

ADAPTIVE CLOTHING

Digital Craft: Tools of the trade Robin Zegelaar 0850198

The thing newer technologies and fashion share is innovation, looking forward. However fashion does not only look forward, it keeps the past as a central part of the craft. Trends celebrate the past while looking at the present and the role newer technologies play are how to make those trends innovative, new, fresh. The role the newer technologies play don't have to be obvious, as using digital prints instead of screen printed ones. But they can be very invasive on a trend like a new type of fabric (fermented fabric, made from grapes using a certain type of bacteria) which drastically alters the way a standard silhouette looks and feels. They can be practical, like using a certain type of polymer to create waterproof garments or completely decorative like laser cutting leather to appear as lace. But all of the techniques add something new, making it relevant to the now and revisiting its original value.

In the case of global warming there will be a need for clothing that can adapt to changes. Not only will the temperature rise in general there will also be extreme colds, droughts and storms. A part of fashion is about adapting and creating ways to deal with change (or go against and make a stand against change), be it political, cultural, escaping reality or in the case of global warming practical. There will arise a need for clothing that has the ability to adapt to certain conditions.



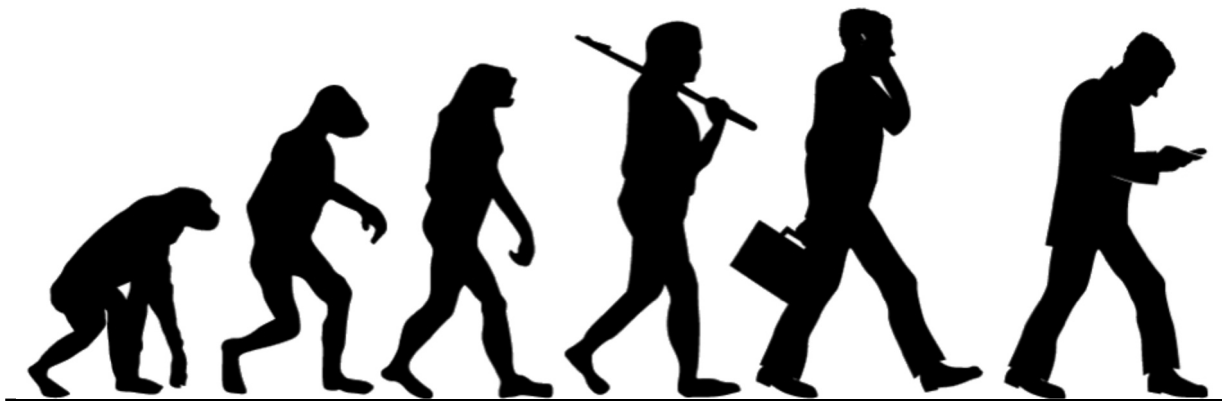
ADAPT:

make (something) suitable for a new use or purpose; modify.

modify, alter, make alterations to, change, adjust, make adjustments to, convert, evolve, transform, redesign, restyle, refashion, remodel, reshape, revamp, rework, redo, reconstruct, reorganize, customize, tailor, improve, make improvements to, amend, refine, tweak;

become adjusted to new conditions.

adjust, acclimatize, accommodate, attune, habituate, acculturate, conform; familiarize oneself with, habituate oneself to, become habituated to, get used to, orient oneself in, condition oneself to, evolve to, become naturalized, become seasoned, get one's bearings, find one's feet, blend in, fit in



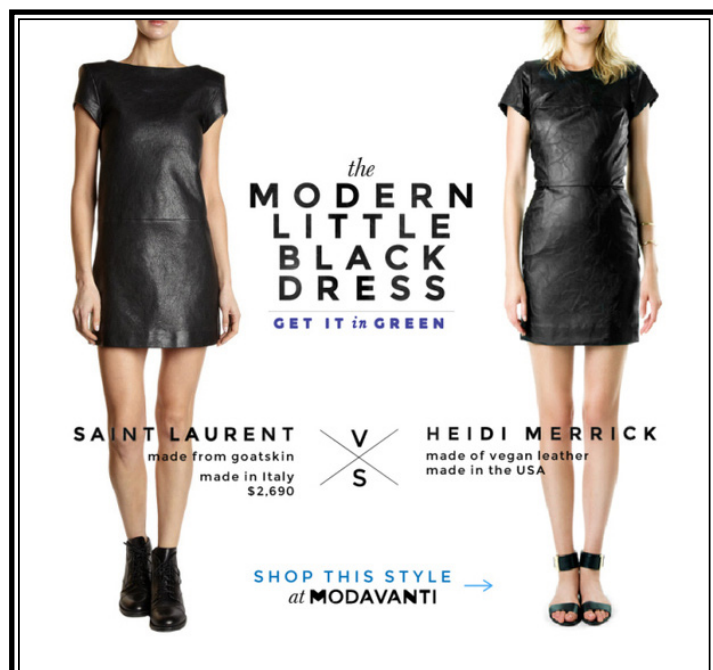
This led me down the path of evolution. What if humans can't evolve fast enough or we have different needs? Newer technologies can play a significant part in how to deal with evolution, they can fill the gap of what there is and what is needed/ wanted.

In one of the first classes, where I presented my idea, we talked about god mode and that I essentially take over evolution because I shape the evolution myself. In evolution changes come because they need to change, there is no end goal just a survival. But fashion is more like a second skin, not just for protection. Fashion can be an expression, show social and economic status it can even be political. It is more than simply adapting to a new situation to survive.

I also received the suggestion to look at a book of Susan Blackmore, dealing with meme. In short meme is copying certain traits. Meme can be anything, from genetics to cultural. This includes genes that know how to deal with predators, a symbolic dance passed through to the next generation as a tradition and even speech can be considered copying. I find this fascinating as a concept and also see it clearly in fashion, where it uses copying traits frequently, mostly visible in the form of trends.

Trends have a lifecycle after which they disappear, but most of the time they are reincarnated in a later period. When they do reappear they are envisioned in a contemporary

way, using technologies, ideas, knowledge of that time (they evolve/adapt). As a fashion designer I'm not that interested in trends as in what specific colors to use for a season, but more in trends that surface because of certain conditions at that time. Conditions could vary from cultural to global weather changes.



The image above shows not only a meme (a copy of a garment, even the whole concept of a little black dress can be viewed as one) but also a response to the use of animal leather and using a vegan version of it as a stand against it.



Seeing how everything fits into this time, what do people want/ need. And of course looking at the future, what could be the next big thing, what evolution in techniques can we bring and use? In that way fashion also stimulates new techniques by demanding progress and testing boundaries. Thinking of ways to make 3d printing more wearable/flexible, spraying fabric from a can (fabrican company) and Ultrasonic bonding to create more durable clothing are all examples how fashion also pushes new technology forward. The “old” trends become new by using what is available at the present time. If newer technologies had a breakthrough in developing a new fabric an old silhouette or detail can be transformed completely.

The advancing of techniques and production of new ones led to new ways to create, for example durability. Production methods where they use sound waves to bond seams (shown in a quilt form image 1) instead of regular sewing to create a sturdy and fully closed seam. Developing new fibers from coconuts that is durable yet breathable (and has the added perk of using less water to fabricate than regular cotton). There is also sustainability by dying fabrics through a new process where the dye adheres better, costing less water and energy or creating intricate designs using a laser cutter (diminishing the cost significantly but uplifting a product to a new level of intricacy as seen in images 2 and 3).

The shift in the need for certain clothing shifts the value of certain materials too. If it is constantly raining a water resistant synthetic fabric gains the upper hand over a cotton that just soaks up the

water and provides no protection.

These are all ways in how new technologies add to the world of fashion, its trends and how they interact with changes in the world.





For the research of my tool I took a look at the effects of global warming to form a setting for my tool. Global warming brings serious changes in the environment. Most of us know that the sea level is rising and the polar cap is melting, but the shocking thing to me was how fast it happens. By 2100 researchers expect a rise in sea level of 3 to 6 feet, which is devastating to coastal areas (Florida would be mostly flooded). Other problems are ocean acidification which results in diminished sea life, a temperature rise which will not only bring warmer weather but also more extreme weather changes and storms, migration of wildlife and flora to different regions (or simply the extinction of certain species), and drink water that is rapidly depleting (which usually takes a backseat when talking about global warming but will be a real issue in the years to come).

Learning these facts I decided to go with the weather changes, seeing how this will be a major influence on fashion, trends and seasons while still giving me the freedom of how to deal with it.





During my research I came across several designs inspired by global warming. The first one was a raincoat that stores rainwater. The Raincatch rain coat was designed by Hyeona Yang and Joshua Noble to provide clean drinking water to people. The water gets collected through the open collar and transported to a storage in the jacket where it gets filtered by charcoal and a chemical process. Eventually it is purified water which is drinkable from a straw near the face. This design really got me thinking about the seriousness of what they are representing, a limited supply of drinking water. And although not practical does confront people, telling a story without the need of an explanation.

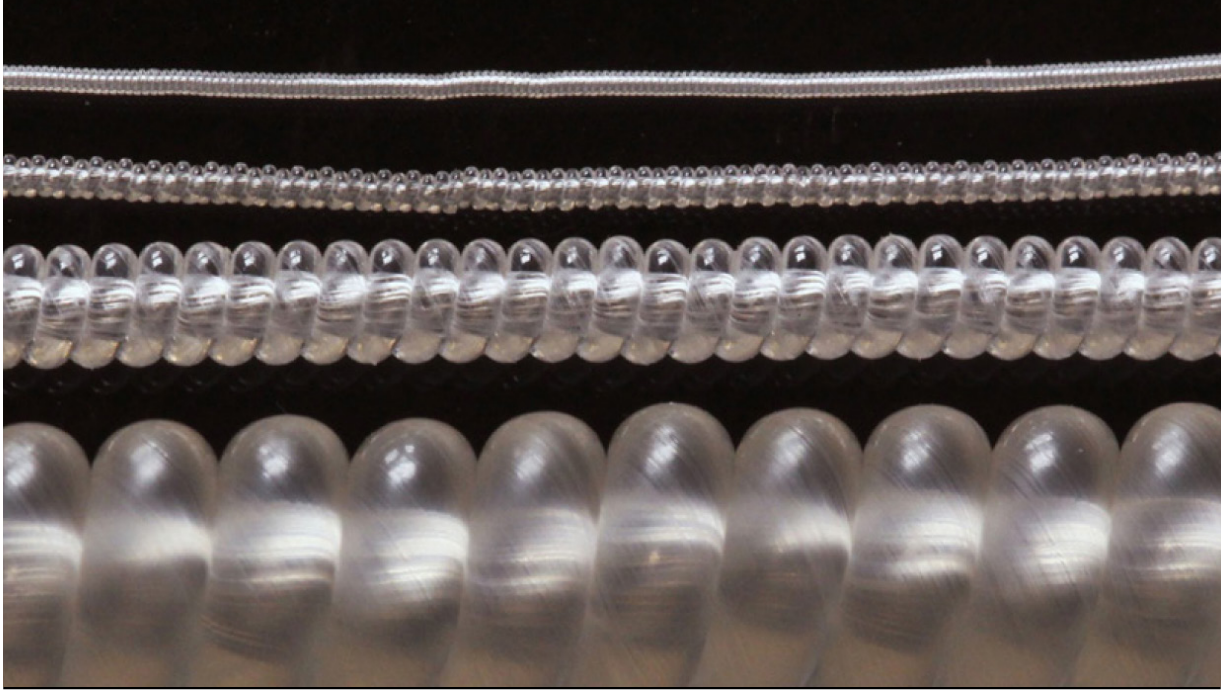


Another design is a jacket that reacts to pollution, featured in the image above. The Aegis Parka is designed to offer protection from pollutants in our environment. The design studio Nieuwe Heren created the parka which reacts to the level of pollution through leds. There is also a built in respirator which filters various pollutants like carbon monoxide and diesel emissions. The fabric of the jacket is treated with the photo catalyst titanium dioxide (which is a compound with anti-fouling and sterilizing properties that activate when exposed to ultraviolet light). The treatment for the fabric came from developments made on products that are "self-cleaning". I find it interesting that they were able to integrate that

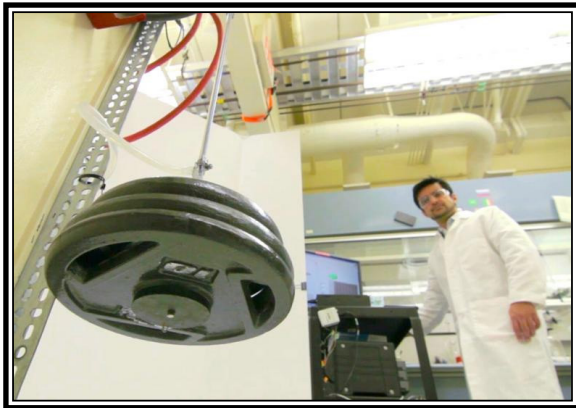
treatment into fabric because it is a very useful treatment in respect to clothing that is prone to collect dirt and bacteria.

A polar opposite is the designer Tino Seubert, who uses pollution to dye his clothes. He has two main goals: using something harmful and give it a useful non-harming purpose, as well as generate awareness about the pollution surrounding us in our daily lives. *"Despite the introduction of diesel filters in the western world decades ago, our polluted environments still remain a constantly growing problem,"* he writes on his blog. *"People living near busy streets, pedestrians and cyclists all suffer from the smog pollution risking cancer, asthma, and heart diseases."* He was inspired by the way how the ancient Egyptians made their ink. They suspended carbon dust in water to create a rough form of Indian ink. He translated that to using diesel filters and collecting the pollution to use as a dye. Not only is it a reaction to the extremely damaging dyeing process that is currently used it also uses the existing pollution as a way to enhance/adorn the fabric making the wearer aware of the problem and recycling the pollution at the same time. I find it interesting how he uses pollution in a traditional manner such as dyeing to not only create an image but also awareness.





There is even the making of superhuman artificial muscles using coiled fishing line. The fishing line is twisted with sewing thread and can lift 100 times more weight than a human muscle of the same size. It was developed at the University of Texas and revealed in February 2014.



The thing that I find highly intriguing is that they show how the artificial muscle is made. There are no expensive machines required to create a twisted fishing line. The only threshold there is in on how to integrate it into something where it will function. But the idea of an exoskeleton without being a huge robot seems plausible by using the strength of coiled fishing line. I imagine it would be usefull for other things too like in corsets to shape the body or high strength backpacks for example, it opens so many doors to create gear or garments useful in a changed environment. It excites me that there are so many interesting developments happening that push the boundaries.

I also encountered practical technologies that are already in use like ThermaDown. It is goose down treated with a Nano coating which converts body heat to infrared energy. The idea is that the goose down keeps you warm while the resulting infrared energy improves athletic performance and overall physiological condition.

The idea of clothing enhancing human capabilities is extraordinary and an interesting field to research. Most of these developments are either from the military or sportswear companies. They look for new ways to create practical and useful gear, which gives them a huge impact on fashion with all their developments. Materials like neoprene have been around since 1930 and were developed further into wetsuits by sport companies. And the popularity of neoprene just started in the fashion world because of the way the material has adapted since its origins.

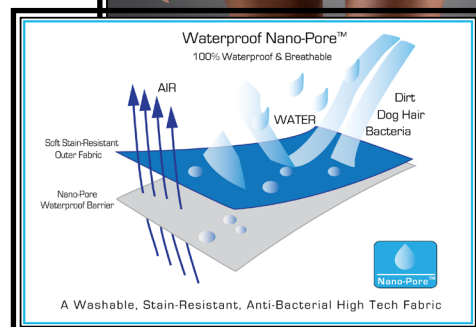
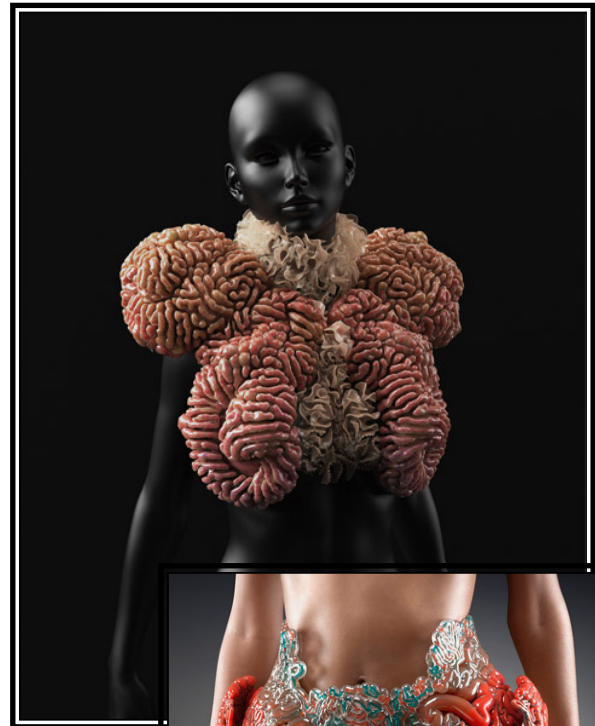




New technologies give us the way to deal with change. New innovations can be a practical approach like using certain types of polymer to create waterproof but breathable clothing, flame resistant outerwear or even bacterial killing microbes infused in fabric. It could be manipulating biology to create an organic fabric, like the use of a kombucha culture to create a form of plant leather. There is also the possibility of looking at old techniques, like making lace, and create it in a different way using for example a laser cutter. This allows for a different feel and use of material while still showcasing the lace influence, keeping the richness of lace but taking it to a modern place.

New technologies can even be pure fantasy like the garments from Neri Oxman which are created by 3d printing and allow “living” on a different planet. Each garment is created with a different planet in mind changing its appearance and functionality.

I think the designs really hit the mark of what innovation could lead too. From big evolutionary steps to small practical things, they all change the way we think, use and perceive. In the case of 3d printing it elevated the 3d print to a higher level, transcending the aesthetic and giving a deeper message (namely a way to use it in our evolution as a species). It also tells a story and that is something I am highly interested in, something I strive for with my own designs, tell a story or convey a feeling with my designs. But it is also something I struggle with when I’m using new technologies even though new technologies have the capacity to blur the lines between reality and fantasy; I tend to get lost in the practical use and think of reality, whereas my fascination lies in making fantasy a reality.





What new technologies bring are opportunities to me as a designer. It gives me the options like laser cutting to create details I could never have done by hand or digital printing for the most amazing fabrics or really using technology to create something that interacts with the environment like the smoke dress from Anouk Wipprecht that produces smoke when someone gets near the wearer. But also looking at material usage and what the impact of its use is.

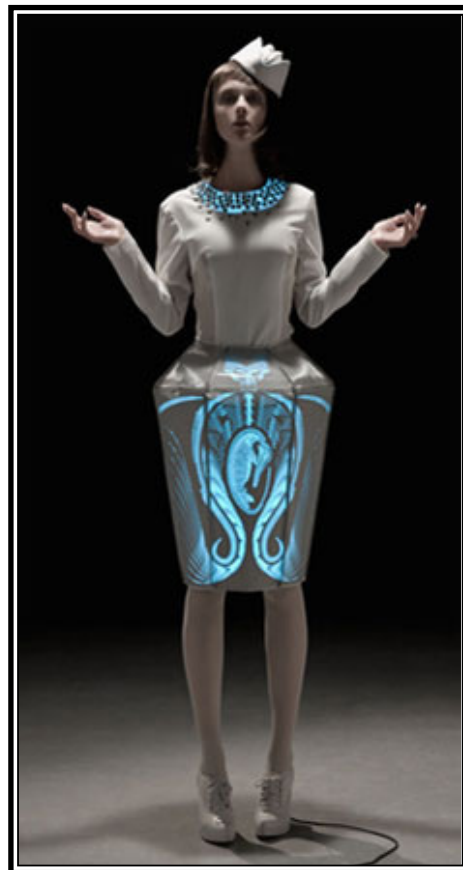
They make it possible to create the ideas in my head and craft a reality. We get a new perspective by looking at things through new technologies or using new technologies in an old way. That is what I find fascinating about new technologies how they bring innovation, a new look or a new meaning to something.

Designers should not be afraid of new technologies or resist them, which does not mean they shouldn't question them and think about what they mean in their particular craft and how they could affect another. It is possible to think from a new mindset and not use a new technology or the other way around. For me it is a way to bring innovation or a new perspective on things, not only fashion but also the world surrounding it.

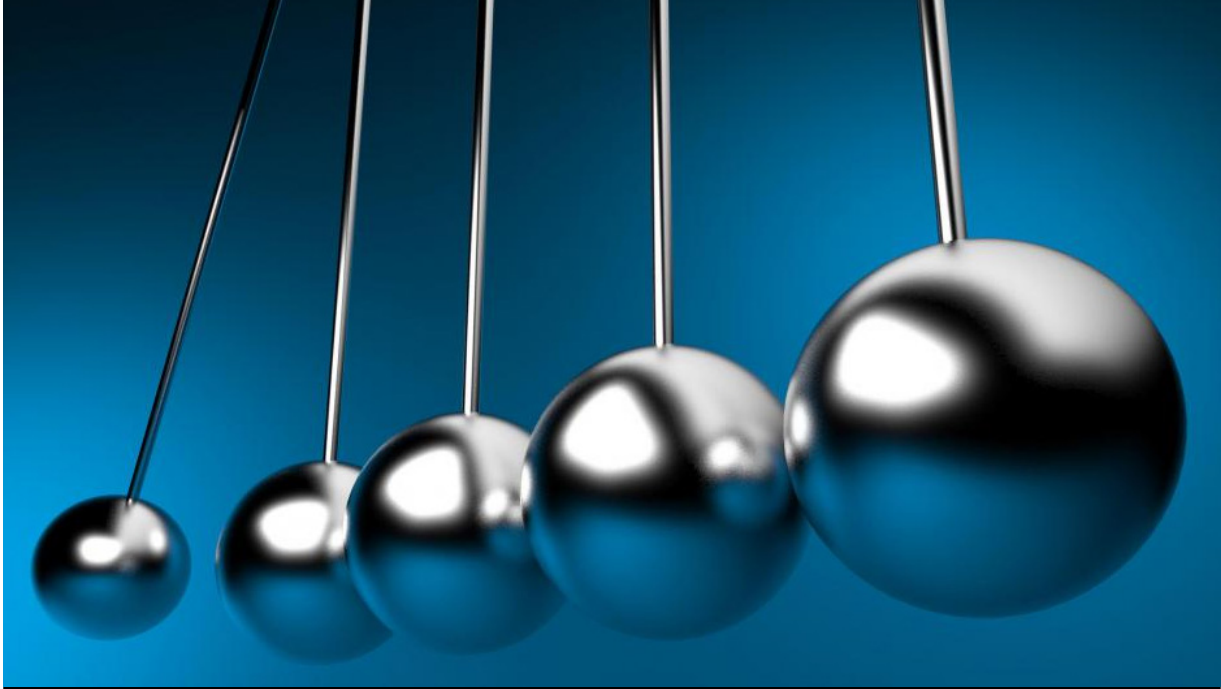
The research for my tool of the trade made me look at technology and fashion and their futures in a different way. I see them evolving and adapting together, creating new meaning for old trends/materials/stories. Old techniques will not be lost but envisioned in a new way, using a different material, approach or an innovation in the technique itself.

The idea of fashion evolving and adapting is not new, it basically sums up the core of what it

is. That is also what connects it so clearly to new technologies which also evolves and adapts in time. But it is more than just technologies it is also about the cultural context, what is playing in the world around us? With my tool I gravitated towards the culture and the changes in the world of now, and how fashion can respond to that, using materials with a certain mindset. It is about evolving aesthetics and practicality.



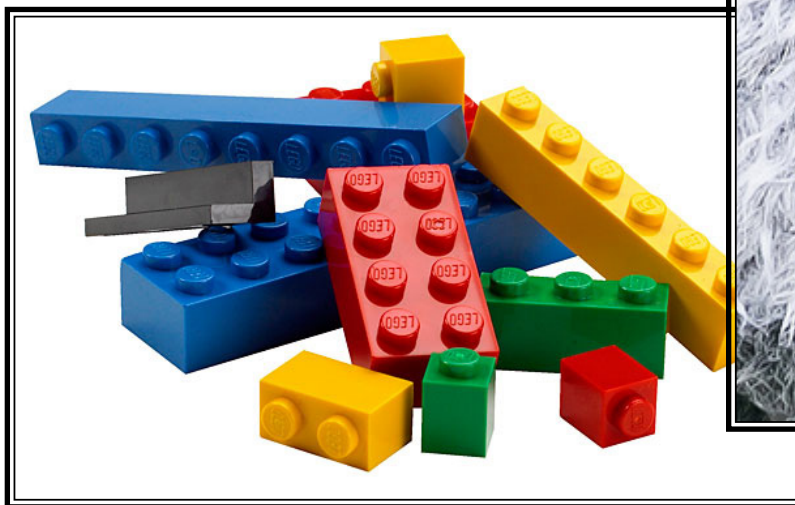
Vega Wang 2010



My tool will be a garment that can adapt to its surroundings through the user, evolve or copy a trait that is wanted at that time.

The thing I love about this idea is how it touches fashion and technology in a similar manner; both make use of evolution and copying traits and are in a constant motion. It also means the two can be combined and react to each other, there is a demand in fashion and technology is created to meet that demand, a new technology is created and can be adapted to fashion etc. They are like two wheels pushing each other further and further without a finish line.

Looking from the perspective of global warming it will not only touch on the practical needs but also the question of material. Using things like waste and or uncommon materials in combination with "normal materials" to think of ways to dispose of waste or looking at durability. Testing things like insulation, protection against rain, new look at fur etc. Eventually it will be different "evolutions" that can be used on the tool.



The tool will be a visualization of the idea of adapting through the user, specifically focused on global warming. The starting point will be a base module, the first brick or gene in the evolution. From thereon you can add, deduct and change the base to meet your needs. The user "evolves" the garment to suit their needs.

