examine discrimination in design and fashion. The last part will concentrate on the analysis of dress typologies and the translation into a design that will use discriminatory elements for adding value and promoting individual diversity.

Discrimination consists of an intellectual operation of making fine distinctions between elements.

Paris
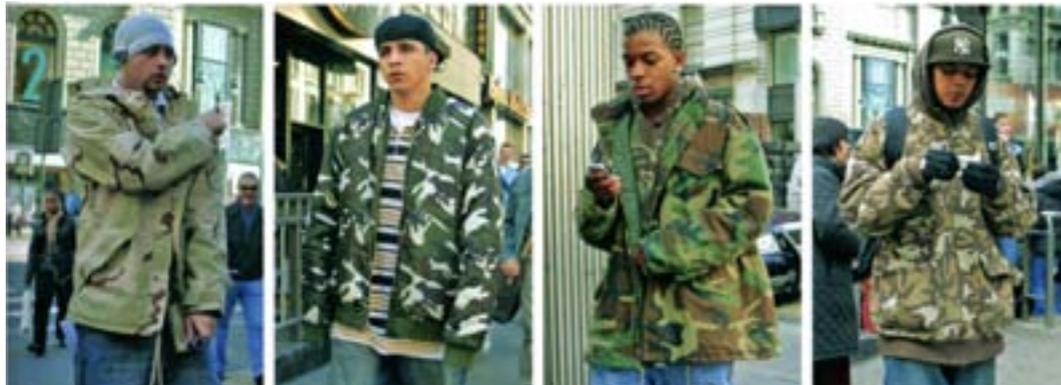
New York

Shanghai

I. THE POWER OF DISCRIMINATION

a. Globalisation and diversity
b. Individual and group identities

As communication technologies and travel increase, cases in which different cultural groups come into contact increase. Discrimination against people takes its root in ethnocentrism, which is a group's belief that their cultural patterns are proper and right and therefore superior to others.

"For the society, ethnocentrism serves to reinforce the normative system by giving it a kind of ultimate reality. The culture of a society is an elaborate and sometimes painfully acquired style of life by means of which the members have learned to struggle with problems of survival, security, and social interaction. A belief that supports this system has value under some conditions. However, when problems of security and social interaction involve continuous interdependent contact between ethnocentric groups, the belief in the superiority of a particular society may be a serious obstacle to the satisfaction of the very needs from which it originally grew."[5]

Western Samoa

"The debate over headscarves demonstrates the political force of design."

Boris Groys on *The Obligation of Self-Design*

The economic crisis has brought about social unrest. When facing difficulties, people tend to blame their misery on the other because of their perceived differences.

One example which shows the complexity of the subject is the polemic surrounding the veil in Western countries. Being deeply woven into political, cultural, psychological, social and historical contexts, it is important to acknowledge that the value one attributes to the headscarf might be different from its actual background. In terms of public opinion in the West, veiling has become a battle-ground for debate on women's rights, whereas the use of the veil can be an expression of free will as well as a sign of oppression and humiliation. To associate the veil with violence against women is a flawed oversimplification that ignores such violence still committed within our own cultures and others, regardless of the way victims and perpetuators are dressed. It is also too simplistic too oppose the veil and the unveil when, also among Westerners, we don't always agree in our own values of modesty and propriety in dress.

Where differences exist they might engender inequalities and injustice; the opposite scenario in which all differences are erased, would give place to a totalitarian model.

"There are two utopias in clothing matters, the naked or the uniform. Both opposites and both purely conceptual, since when put into practice, they are subjected to the context and the laws of decay that will irreversibly bind them to a specific meaning."[6]

Uniforms have the utopian pursuit of putting all on the same level. At the same time they deny individual characteristics, and this results in discriminating against everyone. They reflect a collective identity signifying affiliation, compliance to rules, values and status, but deny individual variety. The consequences of uniforming, specifically the impoverishment of the culture and economy of a country, can be seen in the North Korean regime. Mixing diverse cultures is beneficial for all parties in the same way that biodiversity strengthens ecosystems and crossbreeding creates individuals with stronger DNA. However, it can also result in social frictions. A shift in global configuration requires a paradigmatic change which starts at the individual level.

Vanessa Beecroft

Discrimination affected 1 in 5 persons in the last 12 months.
The types of registered cases are divided in the following categories:

physical
$\begin{cases}\end{cases}$
41%   age
24%   handicap or chronic disease
19%   appearance
14%   gender

psychological
$\begin{cases}\end{cases}$
7%   sexual orientation
6%   political opinion or lifestyle
5%   religion
4%   ethnical origin

2%   other

The state of discrimination in Zuidoost Brabant in the Netherlands

The human genome project was unable to identify patterns defining racial categories and concluded that race does not exist genetically. Only 0,06% of the DNA varies between each human individual. This infinitesimal difference will lead to the diversity among humans. Although genetics account for much of our constitution, they are just a blank canvas on which our identities will be drawn. Life experiences and the environment play a decisive role in shaping the individual. However, although DNA studies show that we are basically the same, our individual cognitive processes emphasize the perception of differences, in order to survive. Our brains are designed to discriminate and see differences. We may be individual, but we are interdependent.

In total, the individual is constituted of physical and psychological elements. The former are determined by DNA and the latter by modifications the body undergoes through dress behaviours, diet and environmental hazards. The psychological elements stem from the culture, society and personal experiences of human interaction. Dress reflects all the elements that constitute the individual within his group. Humans have been wearing clothes for at least 72000 years, according to evolutionary anthropologists[7]. They have evolved with our anatomy and are a physical part of our body, since we would not be able to survive without them. Through the ages, dress has evolved from a purely physical need into a sophisticated non-verbal language. This process of individualisation is most apparent in dress. Dress is a process involving all the senses of perception from colouring the hair and shaping the body to odour, scent, sound and taste. For example, the conscious training of movement influences the sounds produced and becomes a part of the individual. The cultural ideal of Japanese femininity is to barely lift one's feet and make short steps that make a constant scraping sound on the ground when walking[8]. The Western equivalent of this would be the clicking sound of high heel shoes. Taste is also part of dress. Through the ritualisation of personal hygiene, we influence our experience of tastes and our interactions through the perception of breath. All the elements of dress combined are an integral part of individuality. The different dress behaviours will lead to discrimination between each individual.
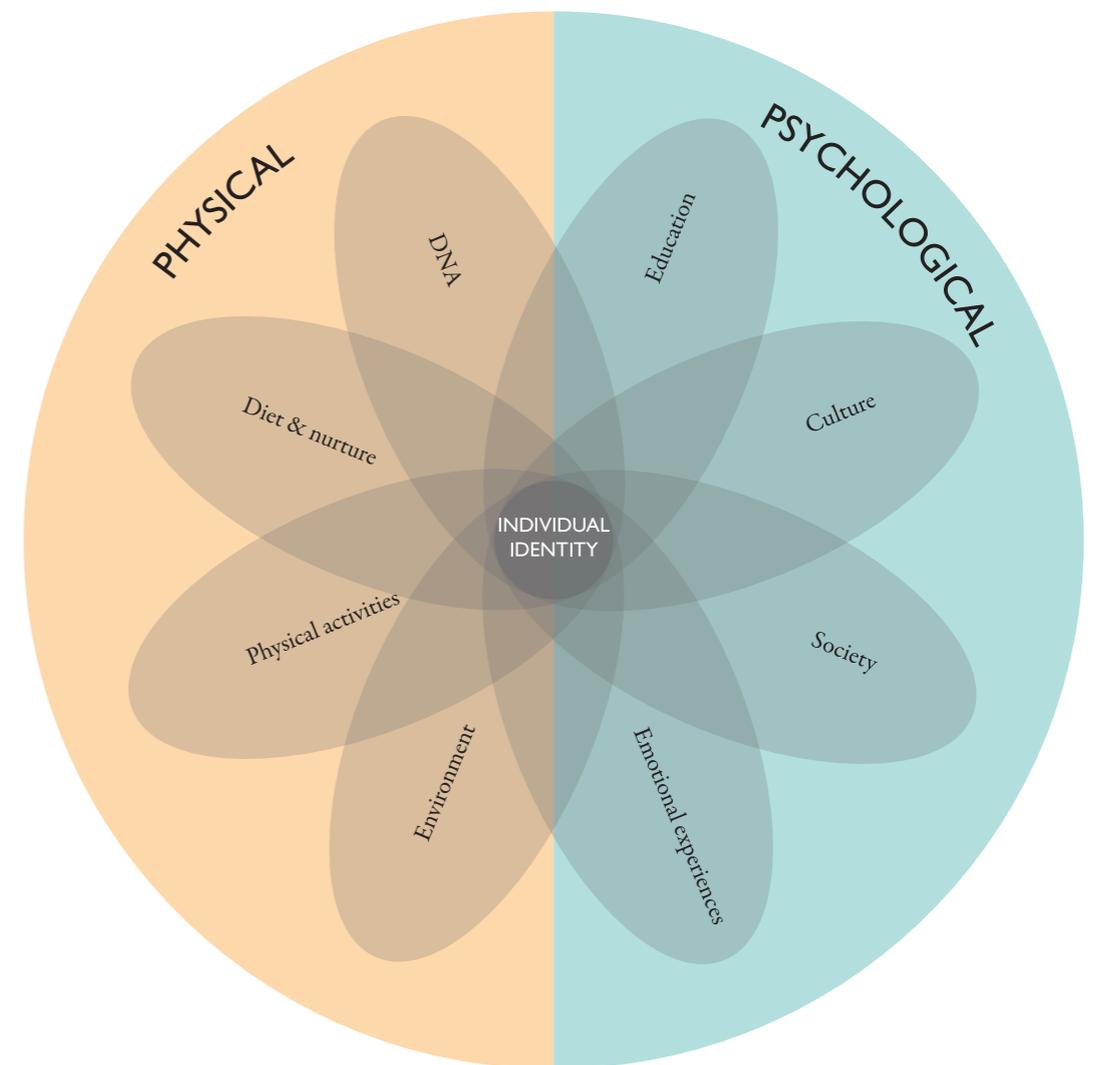
Elements that build the individual identity

68. Formers – Rotterdam 2005
Exactitudes

Georg Simmel, one of the founders of modern sociology, was interested in the interactions between groups and individuals. His observation on the effects of metropolitan life and the consequences of life in the city on its inhabitants was particularly relevant [9]. He saw fashion as a social phenomenon that allowed the unravelling of underlying human behaviours and needs. In the process of becoming civilized, humans imitate their surroundings and then add their own distinctive signs. According to Simmel, there is a dualistic dimension in people in both wanting to fit in a group and be different at the same time.

When speaking of discrimination, we mostly think of interactions between humans, but the way designs are conceived can also create discriminatory situations. They can do so by emphasising stereotypes or excluding certain categories of people. Those are concrete cases a designer can help resolve.

Church Stairway

II. DISCRIMINATING DESIGN

1. Physical and social space
2. Fashioning individuals

Design is part of material culture and thus conveys the values and ideals of a society. Therefore, through the analysis of discriminations in design, we can learn about the underlying social context in which the design was created.

Discriminating between plays an important role in design. It is part of the process of identifying differences between objects, details, the function and type of users. However, by targeting a particular use or user, design is continuously discriminating against. This can be positive as it works toward the fulfillment of the purpose it was designed for. But there are numerous cases in which discrimination in design is unjustified, promotes intolerance and segregation in society. Cases of discrimination in design are everywhere. For example, public spaces are increasingly designed to prevent all types of marginal behaviour. In doing so, our urban spaces have acquired a hostile atmosphere. This type of design may eliminate unwelcome behaviour, but it also promotes an intolerant society. The solution many countries have found for the problem of homeless on public benches is to design them in a way that does not allow for lying down. Places open to the public are designed against all kinds of behaviour. There are no comfortable benches to sit on and no inviting socializing areas. While this might prevent the loitering of unwanted people, it also prevents the rest of the population from using those places.

Designing in a discriminatory way gives the message to the population that it is acceptable to exclude. Segregating society is not a solution since there will always be inequalities and differences. However, encouraging the mingling of different people would defuse the fear of others.

DISCRIMINATING AGAINST HOMELESS

DISCRIMINATING BETWEEN HOMELESS AND OTHER USERS

"Clothing is not here to hide our body, but to organize our anatomy and make it readable, make it legible according to a given system, a logic of investment in form and libido."[10]

Fashion is one of the most discriminating industries. We can identify several types of discrimination at the different levels where fashion operates, namely the communication, the product and the work methods. Also, the use of garments will alter a piece's appearance and make it subject to discrimination.

There are both psychological and physical discrimination in the visual discourse composed of images, communication, representation and models that are conveyed. The days of fashion companies simply selling clothes are long gone. Now, companies are selling a lifestyle, fantasy, emotions and images, and inspire consumers to adhere to their world. The diversity of brands allows for an array of possibilities and richness in imaginary tales from fashion creators. However, there is a tendency to adopt similar codes and to synchronise trends. The same body features are predominantly considered. Images are manipulated to depict an idealistic representation far from reality.

The Dove campaign to show the public the amount of manipulation fashion images undergo is an example of an anti-discriminatory initiative. It proves that one can sell a product by other means than making the consumer feel self-conscious.

In the same manner, the availability of sizes, and common standard proportions, might also be perceived as discriminatory if a part of the population cannot wear a product. In my research, I found a case of a nurse who complained that the company who was providing her hospital's uniforms did not make her and several of her overweight colleagues' size. Personally, although I wear average sizes, I often have difficulties in finding the right fit. Although I don't feel personally discriminated against, it somehow makes me feel like I don't fit in not only physically but also psychologically. No one has standard measurements because they are an average of a specific group.

The success of a fashion company relies on strong visuals and styles. Designers are involved in creating fantastic images while conforming to the ideal model that dominates the industry. Simmel's theory of distinction and imitation can be applied to the mechanisms of the fashion industry. The whole fashion industry spies on itself, with weaker companies imitating more successful ones while simultaneously trying to stand out. Very few designers have challenged the establishment, but those who have, have left their mark and changed our perception of the world. I think of the advertising campaigns of Benetton, which despite their polemic, have contributed to generating debate and breaking taboos on sensitive issues. Martin Margiela and Alexander van Slobbe are examples of designers who have shifted the attention back to the product and its qualities. In doing so, having a human model to sell the product becomes secondary and even superfluous.

Once it is worn, dress acts as a communication tool. The natural wearing and damaging of garments can be perceived as signs of decay and make the wearer subject to stigmatisation and even discrimination. But they also carry the memory of the wearer's experience. The piece becomes individual. Utilizing the wearing aspect of dress an element for individualisation is an intuitive way of integrating positive discrimination into the design.

Avoiding discriminating against in design implies refraining from using a physical ideal, standard models and sizes and giving value to the transformations the object undergoes in its use. This also means denying all of fashion as it exists – but gives ground for a totally new design approach. Respecting diversity is giving someone a choice and choice is key to freedom.

Dress is the most intimate manifestation of self.
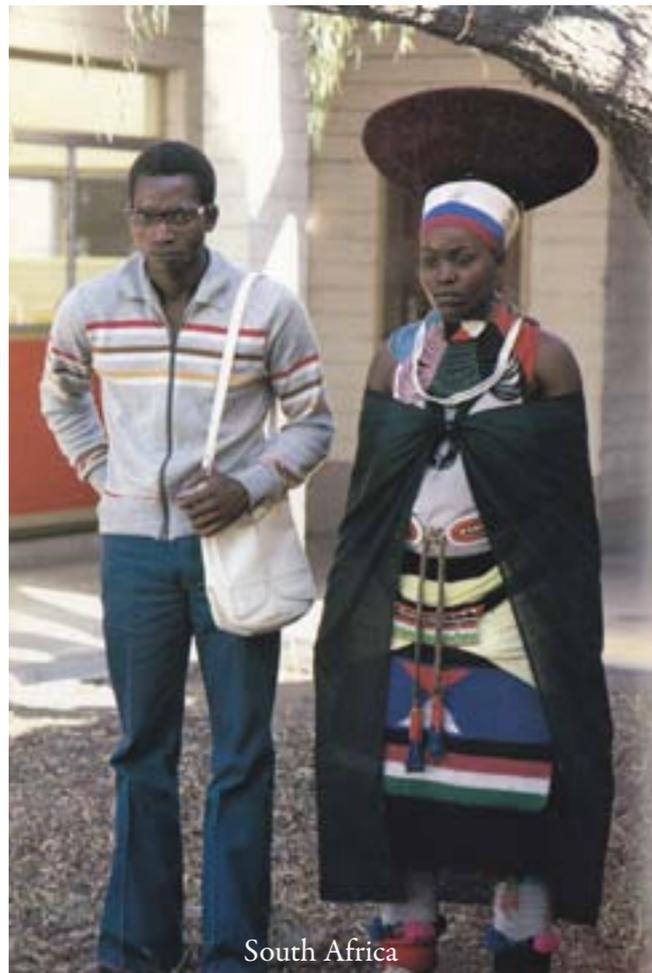

South Africa

III. INDIVIDUALISING DESIGN

1. Individual uniforms worldwide
        Categories of analysis
        Typological study

2. Body movement as form giving
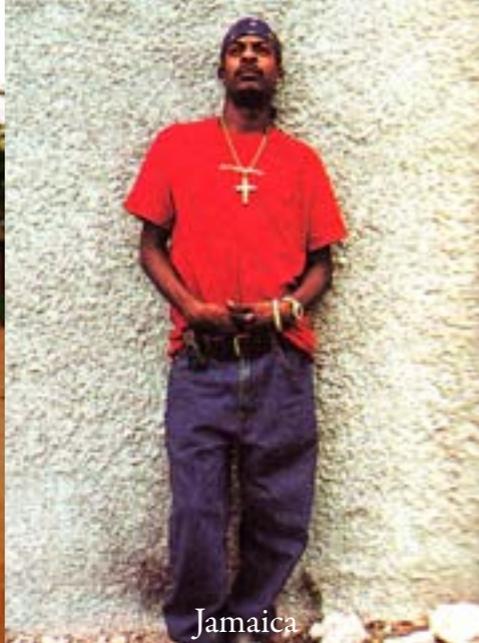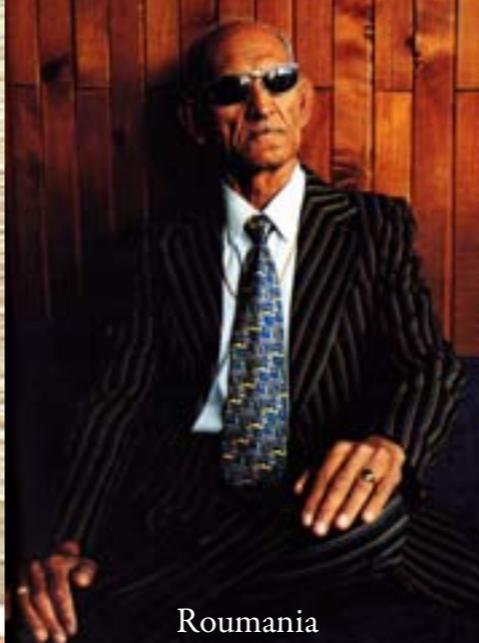
Uganda
Jamaica
Roumania
Italy
Argentina
Bhutan
Poland
South Africa
Mexico
India
Colombia
Turkey
Russia
USA
USA
Iran
India
India
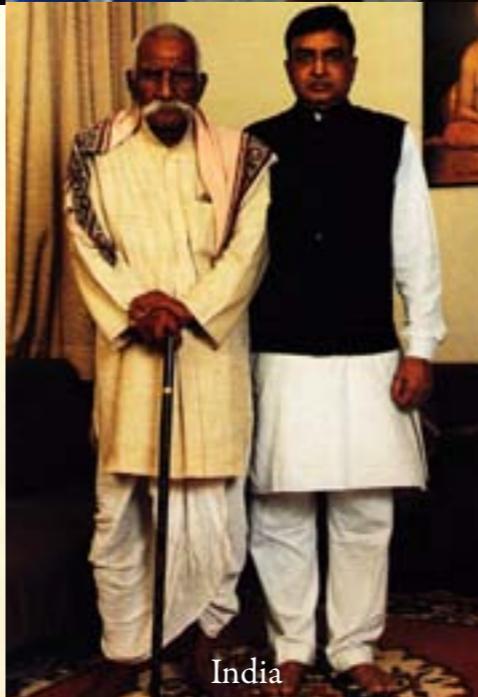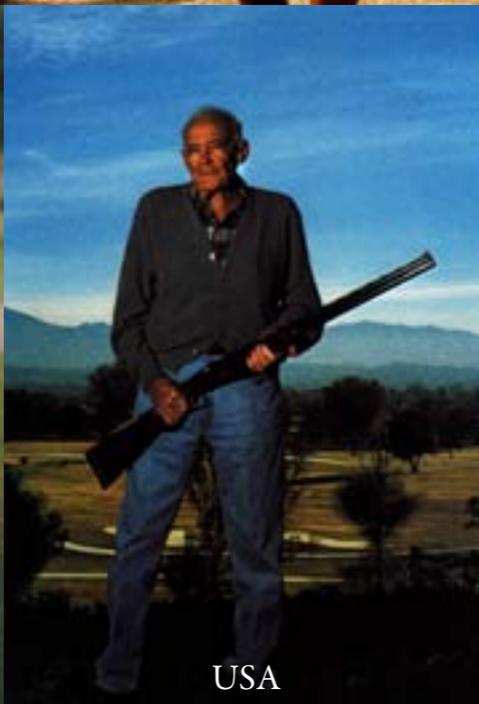
Dress is the most visible and immediate manifestation of self. To understand the amplitude of differences in dress habits, I underwent a compilation of photographs of individuals from over 80 countries worldwide. The objective of this collection is to map the dress behaviour of individuals and groups around the world in order to analyse the typologies, identify the variations, the common aspects and the diversity. It will allow the determination of whether or not there are universal conventions and the array of individual expression.

The criteria for this study are the following:
- The source should be of photographic nature only.
- Outfits should have been worn in real life. (no staged styling, fictional or theatrical context).
- The sample as a whole should depict as much geographical and formal diversity as possible.

For the present thesis, the analysed part of dress is limited to the clothes. This relates directly to the objective of my design which will result in a garment. Headgear, footwear and accessories will be discarded. The sample is not exhaustive, but gives a good idea of the diversity. This study shows the recurrence of **world dress**, which is a type of garment worn by various people regardless of where the shape or the person originated from. The men's dress shirt, the t-shirt and pants are the most common types of world dress worn by both sexes. An additional layer of discrimination between the subjects is the level of **cultural authentication**, which is the integration of local cultural items into an item of world dress to make it a culture's own. A men's shirt printed with local patterns is a type of cultural authentication.

I proceeded to divide the garment into different categories and elements within these categories. There are three main categories: the **structure** of the garment construction, the **length** that determines the amount of body covering and the **details** that are subdivided into edge details, attachments and pockets. There are two types of structures. The **continuous structure** is when the material will give shape to the garment usually wrapped or suspended on the body. The **fragmented structure** is when the material is pre-shaped to a body or any other ideal shape. Often, outfits and pieces display a combination that range between the two structures. The nature of the details differs greatly depending on if we are in a continuous or fragmented structure. From a Western viewpoint, continuous structures relate to more feminine and traditional forms whereas it is not the case in other cultures where they might belong to male attire as much as female. Fragmented structures are also more specific to western clothes. Overall, the most common length, regardless of religious beliefs and culture, is from the neck to the wrist and ankle, covering the whole body leaving only hands and face exposed. The fact this behaviour transcends cultural beliefs can be explained by the higher functional need of using these body parts in our activities.

Finally, this analysis focused only on the structure. The shapes of the garments do not tend to differ so much as the colours, textures and qualities of the material. They are important elements that provide the most apparent differences and richness in global diversity and individuality.

STRUCTURE

CONTINUOUS ← — — — — — — — — — — — → FRAGMENTED


material shapes
the garment

material is shaped
to the body

material emulates
the ideal body
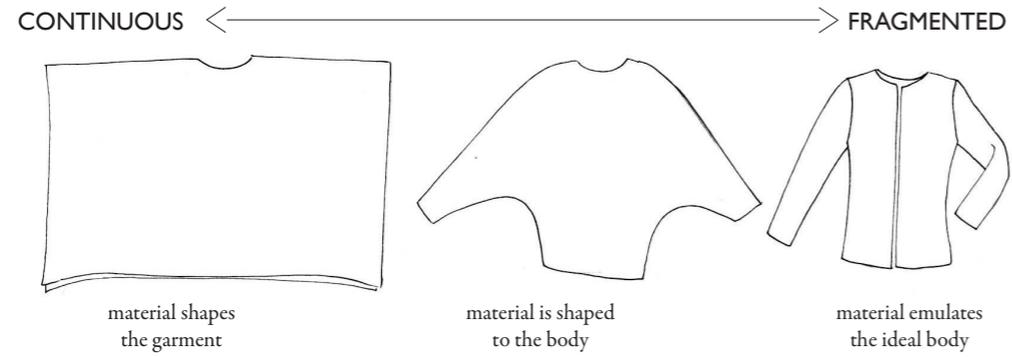
continuous structure.

mixed structure.

fragmented structure.

DETAILS

The nature of details is different for each group of structure.

	CONTINUOUS	FRAGMENTED
EDGE		
ADJUSTMENT		
POCKET		

EDGES LENGTH
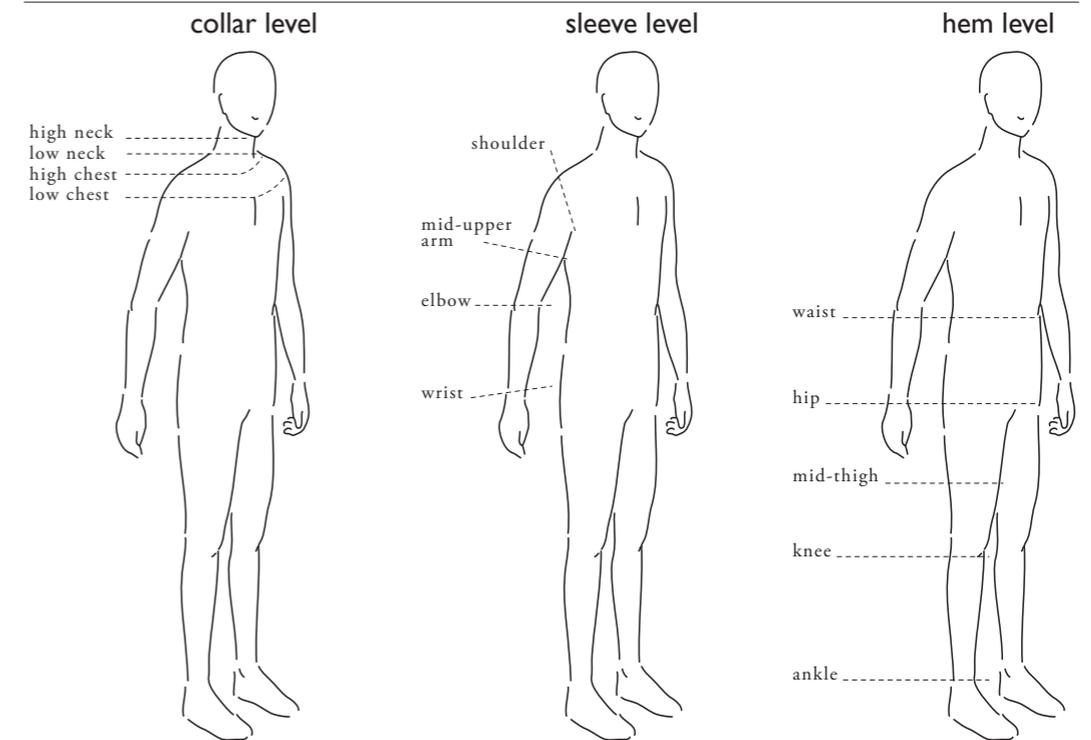
collar level	sleeve level	hem level

high neck
low neck
high chest
low chest

shoulder

mid-upper arm

elbow

wrist

waist

hip

mid-thigh

knee

ankle

Agentina

Bhutan

Borneo

Colombia

India

India

Italy
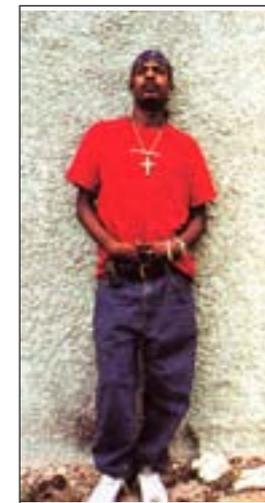
Jamaica

Kenya

Romania

Spain

South Africa

Converting every picture into a common representation for comparison

STRUCTURE

Continuous ⟵————————⟶ Fragmented

EDGE LENGTH

COLLAR

low chest	high chest	low neck	high neck

ARM

shoulder	mid-upper arm	elbow	wrist

BOTTOM HEM

mid-thigh	knee	ankle
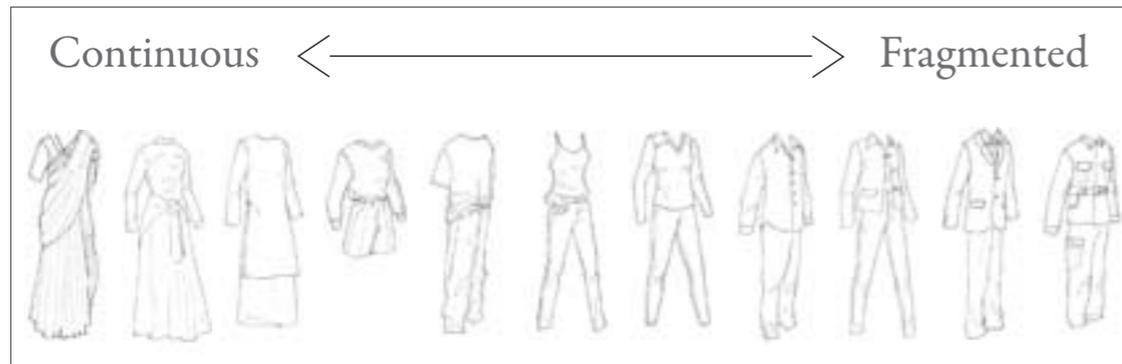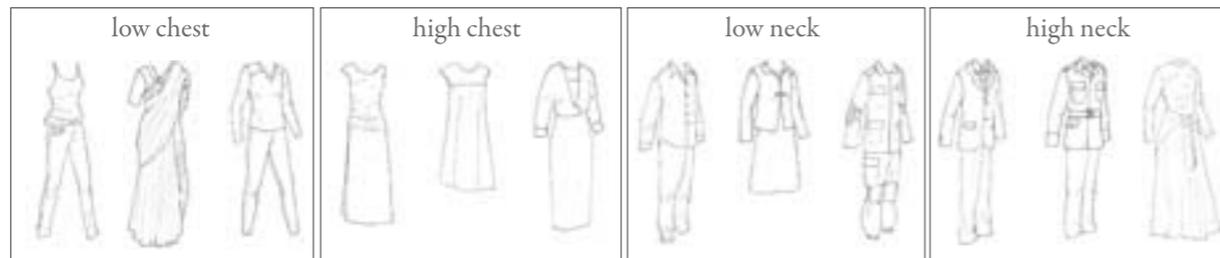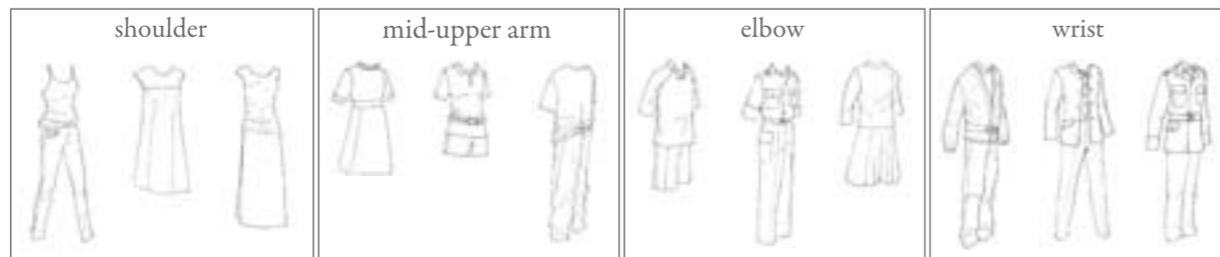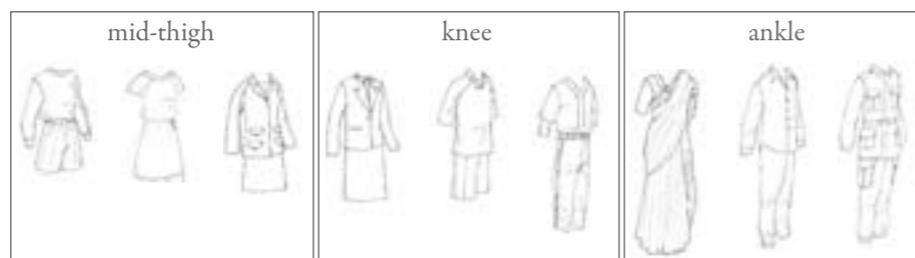
DETAILS
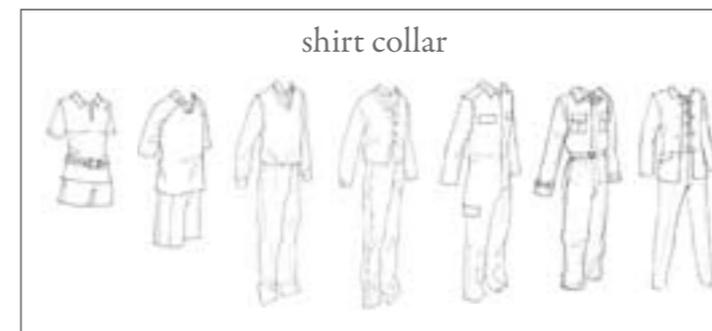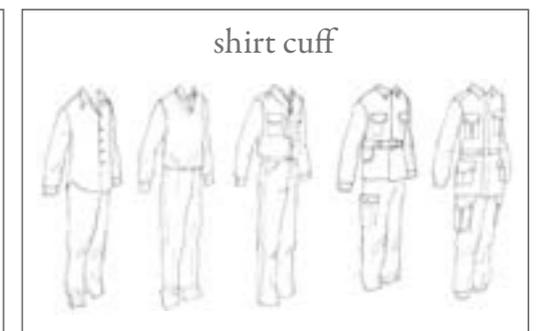
NECKLINE	ARM
shirt collar	shirt cuff
standing collar	buttoned cuff
tailored collar	rolled cuff
continuous	continuous
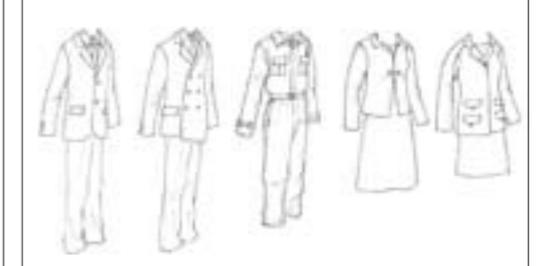
Extract of analysis by category

"Who we are arise directly from what our bodies can do"
Richard Sennet

Garments are our first home. To make appropriate pieces involves building around the individual both on a psychological and physical level.

It is easy to say that I will create shapes and measurements without reference, but more difficult to put into action. This means having to re-evaluate all the skills that I have painfully acquired in pattern drafting and merchandising. I have to build a new process of making the product. It sounds risky but this thought gives me enthusiasm and feels like a liberation.

My solution to discrimination in dress is to exploit the discriminatory elements as signs of distinction and individuality. I will propose garments that undergo permanent changes related to individual use the first times they are worn.

Let's consider the process of individualisation mentioned in part I.b. At birth, we are given a body which is 99.94% the same DNA as every other individual in human species. Our brains are like sponges in the first years of life that absorb the information and skills useful to operate and survive in our environment. What is learned in childhood will determine our identity for the rest of our lives. As time goes by, the way a person treats and feeds his body will further differentiate himself from others.

In the same manner, I would like to propose clothes with the same properties. They should be made of materials that are very resilient and embrace the shape and motion of the user. With time, the form should cease to modify and keep the memory of its past while staying flexible. The original shape of the piece would be of no importance, since it is its adaptation to the body that will result in the individuality of the garment. In all, the clothes would be made by measure and the material would evolve with the user, just as each person has a unique DNA that evolves with experience. This way, the design would discriminate between each user without discriminating against anyone.

I would like to stress the importance of preserving the heritage of dress forms as a non-verbal language. I am not proposing a new model to be followed which would contradict my whole discourse. I am proposing an alternative approach to existing types to increase diversity.

The design will be shaped by the person who carries the product. Drawing inspiration from the way garments used to be made, combined with current and future technologies, I will examine the possibilities available. I strongly believe that the future of fashion will take a dramatically different shape.

KINETIC STUDIES AROUND ARTICULATIONS

centre of articulation
area of tension
on the fabric

front   back
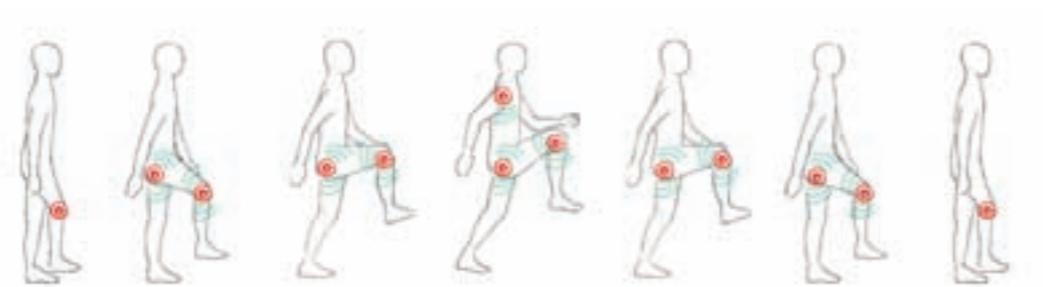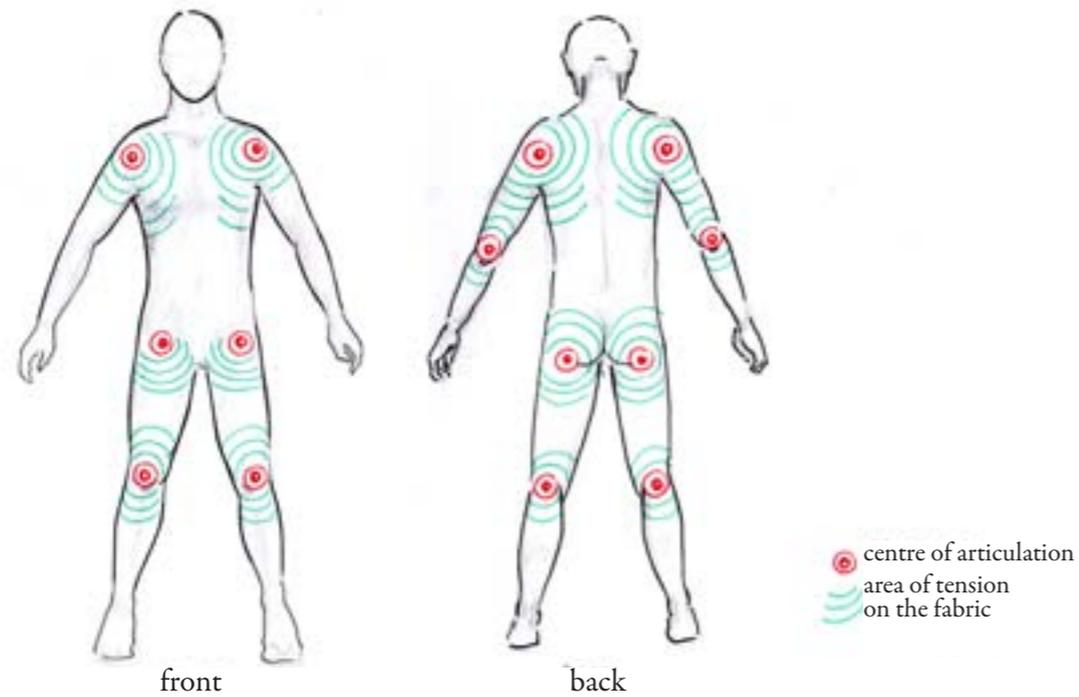
The red dots represent the centre of the articulation of the body movement. The green waves show the regions where the textile of the garments are under tension when the articulations bend and move. The designs take this into consideration. The modifications through movement will be concentrated on these areas.

Test of irreversible modifications from the movement on a sleeve

"A lot of people try to change the world, but tend to forget that we are the world. And change doesn't start with changing the other, but with changing oneself...and consequently the world will be changed."

Birgitta de Vos

Discriminating between is a mental operation that is harmless until it turns *against* individuals and groups. So long as humans exist, so will discrimination. This is not a reason to be defeatist, and I will carry on cultivating tolerance and welcoming difference in my own practice. Although discrimination does not necessarily engender segregation, injustice or even genocide, all of these stem from discrimination. With the combined economical crisis and social unrest, the danger of sliding into collective discriminatory behaviour approaches. This awareness motivated me in the first place to choose this subject and find out whether a designer can do more than just make useful objects. Can he use his power to inspire tolerance and dissolve social friction? Having studied the complexity of discrimination and its implications, I came to the conclusion that by providing an example in my own practice, I could tackle this delicate issue appropriately, avoiding in my turn falling into stereotypes.

By dissecting the mechanisms of discrimination in design, I isolated the discriminatory elements and set a list of criteria to follow. This gave me the opportunity for a more ethical application. It also allowed me to re-design my own profession by turning the aspects that disturb me into positive ingredients and keeping the ones that passion me.

For this reason, and after I examined the subject from all viewpoints, I decided to re-evaluate the design process in fashion and to communicate a new approach that relies on new references. The answer relies on accentuating discrimination which leads to an individually made process. I am proposing an open system, but not a fixed model of procedure as this would contradict my discourse of accepting diversity. This study will culminate into a design whose completion starts once the user wears the garment individually. Valuing differences is the most appropriate path to encourage tolerance and celebrate diversity.
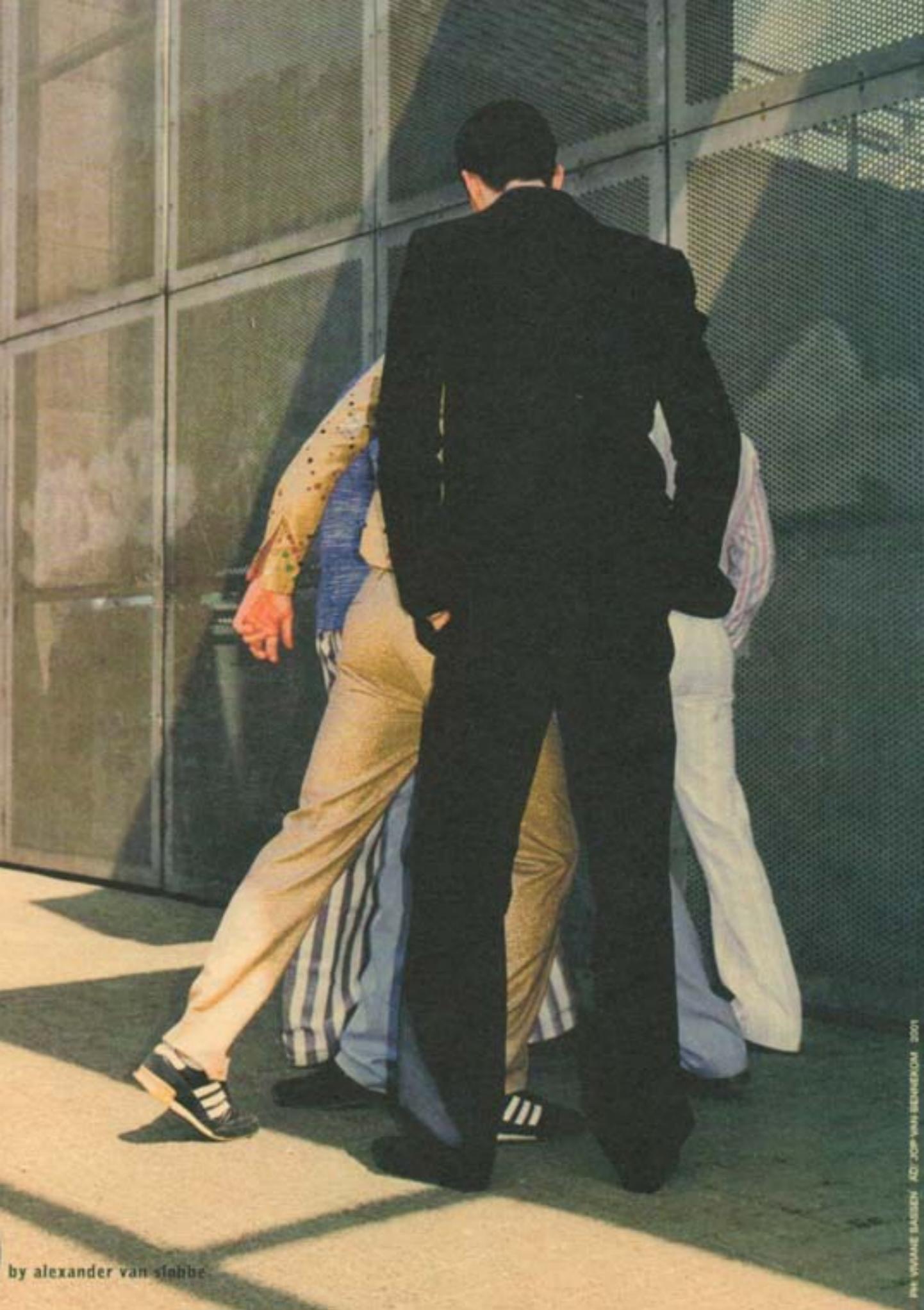
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APPENDIX

INTERVIEWS

Early in my field research, I met with two people who work at *Adviespunt Discriminatie*, an association who helps victims of discrimination, and also interviewed people on the street.

28.01.10

Jan Tienkamp is an advisor and agent at the *Adviespunt Discriminatie*. He listens to complains and offers legal advice to victims. One of the procedures is to have the offender listen to the complaint and make them acknowledge their responsibility in the problem. With the advent of the crises, the number of complaints has risen. It does not mean that there is more discrimination than before, but social tensions tend to burst in periods of insecurity. Cases of discrimination in the workplace increased because of layoffs and fewer available positions. The aspiration of the association is to grow in the future, spread awareness and educate people, especially in schools. Changing the views of the younger generation is the key to evolving into a more tolerant society.

14.04.10

Wies van Kats is responsible for the communications and public relations of the organisation. It is an independent association who's main goal is to help victims, but they also organise yearly activities to raise awareness. The previous initiative consisted of a visual campaign with a poster and a theatre play by children to bring awareness to the issue. They are under the coordination of *Art1.*, an institution that follows the first article of the Declaration of the Human Rights. *Art1.* is responsible for the awareness campaigns nationwide whereas *Adviespunt Discriminatie* is in charge of solving local and particular cases of discrimination.

The following interviews were made with random people in the area of Eindhoven. The purpose was not to conduct a survey, but rather to focus on individuality and highlight the personal view of the interviewed.

31.01.10

Basak, 16 years, was born in the Netherlands and lives with her parents.
She works Sundays in a Turkish restaurant, likes to hang at home in her free time, and studies at the Havo Lyceum right now but would like to do pedagogic studies in the future. She is learning French, German and English, speaks Dutch and Turkish. She also likes to sing and dance. Her schedule consists of going to school from Monday to Friday, working on Sunday and having Saturday off. Different cultures are ways of living in differently. She would not change her identity. She is happy with how she is and not everyone can and should be the same. Discrimination is when a person doesn't feel right with what others say or think of her culture, and make discriminating remarks. This has never happened to her and she doesn't think that it will ever happen.

Mesut is 29 years old, single and has no children. He lives with his parents, has a younger brother and an older sister, precisely 25 and 32 years old. All his family comes from Turkey. He also has family living in Germany, or England and France. Only a small part remains in Turkey. He moved to the Netherlands at 14 years old. He works as a chef. He doesn't have much free time as he works seven days a week for about eleven to twelve hours a day. But whenever he does, he likes to play pool with friends and have a drink. He only had a little education in Turkey. He speaks Dutch, Turkish, Kurdish and German. In the future, he would like to stay in the Netherlands, he has been in a lot of countries before and wants to stettle now. As he was born in Turkey, he comes from a different culture, but he left his country when he was nine. When speaking of discrimination, he says people are people and doesn't make cultural distinctions, besides making a difference between good people and bad people. He has never suffered from discriminatory behaviour.

01.02.10

Bill is married, has three kids and works in the social insurance business. In his free time, he does a lot of volunteering work for his church, being an active Christian next to his full time job. He knows a lot of Christian from his church and other related churches all over the country. His work allows him to be in contact with a lot of different people. His favourite things are good food, nice dinners, conversations and relaxed music. He hopes one day to become a priest/pastor in his church. He wants to help people who are stuck and to bring them back into society. Being half indonesian and dutch, he feels like a person who doesn't fit anywhere, neither Dutch nor Indonesian. He would like to bring change to his country of origin. He wants to contribute to the development of Indonesian infrastructure and economics. He wishes Indonesia resembled Singapore or the Netherlands in terms of material wellbeing and a greater variety of faiths. He is sometimes discriminated against, but very subtly. In 1973, after the news reported a hijacked train by "molukkers" in which Dutch were killed, his sister was discriminated. She was turned away at the supermarket.

03.02.10

Tuhba, 24 years old, has two daughters of 2, and 5 years old. All her family is outside the country except her husband. She has been a cashier at a Turkish shop for two years. She doesn't have a lot of free time as she needs to do a lot of upkeep in the house and works a lot of hours. However, she enjoys taking strolls with her friends or going to the cinema. Education? She doesn't get this word. Born in Turkey, she has been in the Netherlands for five years and speaks very little English. One her favourite things is making clothes. She has a lot of ambitions for the future, but it is hard for her to explain.
She wants to stay in the Netherlands as providing a good education for her daughter is the most important thing. Her husband doesn't speak Dutch very well. Later she might want to go back to Turkey. She sees a lot of cultural differences between the Dutch and Turkish. The language barrier is, for example, very hard. But she is always keen on learning more. This is important for her work. She thinks Dutch culture is very hard, because there are no family traditions. She thinks moving out of the house at 18 years does not promote very close family relations. She thinks 18 is a bit too young to move out. She cannot see many similarities in the two cultures. Some people are really sweet, but isn't that the case everywhere in the world?
She wears a headscarf. Everyone is equal, and people should respect that, with or without a headscarf. She was discriminated against because of her headscarf by two young girls, and because she doesn't know the language perfectly well it was a bit hard for her to defend herself. What's discrimination? Headscarf! People should be respectful, everyone is human, regardless of their faith. When people discriminate agaisnt her she wants to go in discussion with them to understand and learn.

03.02.10

Connor is 22 years old, single and has no children. He studies at the Design Academy Eindhoven. His main family consists of himself and his mother. He also has an aunt, uncle and grandmother. He has no brothers and sisters and does not know his father or any family from his father's side. He comes from a woodworking background. Since he was 12 years old, he has been building treehouses and sheds. Since he had spent 10 years working in carpentry, he decided do try design. So, officially, he is a designer. In his free time, he does quite a bit of photography because he comes from the countryside in Ireland and enjoys the free space and being outside. He speaks three languages; English, German and Spanish. He learned Spanish when he went to Equador for six months at the age of eighteen. His mother is German and he learned the language from her. He has plenty of good friends at the Design Academy and back home in Ireland. The problem living in a different country is that he does not get to see them very often. He is at the Design Academy from Monday to Friday. He gets up at 9, goes to school until the evening, then goes home, eats some food and keeps on working until he goes to sleep. At the weekend, he takes some time off to play football or to go somewhere. In the near future, he would like to travel like he used to four years ago. He longs to go to South America, India or South Africa, but is conscious they have to be well planned as they are half year trips. He has applied to study in Helsinki and hopes that it works out as it would be a nice travel experience. This would satisfy his thirst for travel.

He did not expect to find any cultural differences coming from Ireland to the Netherlands. But in Ireland, when he goes out, he is regarded as someone who is moderated, by Irish standards, because he does not drink too much. However, in the Netherlands, he is considered the alcoholic among half of his mates. It is not just about drinking, but the social interactions are completely different. A word Irish use is "to crack", which relates to behaviour in which you can talk to random people on the street about absolute nonsense, but in the Netherlands, it is much more difficult.
He thinks the Dutch work a hell of a lot harder, especially at the Design academy.
Food is pretty much the same. Average things are the same. The streets and systems are like in every developed country. He likes living in the Netherlands, but he misses the space and freedom of Ireland. However, the creative and interesting people he finds in the Netherlands is something lacking in his home country.
He doesn't really know what discrimination is for him. It could be excluding somebody because of being from a different country or a different colour. The Design Academy could be discriminatory as there is a clear divide between nationals and internationals, but this is also natural as there is a language barrier.He has not felt discrimination, but did felt out of place in some cases, when going out to the pub, because he acts in a different way.
He witnessed discrimination when he was little. He grew up in a place where there are locals who are from the place and discriminated against anybody who was from outside the small group of the village. He also has a friend in Eindhoven who was victim of a discriminatory treatment simply because of his skin colour. One day, when he was the only one waiting for the bus, it did not stop to pick him up and just kept on driving.

TECHNOLOGIES

    1. Knitting technologies

    2. Body scan for fashion

    3. Electrospinning

MATERIALS

    1. D3o schock absorbing materials

    2. 3D printed textiles

    3. Shape Memory Alloys and Polymers

    4. FabriCan

    5. Vilene

EXPERIMENTS

    1. Body position studies

    2. Shaping materials

    3. Three dimensional weaving

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A-POC
by Issey Miyake and Dai Fujiwara

A Piece Of Cloth is a technology that knits a ready to wear piece. A programmable machine creates a cloth with a perforated pattern that can be personnalised.

"In their uncut state they are simply a canvas, the wearer is handed a tool to make of it what they will and bring it to life."

Issey Miyake

KNIT AND WEAR
Audax Textielmuseum Tilburg

Programmable double bed knitting machine can provide one piece knitted garments. The specialised software allows to conceive full knitted pieces for the machine that can be individually made. The average time for a full wearable sweater is 40 minutes. The Textielmuseum in Tilburg uses Stoll german knitting machines and software. The advantages for this technology to be available locally is to save transport and the time from conception to the final product just as in rapid prototyping techniques.

The digitation of the human body has been used successfully for many year in the military for determining the correct sizes of uniforms for the entire staff. It is also common for animation and video gaming. There are various types of technologies available in North America, Europe and Asia.
The commercial technologies can be divided into five groups:
- Laser scanning
- Projection of white light patterns
- Combination modeling and image processing
- Digital manual measurement
- Other active sensors

The aim is to have a 3D digital representation of the human body. Opportunities in fashion include more accuracy in sizes and mass producing made by measure items. Benefits are reducing the rejection of products, lowering the amount of stock in sizes and a personalised service improving customer satisfaction. There can be significant cost reduction in manufacture, but the prices of this technology are still very high to compensate for the advantages.

The principles of digitizing the human body in both laser and white light projection consist of a light emitter and a sensor. By a triangular mathematical function, the data is transfered into a three dimensional digital model of the body. Other technologies include an electronic tape measurer, cylindrical holographic imagery and a combination of different techniques. Depending on the objective, combining measured data with stored data can give a sufficient information for digital bespoke tailoring.

The technology is fully operable for the industry. There are a total of 55 companies worldwide selling 3D scanning apparatus. The elevated costs have prevented the application into commercial use, but, as the technology becomes more affordable, it is expected to revolutionise the fashion industry.
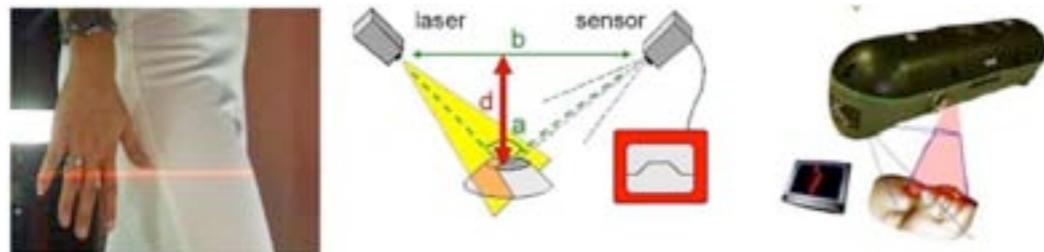
Laser body scan
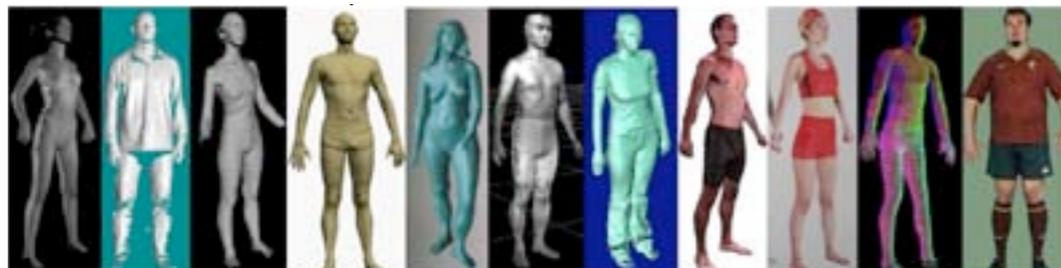
Examples of results obtained by different 3D full body scanning systems.
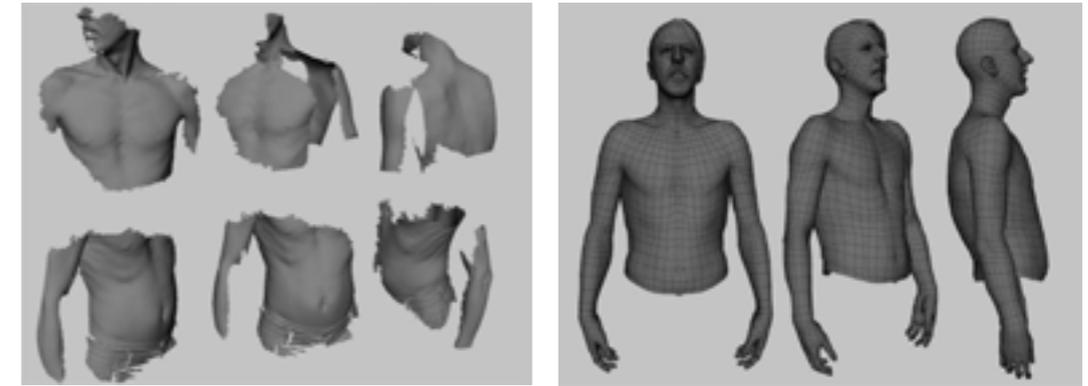
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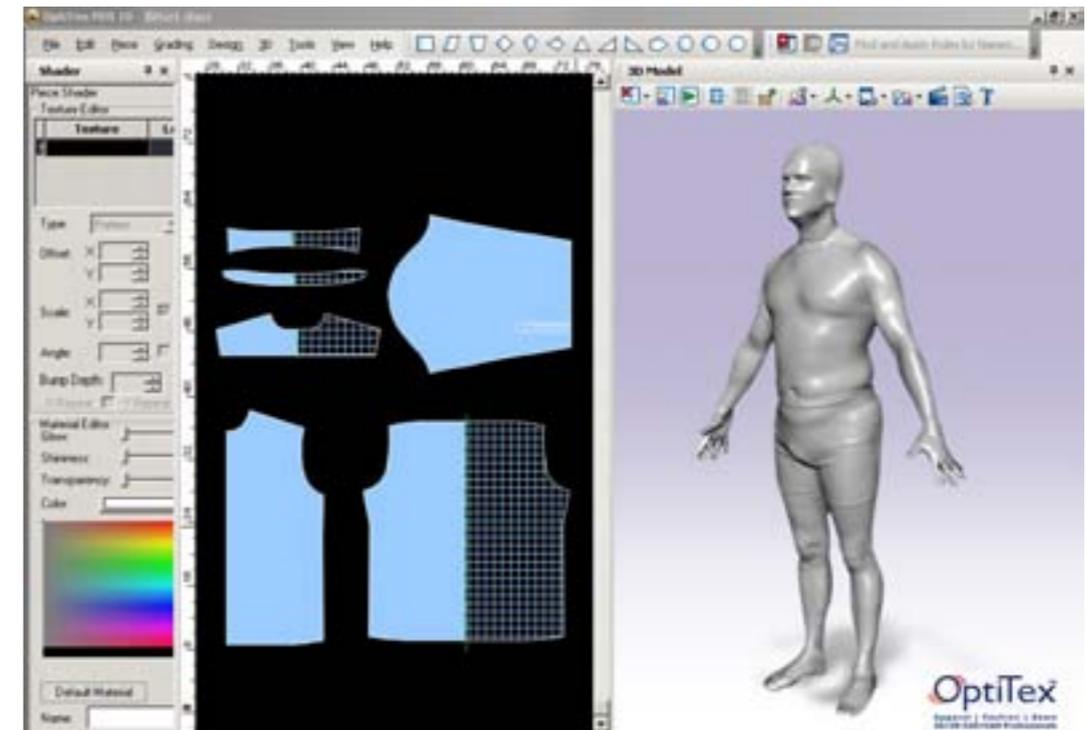
Software using digitized body scan.

Electrospinning is a technology injecting a nanofilament around an electrical charged field. It gives the possibility to have performing textiles created in any 3 dimensional shape. Although it has been available for more than 70 year, it has seen a rising interest in the past decade together with nanotechnology. Further developments in the next decade are promising.


Army Soldier System Center
set up of electrospinning fibres

Army Soldier System Center
Electrospinning simulation 3D bodyform

1. D3O SHOCK ABSORBING MATERIAL

D3o is a specially engineered material made with intelligent molecules. They flow with the wearer as they move but on shock lock together to absorb the impact energy.

relaxed state
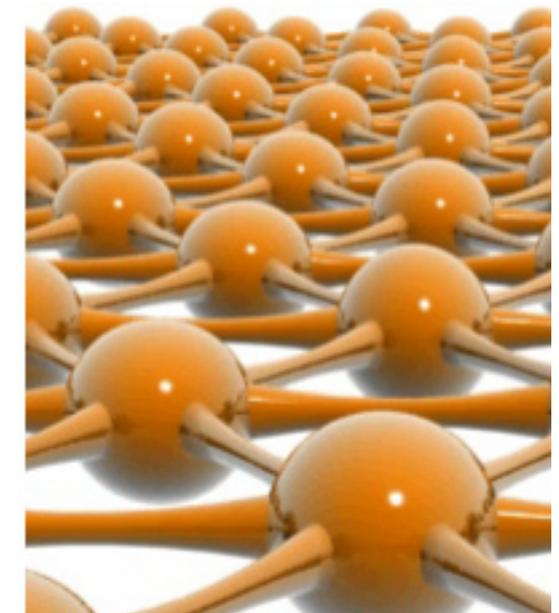
shock absorbing state

2. 3D PRINTED TEXTILES

This is a patented technology from dutch manufacturer *Freedom of creation* that produces laser created textiles without the need of complex stitching.

Shape Memory Alloys (SMA) are metals that can be programmed to take different shapes at various temperatures.
Shape Memory Polymer have the same properties as the metals. They are mostly used in the medical field, mainly dentistry and for prothesis to shape to the body.

SMA biodegradable sutures tighten the knot in 20 seconds when heated to 40°C.

Dutch Designer Mariëlle Leenders developed this shirt using SMA threads woven into the textile.

The Italian clothing company Corpo Nove manufactured a long-sleeved shirt out of a fabric incorporating a SMA. Depending on how it has been preprogrammed, the fabric forms itself into different shapes in response to the ambient temperature. This shirt rolls up its own sleeves. When the room temperature exceeds a certain value, the fabric forms folds and the shirt shortens in length. The shirt can also be compressed into its smallest possible volume, for example for transport. By allowing it to reach a preprogrammed temperature, e.g. by the introduction of warm air from a hairdryer, it regains its original shape.

Developed by american designer Manuel Torres, *FabriCan* consists of spray a material that turns into a nonwoven fiber on the body.

Vilene is a range of interlinings offered by the german manufacture Freudenberg Vliesstoffe FG. It goes from a wide range of light to heavy, as well as high volume nonwovens. The nonwoven interlining dissolves in lukewarm water (25° to 40°C). It is a non-irritating to the skin and offers the option of individually designed garments.

Garments are traditionally build for standing body position. The structure is 2 dimensionally conceived with front and back. However, the body is 3 dimensional and takes many different positions throughout the day. These studies are an attempt to built clothes from other body positions like folded arms.
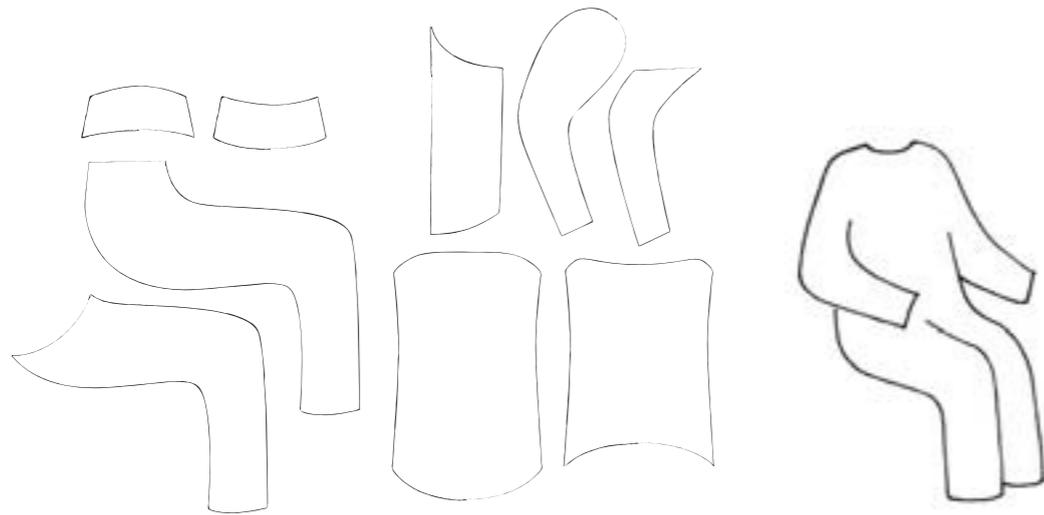
The pattern is retraced from the desired body position instead of conventional pattern drafting or draping.

A ceramic head was used as a tool for shaping the materials and
testing its ability to embrace the shape.

Using textile hardener to shape the fabric.

Experimenting with silicon.

Mixing latex with textile to shape the
fabric while preserving flexibility.

Using textile hardener to shape the fabric.

Weaving around the mannequin with a knitted ribbon to create a material out of a 3 dimensional shape as an attempt of low tech *Electrospinning*.

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HEAD OF DEPARTMENT
Gijs Bakker

THESIS MENTOR
Koon Kleijn

DESIGN MENTORS
Joost Grootens
Herman Verkerk

OTHER CONSULTATIONS

Joana Berzowska
Associate Professor of Design and Computation Arts at Concordia University in Montreal.

Saskia van Gelder
Textile designer and coordinator Man & Identity Design Academy Eindhoven.

Leslie Holden
Head department design and General manager of the brand Individuals at Amsterdam fashion Institute.

Dick van Hof
Mentor Man&Humanity Design Academy Eindhoven and independent designer.

Vinca Kruk
Mentor IM course Design Academy Eindhoven and designer/founder of Metahaven.

Tatjana Quax
Guest Mentor IM course Design Academy Eindhoven and designer/founder of Studio Aandacht.

Simone de Waart
Creative director at Material Sense and lecturer at Technical University Eindhoven, Industrial Design.

Carolina Re:s
carolinadsr@yahoo.com
www.carolinareis.com