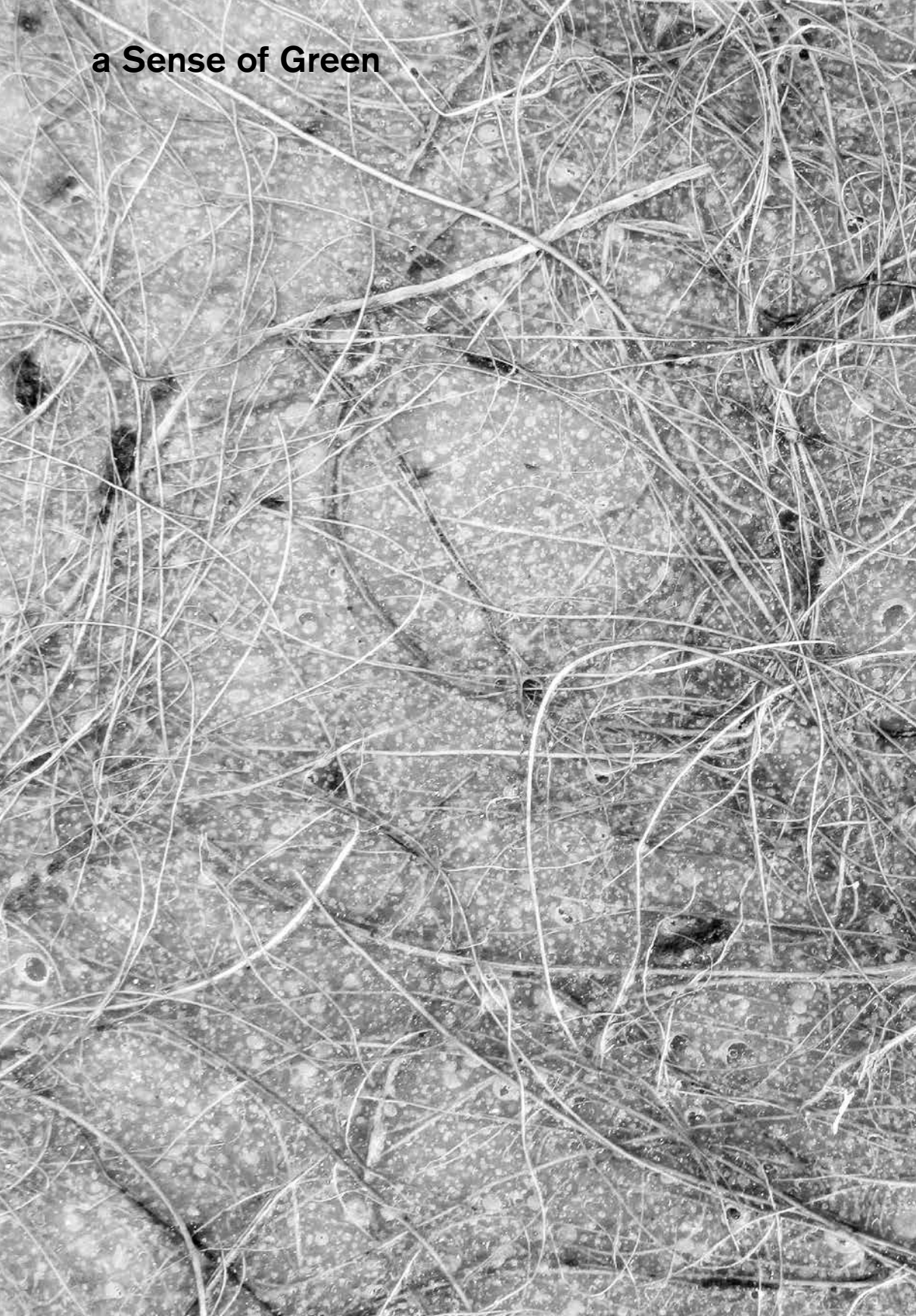




a Sense of Green

a Sense of Green



Colophon

Editor

Nathalie Beekman

Copy editor

Lyndsey Housden

Editor in chief

Anne Nigten

Design

Studio Edwin de Boer

Images made by participants of the workshops unless otherwise stated

Participating students

Iris van Gelder

Ilse Vanger

Marc Paulusma

Jurrien Veenstra

Jesper Veltrop

Henriëke Feddema

Ina Meininghaus

Rieke van Dijk

Elske Hollemans

Dieuwertje van Walsum

Deborah Smit

Florianne de Vries

Janiek Warrink

Sophie Seidel

Ineke van der Maarel

Anabell Teepe

Marloes de Vries

Malissa Geersing

Thijs Alberts

Annemarie Havinga

Jente Westerhof

Matthijs Mooi

Nine Marije Ligtenberg

Saskia Kerssies

Roy Kok

Vera del Grosso

Carine Kruit

Kevin Rooi

Lance Schmale

Marjolein Meijer

Marije Miedema

Victoria Romp

Marieke Gunnewijk

Elselien Pruisman

Ward Jonkman

Stefanie Krietemeijer

Sonja Murauer

Anna Ypma

Table of contents

4	Foreword - Anne Nigten
6	Design for Biobased products - Han Brezet
10	Just Starting... - Klaas Pieter Lindeman
12	Wishful thinking, wishful doing - Quotes Studio Tjeerd Veenhoven
14	Workshop 1 Biobased design
16	Biobased design and storytelling - Eileen Blackmore
20	Design by students
28	Workshop 2 Skins
30	Designing with Biobased materials - Aart van Bezooyen
34	Design by students
36	Real life design assignment
38	Mourning box prototypes
40	Workshop 3 Value of Waste - Shelters
42	The artist as agent of change - Nathalie Beekman
47	Haptic experiments
48	Vinyl shelter
50	Hemp shelter
52	Earthship
53	Bamboo & Jute shelter
56	Workshop 4 Value of Waste - Life cycle of materials
58	Material driven design - Anouk Zeeuw van der Laan
60	Research workshop
62	Life cycles and design
64	Next Steps - Anne Nigten

Foreword


Anne Nigten

This booklet is a short reflection on the workshop activities by the research group, Popular culture Sustainability and Innovation (PSI), of the Hanze University in Groningen for the CCC Reloaded: CREALAB project over the last one and half years.

CCC Reloaded: CREALAB is a European innovation project for the creative industry that ran from October 2013 to March 2015. Together with the municipality of Groningen, the research group PSI is representing the North Netherlands (NN) region in CREALAB. CCC reloaded: CREALAB contributes to a sustainable economic and social growth in the North Sea Region. The project's most important objective is the support of Small Medium Enterprises (SME's) and freelancers (in Dutch: ZZP'ers) with the development of innovative ideas, services and products.

CREALAB fosters exchanges between knowledge institutions (such as the Universities of Applied Sciences), the industry, governments and the public to bring about innovative ideas, products and services in the area of sustainability. During this project PSI worked closely together with its international partners and the tutors of the design department of Academy Minerva, SME's and freelancers from the professional practice, alumni and the municipality of Groningen. We could distinguish roughly two types of workshops: the formal learning sessions and informal or peer learning sessions. The formal learning sessions focused on obtaining new skills and knowledge about biobased materials and sustainability as a branding tool for students. The informal learning sessions dealt with peer-learning among students, alumni and representatives from industry. There is a significant element of mutual learning and knowledge exchange among practitioners (students and entrepreneurs alike) within non-formal learning, which recognises elements of "learning by doing" and "learning things together" in order to acquire new sustainable expertise.

The topic of these workshops all dealt with multiple aspects of the biobased economy. As we know the global warming manifests itself by having a major impact on our (future) lives. PSI researches what the role of artists and designers could be as Agents of Change for creative sustainable innovations in the near future. To achieve this PSI researches



models and approaches that are proposed by artists and designers as creative catalysts for innovation with and for the industry in the area of biobased materials and their applications. Doing so means a shift in focus from finding more efficient ways to “clean up the mess” to changing the way in which value is attributed to things. Furthermore, art and design are proposed to explore and propose such potential solutions. This brings forward new challenges in the liaisons with the regional, so far mainly agricultural, industry. Research group PSI advocates an agency role for artists and designers in the field of biobased materials as an impulse for the biobased economy in our region. In order to develop a better understanding of these future opportunities, Han Brezet contextualises our research in the biobased economy innovation plans in the North Netherlands (NN) region for us.

Based on the issues that were brought forward by representatives of industry tailor-made innovative biobased solutions were explored, designed and implemented. Besides working with entrepreneurs our students also engaged in a dialogue with a broad audience (specialists and lay people) in events and two Energize festival settings to disseminate and validate their work. Moreover, all these outward looking activities provided valuable feedback for the work as well as network opportunities. The outcomes of the first series of biobased workshops were also a source of inspiration for the theme of the upcoming Energize festival: the Value of Waste. In this way a continuous learning cycle is generated, where everyone is learning from one another. All of the workshops will be described, in text and visuals, in the following chapters. You are kindly invited to join our journey in a more or less chronological order.

We hope that our contribution to the CREALAB project generated impulses for new frameworks for co-operation between creative practitioners, scientists and business entrepreneurs. As we believe that when sustainable innovation needs are being identified and viewed from creative perspectives, refreshing solutions for traditional and new industries and SMEs can be found.

We would like to thank all our students, the Minerva tutors, guest lecturers, entrepreneurs, our audience and everyone who contributed to this booklet. Our special thanks goes to our CCC Reloaded: CREALAB partners and its funders: the Interreg North Sea Region programme.

Dr. Anne Nigten, March 2015

Design for Biobased Products

Han Brezet

DfS Professor

TU Delft

j.c.brezet@tudelft.nl



Introduction

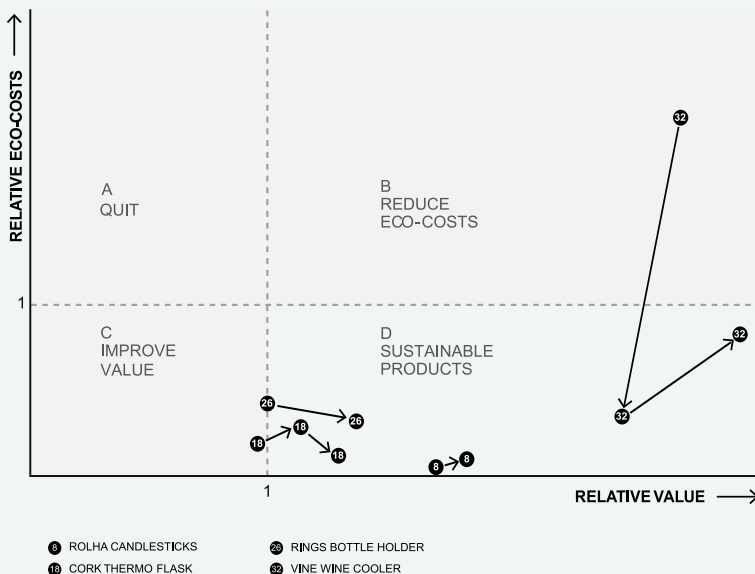
Ca. 30 years ago it was realised in some advanced environmental sciences disciplines, that it was better for the survival of the earth' life support systems and life itself, to prevent environmental problems in the first place, rather than to try to solve them after their occurrence. Gradually, the focus started to shift from end-of-pipe solutions for polluting processes to prevention, via the design of new products with relatively less pollution, emissions, toxins, use of energy, transport and land etc. over the full product life cycle. Next to the introduction of new process technologies, Designers-for-Sustainability started to contribute. Scientific programs for life cycle assessment (LCA) were developed and new product policies issued, stimulating a whole new field of industrial design. The majority of these new activities could be defined as eco-(re-)design of existing products, like cars, electronic products and furniture, and was in most cases aimed at existing, usually larger product formulating companies. Ecodesign's aim was -and is- to detoxify, de-carbonate and de-materialise each product's functional unit.



Design for Biobased Products

Today, in addition to regular Ecodesign, many other popular approaches in the Design for Sustainability (DfS) field can be distinguished, like Design for Energy Efficiency, Product-Services-Systems (PSS-) design, the Cradle-to-Cradle approach, the Biomimicry approach, Design for Resilience, to name a few. Although these different approaches embrace of course partly different underlying philosophies, it is absolutely clear that all are one way or another inspired by life and nature in their thinking.

Where some product designers, such as Tempelman et al (2015), have developed a comprehensive guide for nature inspired design in general, others focus on the specific opportunities biobased materials can provide for the development of sustainable products, like van der Lugt with bamboo (2008) and Mestre with cork (2014). Particularly, Ana Mestre has demonstrated that a strong vision on biobased material, in this case cork, together with modern production techniques and an emerging network of young design professionals and universities, can



lead to a completely new landscape. In Portugal, one can now find hundreds of new cork applications in consumer and professional products, stimulated by actors in the DesignCorque network and growing expertise in the field, from cork hybrid wine coolers to novel chairs and textiles.

With its potential large supply of biobased materials from agriculture, several entrepreneurs, designers and innovation agencies in the Provinces of Groningen, Fryslan and Drenthe, in the north of the Netherlands have kicked off similar initiatives. For instance Studio Tjeerd Veenhoven is among the pioneers of biopolymer based designs and leaf based leather-like applications. Likewise, designer Natascha van der Velden develops sustainable textiles' and fashion concepts from agro-based materials grown locally, under the label Made in NN (North of the Netherlands). The House of Design network in Groningen fosters her work, as well as 3D printing with biopolymers and new product development from original Drenthe's sheep wool, etc. In addition, the House-of-Design operates within advanced EU-programmes such as RegioCrafts, to exchange biobased design expertise at an international level. Applied universities like the Hanze Hogeschool (Groningen) as well as the Noordelijke Hogeschool Leeuwarden and Stenden (Fryslan/Drenthe), have developed support programs to foster these developments through research and contributions by talented young students. A new window of opportunity seems to be opening up.

Value creation and new venturing

However, like for all DfS approaches it is not enough to successfully create a prototype of a biobased, toxic free product, which uses over its life cycle low energy, with a high potential for reuse and circular management. Arno Scheepen's all-Frisian-wood bicycle may be the best choice from an environmental perspective, but it's expensive to produce and has a market price of ca. € 2.000. Therefore, nobody wants to buy it. Similarly, many of Ana Mestre's first cork prototypes were environmentally attractive in terms of LCA-scores, but considerably more than budget users were willing to spend. By making use of the EVR – Ecocosts Value Ratio, designers could improve the potential market value of the product prototypes, while keeping a better environmental profile. Figure 2 indicates this approach, where it is the designer's task to "move" new concepts into the attractive quadrant D, where Ecocosts are low and expected Value is high.

Another experience in many DfS programs is that large companies are usually not the first biobased innovation adopters, even though their innovation budgets may be high. Usually, smaller firms or even new ventures and students' kick starters are the ones to start and run the innovation process, more and more facilitated by emerging hubs and other networks of the creative industry. For instance, in the Portuguese Design-Corque project, almost all cork producers were actively involved and contributed, except for the largest producer and this is still the case today.

The NN perspective

Design for Biobased products seems like a great opportunity for the future economy of the North of the Netherlands (NN). However, in order to give designers and entrepreneurs a chance to foster biobased material research, new institutional arrangements are needed, which enable practical innovation through the enthusiasm of motivated university staff and students.

Emerging creative hubs, such as House of Design, Groningen, Creative Hub/Design Factory, Blokhuispoort/Leeuwarden; major events such as the Frisian EU Cultural Capital 2018; famous music festivals Noorderslag-Eurosonic and Into-the-Great-White-Open, need to be positioned to function as evolving networks. This will help to create a new, more sustainable society that maintains and attracts new talents in and for the North.

Some courageous policymaking is needed here, with a strong focus on resilience and sustainable innovation, which acknowledges the essential role of the new creative class vis-à-vis existing and partly outdated economy sectors.

References

Lugt, P. van der, Design Interventions for stimulating Bamboo Commercialization - Dissertation
TU Delft, 2008

Mestre, A., Cork Design - Dissertation
TU Delft, 2014

Scheepens, A., In: Delta, jaargang 41,
nummer 19, Delft, 2009

Tempelman, E. et al, Nature inspired Design -
a practical guide towards positive impact products - Book TU Delft, 2015

Just Starting... Klaas Pieter Lindeman



Klaas Pieter Lindeman is an architect with his own practice and a teacher in Interior Architecture and Design at Art Academy Minerva. He is the unifying figure and the driving force of the biobased workshop series.

This booklet provides a visual overview of sustainable design workshops of the last year and a half, in which 'Biobased Materials' were the common thread.

In addition to the aim of researching materials, an important component of the process was to capture findings and insights. How can we pass on accumulated knowledge to the next group of students and make it a continuous process of research, instead of starting from scratch each time?

The concepts 'Biobased', 'Awareness', 'Value of Waste' and 'Lifecycle' formed the inspiration to formulate initial assignments. During the workshop kick off the relevance of applying biobased and waste products was emphasised. The traditional materials as they are used in the building industries are energy consuming and often poisonous.

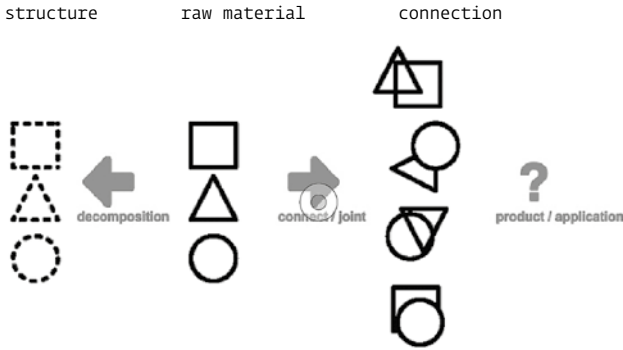
Combining materials and the search for possible applications was the starting point of the first workshop series. It is most interesting to

choose materials which are 'regional'. Think of local products such as hemp, grass and cardboard. Small distances means less transport, less power consumption and on top of this, it is a way to establish a 'bond' with a region and its materials.

In the workshops we have frequently made use of the House of Design foundation network. Encounters with entrepreneurs and designers who are experienced in researching biobased materials, inspired the students. We found out that professional designers often have to deal with the same research challenges as the students.

Entrepreneurs will often come up with the question to make their material 'catchy' or to experiment with their material in order to find out what else can be done with this material, outside the functional realm that they can imagine themselves. They are looking for other applications than just the functional ones. To examine the material from various angles; cultural, experiential and social, offers opportunities for Art Academy Minerva.

My role in particular was to organise these workshops. To be a binding person between student and professional designers, entrepreneurs and technical workshop experts. I had to create an environment in which research and



Scheme 1: In this scheme two different directions are visible. *Back to the origins*: analysing the composition of materials that are in an in-between phase such as bamboo, card board, hemp, jute, felt and potato starch. *Combine materials*: the connection of materials through different methods is in focus. Both directions lead to different results, insights and applications.

dialogue could take place. In the past period this has been a search for me too: to give direction to relevant issues that may be manageable within the stipulated time. As an architect, it fascinates me to seek new materials. Materials that have various properties such as texture, structure, transparency and sensory qualities. While considering this, the dimension of time is important; we have to look forward and create a vision in order to give shape to the space around us, now and in the future, in which responsibility for the world is an extra dimension.

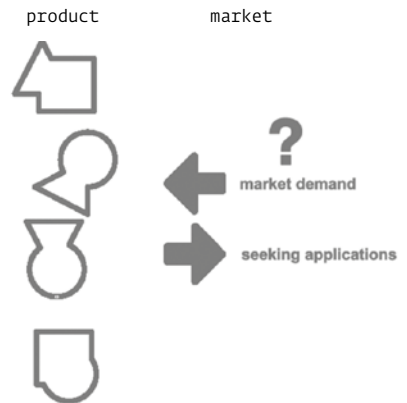
Theoretical research and empirical research take time and perseverance. That's why we made a link between 'long' courses and 'short' courses, which generates a broadening and deepening of the research.

Another important component of doing good research is that there are enough possibilities to make use of technical workshops and workshop experts. In my vision these workshops should be given a central role in future research. In addition to hands-on experiments they facilitate the documentation of knowledge and findings, and in doing so form the constant factor in the program. In our research we always tried to think beyond the 'pots and lamp shades' that are very obvious and perhaps not totally avoidable. Instead we focussed on environmental awareness and on unique functionalities and actions. Important elements involved the lifecycle of materials. We asked

the students, amongst other things, to keep track of what they use and touch in 24 hours and which action is involved.

Given that the subject is still in its infancy, we noticed that students have a drive; they are aware that they actually can discover, innovate or renew something.

Minerva Students are able to give this extra intention of experience. This study is a prelude to future research, embedding the subject in the curriculum and to collaborate with other academies and regional businesses.



Scheme 2: In this scheme there are two different directions. *Think from the product*: when new products are put together, which new applications can be found? *Think from the action*: society asks for new actions that can serve as inspiration to come up with solutions and answers in new products.

Wishful thinking, wishful doing

Tjeerd Veenhoven

Studio Tjeerd Veenhoven is a product design studio with a love for inventing materials and production techniques.

In his work Veenhoven is experimenting with materials in a playful way. By heating, melting, combining and disassembling existing materials, new forms, structures and functions evolve.

Art Academy Minerva is regularly inviting Veenhoven to give inspirational talks and professional feedback to students.

“ *In our studio, over the past 10 years there has been a development that we invent solutions based on Design Thinking. So first think of something you want and then implement the plan with technicians and specialists. You can see this tendency worldwide: what do we want, where do we go and as we have defined this, we can work with the industry to make it happen. Design used to be almost an art form, it stood on a pedestal, still a little bit, it had to be presented in a gallery or a museum. As a design studio we pursue to design for the many and not design for the few. This is a beautiful endeavor that design is very good for.*

For us, it is normal to work with many different disciplines; we use specific ‘pillars’ in our organization; we have education, science, commerce, we have all these different pillars and with each pillar there needs to be a specialist. The ideal collaboration in these processes does not really exist. As a studio we just want people on our team to have very different backgrounds, so we put a lot of people with different opinions and views together.

We emphasize specifically collaborations that are based on conflict and on people not agreeing on subjects, they enter this creative process from their own background and their own expertise, to get as much friction, anger and passion going, to get new results and new ideas, that’s the focus. So we’re not striving to get a perfect collaboration, we’re actually trying to avoid it.

”

“

There's a lot changing in education and there is a lot changing in entrepreneurship. As a green entrepreneur I am challenged with the concept that I have to come up with new ideas all the time and as fast as possible. As for new ideas it would be very fruitful to give art students some real life challenges, some of the challenges I face as an entrepreneur.

The creative process as practiced by artists and product designers is crucial for innovation. The beauty of the creative profession of an artist or a product designer is that we are able to start with nothing, we can have a great idea or inspiration, which is not linked to commodities or markets and put it out there, form it into a shape, make it communicable and we can put all our philosophies and all our dreams into it. This can be the focus for other industries to work with, that's the beauty of the creative process, to start not from raw materials, not from business models but from what you want.

A good example of this process is palm leather, a material that I designed from waste, leaves from the palm tree in India. I upgraded these leaves with a special biological solution and now it is leather. This I started 4 years ago in my own studio out of nothing and what you can see now is that this material started up partnerships and collaborations with science, with commerce and actually there will be a very big project .

I think we're going to have a change obviously; we're going from synthetic raw materials all the way to sustainable materials. I do believe that in the coming 10 years there still are going to be a lot of products that will be designed from synthetic materials but I am very confident that in the coming years many companies will understand the fact that we have to design and produce products that are sustainable, that are part of a circular system instead of a linear system. In that sense I am very positive about the developments.

Right now you see the arrival of many new materials, biopolymers, biobased materials, we even look for old materials that we have kind of forgotten about and old empirical processes. It is very important to get as many designers in as we can, to re-design products with these materials, instead of continuing with the old systems, so that we can make the transition to sustainability as quickly as possible. We have to start again from scratch, all these new materials need new designs and I think the creative industry provides new opportunities to involve designers in this process.

”

Biobased Design





During the project week, two lines of development were set in motion: an awareness of the specific role that artists and designers can play as agents of change in sustainable product innovation and an awareness of the characteristics of biobased materials and their potential applications.


Students made playful hands-on experiments, with combinations of biobased materials such as bamboo, cardboard, felt and bio-plastics, and looked for the design possibilities of each material. They were co-guided by creative enterprise House Of Design, who focused on the functional, professional and experiential properties of design. The findings of this workshop were presented at the Energize festival 2013, thus creating audience awareness. These findings were also archived as a knowledge base for the next workshops.

Biobased design and storytelling

Eileen Blackmore



Biobased materials: Under construction (november 2013)
Material explorations of cardboard, bamboo, hemp, felt, bioplastic. A search for characteristics, sustainability and applications



Eileen Blackmore is director of House of Design foundation, a creative enterprise that is dedicated to the world of design. The foundation organises, develops, connects, exhibits and promotes to bring design into the spotlight. As a connecting link between designers, companies, institutes, industries and consumers, House of Design initiates and facilitates co-operations between these parties. It also serves as a contact point for companies and institutions that have a design question. House of Design organises courses, seminars, exhibitions and design pressure-cookers on a regular basis and represents designers at fairs in the Netherlands and abroad.

Artists as Agents of Change

Artists approach materials from a tactile or intuitive perspective and will play with the material until innovative combinations or compounds arise with their own context. Artists as Agents of Change can play an important role within companies as innovators of materials and applications. This involves both working for their own projects or initiatives and as contractor or participant in companies.

In doing so he keeps a balance between practice and theory, structure and freedom. This makes his performance innovative and agile as he will come up with solutions from practical and surprising angles. It is therefore very important for a designer or artist to know his materials and tools. They are the instruments that you play. When you master your instrument, you can start making music in your own way.

Tangible Time

Designers and artists make our time tangible. They are the 'ambassadors' of the materials and techniques and are therefore responsible for the choice of the consumer. Artists and designers determine which products we use in our work or in our daily lives at home and set requirements about where the material comes from and how it is made. The owner of the designed product is a conscious consumer and has the conviction that his choice will influence the future of his grandchildren positively, because the material of the products will nourish their earth."

Workshop 1

In November 2013 I was asked to do a week-long workshop at Art Academy Minerva together with a teacher, in which we invited students to experiment with raw, industrial materials from the Biobased Economy, which means that we worked with renewable materials. Local producers kindly donated different materials like industrial hemp (Hempflax), cardboard (ESKA Graphic Board), bamboo sticks (Eggworks), bioplastic foil (Oerlemans Plastics) and bioplastic thread (API Emmen).

The aim of the workshop was to create new combinations with these materials, to capture the processes and to get inspired by several professional designers that House Of Design involved in the process. These included for example designers Marjolein Perin

who taught students to use felt in combination with wool and hemp, and Sarah Sixma who spoke about how to use your creativity. They inspired to use both kitchens and gardens as lab. As a designer you are an ambassador of the material, so it is very important to know what the components of the material are and how it is made. In the process students did experiments to get to know the characteristics of the materials by stretching, burning, baking, grinding etc. All kinds of connections were explored using both craft- and self made methods Students got very inspired and worked with felt, straw, hemp, bamboo in combination with bioplastic threads and foils. Kitchen closets were opened and coffee ground, flour and potatoes were added to the pallet. Different prototypes were made, for example hinges made from bamboo.

Workshop 2

In the follow up workshop in June 2014, we focused on how to act in a creative dialog with a client and how to use a method to give meaning to all aspects of your design.

We worked with a design assignment from a local entrepreneur. As experimenting by itself can go in different directions, the question was how to frame this process and how to tune in with a design question of a potential entrepreneur. This boiled down into a double faceted strategy. One part was aimed at testing and underpinning your creative process by using a theoretical framework, the other involved shaping your role in the communication with a client by dividing both materials and design question into 5 different layers. I explained the simple communication model of John von Hebel, which involves the following sequence of actions: to perceive, to process, to interpret, to make choices, to make plans, to execute. We have the tendency to directly go from perceiving to execution, so we often miss important steps in the process.

I exposed the students to a method from Design Innovation of the TU Delft that they could use to develop a product from renewable or biodegradable material, based on a given design question that was written out in the following features:

1. the aesthetic value, what is the story behind?
2. the functional value, what's the use?
3. the interaction, how does it feel, how do you use it?
4. how should the product be made/produced?
5. visual: what does it look like?

The designers were surprised by the simpleness of the method; it gave them a handle to feel free to experiment with the materials.

They experienced that both methods were generating different results than would have been the case with 'out of the blue' experiments. The context of the story behind the product was so strong that the client was very happy with the results.



Example #1 Bamboo: what are the characteristics of bamboo? Fibers? Strength? Elasticity? Compatibility? Adjustable?

Brand moeilijk
Rood Ruist lenner
als het brand brand het goed. (de buitenkant eerst) 20% uit by brand. segment hout tegen.
afwerking
Bamboespaanplaat hd
Sieve
negatief
Water Je kan ermee schrijven. Verhout sp
ft lucht buigzaam Segmenten Soc
Kameleon Constructie limbee Yain

BAMBOE



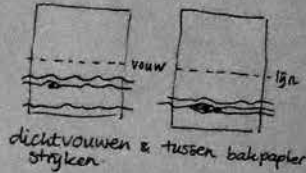
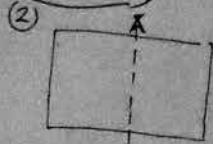
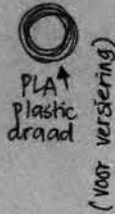
knippen, strijken en strijken!

DIY with bio based plastic

GET INSPIRED BY MARC HENRIEKE & SIMONE

DO IT YOURSELF

basis

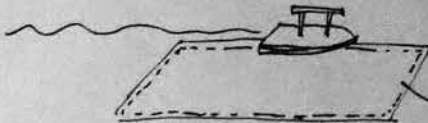


3 Nu heb je 2 stukken met versiering er tussen



4 Leg de Vellen op elkaar met bak papier er tussen

→ Leg er bakpapier onder en er boven en

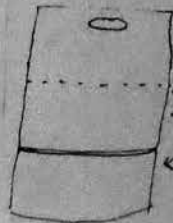
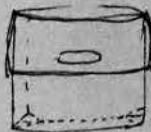
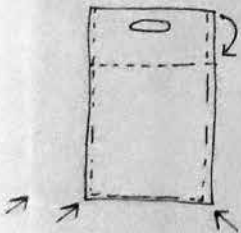
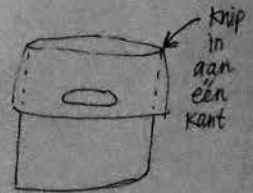
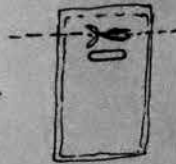


langs de randjes!

laat een klein stukje open blaas 'm op & strijk 'm dicht

KUSSEN

5 Uitgerust? Knip de bovenkant eraf en knip er een handvat in. Een BIO TAS!



Van tas naar Lektuurbak (of pennen, planten, bloemen... of zo...)

BIO PLASTIC get Inspired



laat het licht & de wind erin mee spelen

Example #3 Finding the characteristics of new combinations for hemp and different materials such as plaster, wood glue, straw and coffee.



Example #4 Searching for the characteristics of potato starch foil.



Example #5 Looking for properties of new materials: bamboo chips and bamboo sawdust combined with water, potato starch, (beaten) egg whites. Different treatments; microwave, oven, fridge, freezer, cooking and baking.
By: Jurrien Veenstra, Jesper Veltrop en Rieke van Dijk

5e experiment
- eiwit
- bamboe snippers

6e experiment
- geklopt eiwit
- bamboe snippers

7e experiment
- geklopt eiwit
- bamboe snippers
- bamboe zaagsel

BIO
afbreikbaar

GOED
gietbaar

> 2,5
kg/m²

BIO
afbreikbaar

GOED
gietbaar

+ -
hardheid

> 2,5
kg/m²

BIO
afbreikbaar

GOED
gietbaar

+ -
hardheid

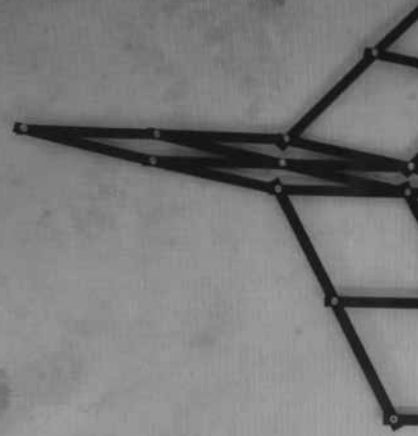
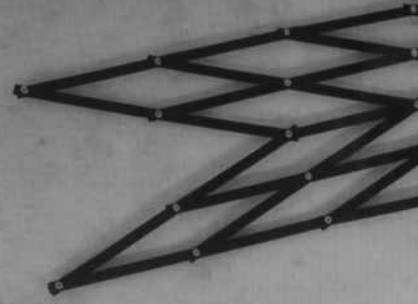
> 5,0
kg/m²

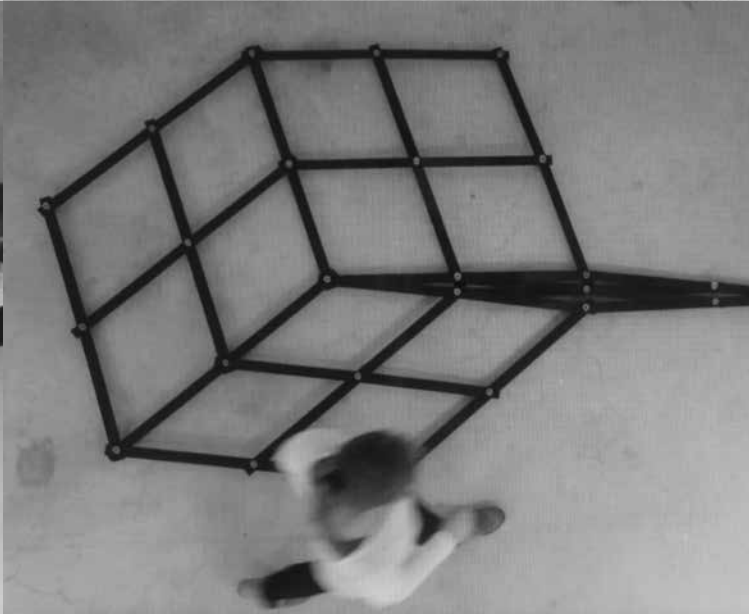
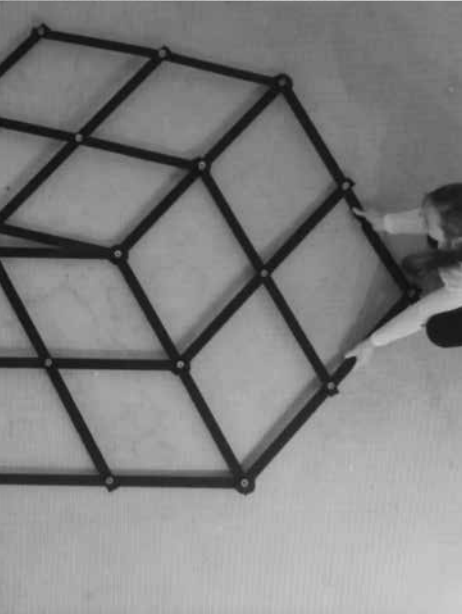
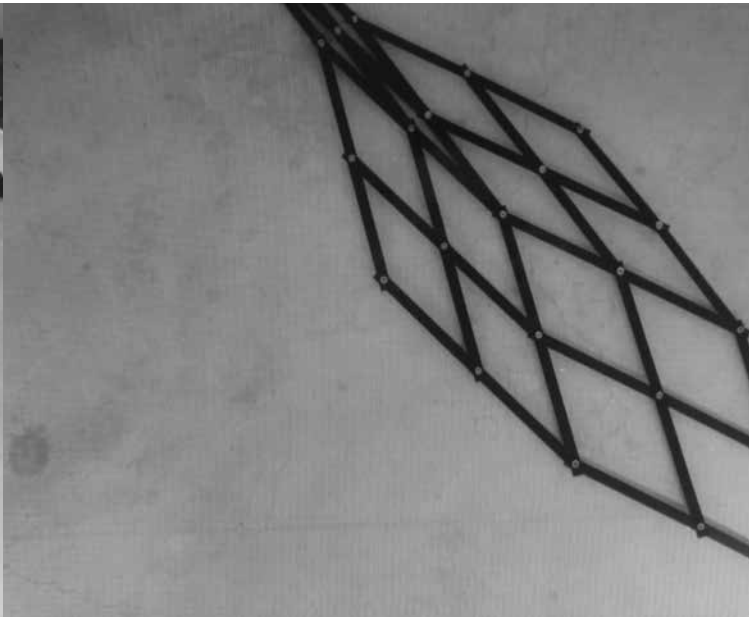
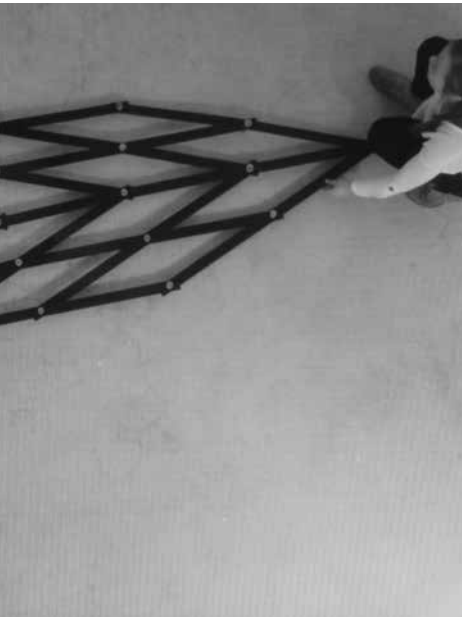
Prototype #1: diluted cardboard made into crockery. Less waste when a fast food restaurant starts to use this?

By: Iris van Gelder, Ina Meininghaus & Sophie Seidel



Prototype #2 Folding screen made of cardboard and bamboo hinges. Dynamic structure.
New functions? Play? By: Deborah Smit en Janiek Warrink





Vakklas 2 (mei - juni 2014)

Skins

fashioncheque®
0 0 0 0 0 0

BOTANIC
CHIC

Source: Aart van Bezooyen

In this workshop series, the aim was to build on the initial exploration of biobased materials and their applications in innovative design. Directed at the potential use of shaping interior space with new set of objects and structures. The focus was placed on the skins of biobased materials, whether or not they combined with each other.

In the first phase of the workshop, the hands on experimentation with the biobased materials was contextualised by a guest lecture by Aart van Bezooeyen, from the creative enterprise Material Stories. The exploration involved both the properties of biobased materials and their possible application in society.

The second phase was based on design assignments from small local businesses (SME's), which involved a producer of industrial hemp (Hempflax), a company for office furnishing (Pet!), and an undertaker (Algemeen Belang).

Designing with Biobased materials

Aart van Bezooen

Prof. Aart van Bezooen (founder of Material Stories, and former Minerva teacher) was invited by Art Academy Minerva to provide an inspiration lecture on biobased materials. The goal of this lecture was to inspire the participating students with case studies and practical examples of biobased materials and making. Earlier, Aart hosted a cook-it-yourself bioplastics workshop with Paula Raché at Minerva to demonstrate the importance of making (and designing) your own bio materials. The main questions were “Why do biobased materials matter?”, “What is the role of the designer?”, “How to make biobased materials?” and “How to archive biobased materials?”

Biobased materials

One of the main reasons of working with biobased materials in the first place is the fact that they are a renewable resource, which means they are not a limited and can be renewed, such as a tree can be replanted for future wood-based products. This makes biobased materials an interesting alternative to the fossil-based resources and fuels which are becoming more and more scarce. Since nobody is looking forward to a future where we are fighting for resources, it is important to find alternative solutions for the approximate ten billion people who will be sharing the planet in 2050. The *Material coordinate system of bioplastics* (from the European Bioplastics Factsheet) gives a good overview of the biobased and biodegradable plastics today.

Role of designers

Finding alternative solutions for the future? This is where the designer comes in. Almost 80 percent of a product's environmental foot-

print is determined during the design phase, so we can say that design(ers) matters. Designers can influence the world we live in, our society, the way we use, choose, buy and discard things. Good designers are trained not to be satisfied with a single solution but know how to look for alternatives and have the imaginary skills to create future scenarios. This combination of creative skills and future thinking makes it possible for designers to play an important role in sketching new possibilities for the future. These “sketches” don't have to be limited to paper drawings but can also be tangible product prototypes, people-based interactions or even (less tangible) business models.

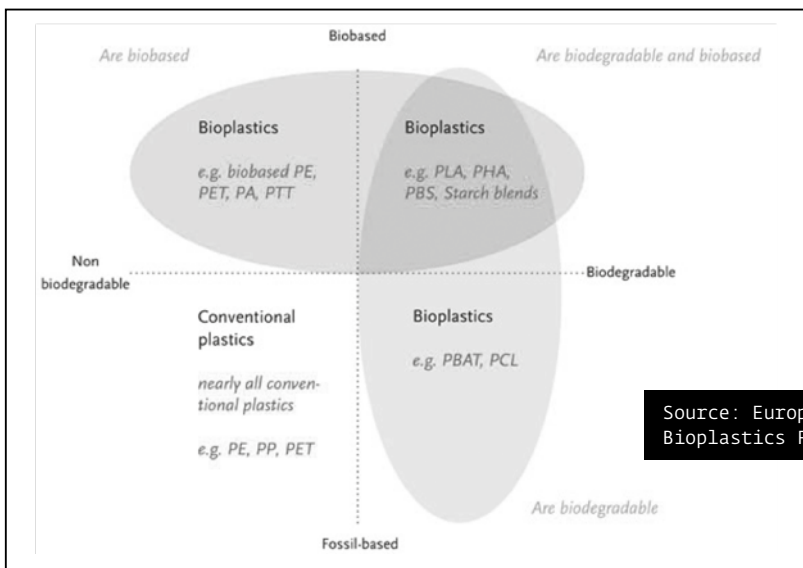
We (Aart & Paula) illustrated the diverse and meaningful roles of designers with case studies from our design research project (and book) *It's Not Easy Being Green* (www.itsnoteasybeinggreen.net) which involved a six-month research in Brazil, Argentina, Chile, New Zealand, Australia, Indonesia, Thailand, Vietnam, Cambodia, Singapore, Malaysia and Japan in 2011. Designers making skateboards out of bamboo, turning industrial waste into high-end furniture, setting up their own waste treatment systems, doing green studies in the jungle and many surprising ways of (re)using materials give us an encouraging view of what is happening around the world.

Case studies

Four case studies about making biobased materials were presented including mushroom-based materials, kombucha-based materials, solar powered 3d printing and a biodegradable coffin for small animals. We also reviewed a few hands-on material experiments with young students at design and art universities to demonstrate how young people can play a (pro-)active role in sustainable design.



Source: Aart van Bezooen and Paula Raché



Source: European Bioplastics Fact Sheet

Archive

Part of the workshop was about the importance of archiving biobased materials with a few tips and tricks on documenting and archiving materials. We took a closer look at existing European material libraries to show the students different methods to document, store and conserve materials (and the process of making).

Findings

Based on the discussion after the lecture we (Aart and Paula) enjoyed it that many of the 2nd and 3rd year students were excited about

the projects that they had seen. There was also a lively discussion on “what can I do as a designer?” and it was good to open the possibility of making (or growing) your own materials. For further results, please browse this booklet!

Agents of change

I see a very important role for artists and designers as agents of change. Their imaginary and creative skills make it possible to develop statements and examples that make possible futures more visible and understandable by a bigger audience. To do so, it is important that



Source GROW Art/Science

artists and designers collaborate with other disciplines such as scientists who are actually researching and developing the materials, products, tools and environments that will define our future.

A good example is the work titled *An Ecosystem of Excess* by Pinar Yoldas (www.pinaryoldas.info), a cross-disciplinary artist and researcher. Her starting point is that environmental pollution has turned our oceans into a plastic soup. Pinar Yoldas asks what life forms would emerge from the primeval sludge and her answer is: *An Ecosystem of Excess* with new species such as the Stomaximus, a plastivore digestive organ. This work is not only a bleak vision of the future of our environment; it is a testimony to an optimistic belief in the renewal of all life.

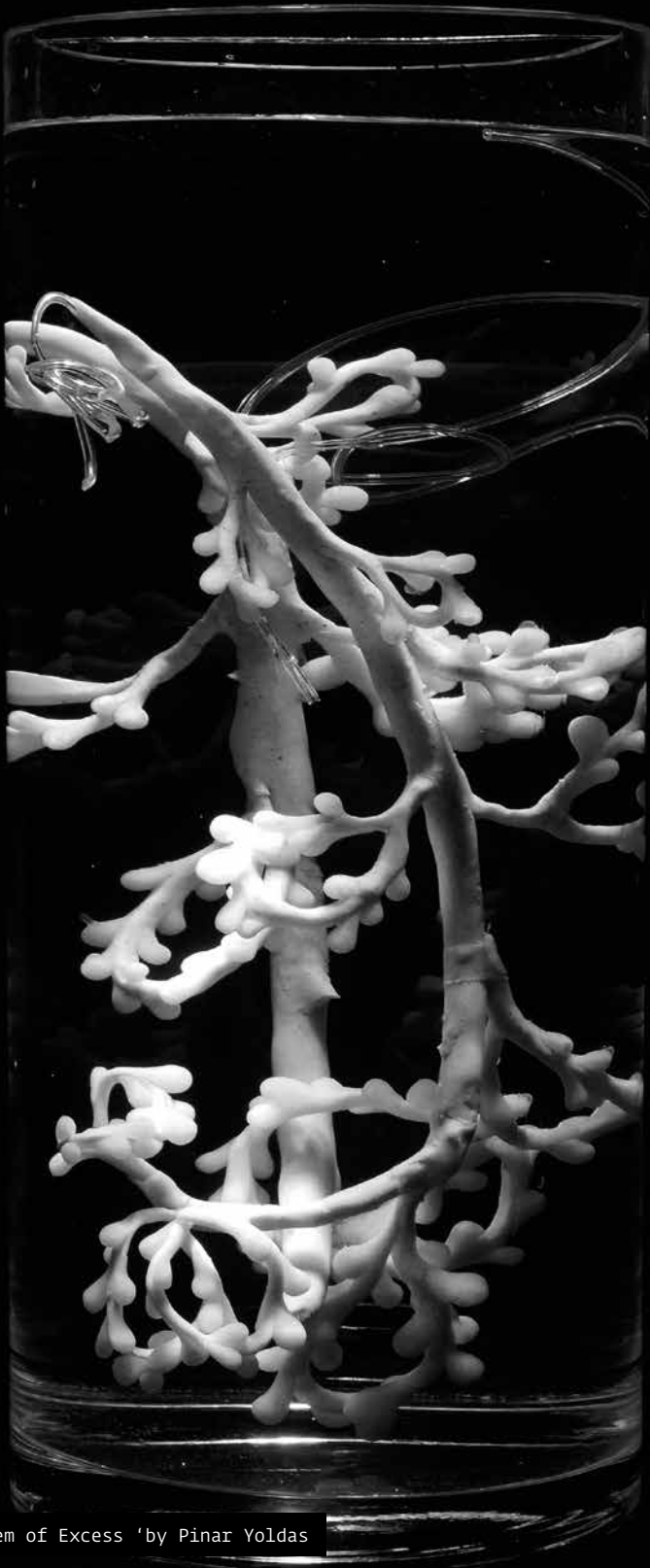
Art & Science

Together with Dr. Filipe Natalio, I recently started a project called GROW, a platform for interdisciplinary art/science projects. The project is a collaboration between the Burg Giebichenstein University of Art and Design Halle (where he currently works) and the Martin Luther University Halle-Wittenberg. They work a lot with biobased materials and their latest workshops focused on exploring and growing mushroom materials as alternative to plastic. You can read

more about this and future projects at www.growartscience.org. One of the best examples of mushroom-based products is demonstrated by the New York based company Ecovative, which is already successfully manufacturing, or better growing, mushroom-based packaging as an alternative to styrofoam blocks.

Conclusion

In short, designers play a key role in communicating new (and sometimes questionable) developments such as environmental pollution, energy transition, nanotechnology, genetic engineering, 3d printing, etc. towards a broader audience. To make our future more people-based and less technology-driven it is important for designers to make new developments visible and understandable for a broader audience. Involving different perspectives and viewpoints in today's material and technological developments is very important to create a desirable future instead of scenarios of fear. We could say that artists can make our future more emotional, more democratic, more people-based - artists can make our future more human.



'An Ecosystem of Excess' by Pinar Yoldas

Biobased workshop Skins: Marc Paulusma and Anabell Teepe

For this project, we focused mainly on bio-plastics; a form of plastic based on binders from corn starch and potato starch. We began by trying out different recipes. It emerged that a small adjustment in the recipe had a strong effect on the quality of the plastic. For example: corn starch makes a transparent plastic while potato starch creates white plastic. It turned out to be quite difficult to control the resulting material, for example a plastic made with vinegar or oil was strong but prone to shatter immediately or after one to two weeks. Plastic without vinegar or oil was less prone to shatter but started to mould and decompose over time. Preventing the material from shattering turned out to be our biggest challenge and we have as yet no satisfactory answer.

Following these experiments we began to focus on creating a product. We explored what kind of manufacturing processes would work for the plastic. In a sheet form it turned out to work pretty well. As soon as the plastic was formed into a sheet and hardened it was possible to drill or saw it quite easily, producing a piece of board. The quality of the board would be different each time, which in turn generated unique patterns in each board due to the irregularity of the material. Pressing the material proved to work well, so it was easy to make thin bio-plastic. For this reason we first focused on applying the material for lighting.

Later as our experience and techniques for making the material developed, we were able to make bowls and such items that required a thicker structure. Through melting the plastic, we could cast it with moulds into the desired form. This material was quite soft and grew mouldy over time, although the shape remained. Placing the plastic between clamps was a simple method to form shapes.

In conclusion, it can be said that it is easy to make many different forms and shapes with the bio-plastic; it is quick, easy and inexpensive to produce. The main problem remains controlling the quality of the material although there may be a chance for our successors to develop our experiments further.

Could it be that the changing nature of this material provides a unique potential for future applications through the design of transforming products?





Making bioplastics: environmentally friendly plastics*

Recipe

Bioplastics are plastics that can be made out of common household products. These are good for the environment in that they contain no petroleum unlike usual plastics such as tupperware etc. Also instead of taking about 100 years to fully decompose it only takes about 7 years.

The ingredients:

- Corn starch
- Water
- Vegetable/canola (optional)
- Wax paper (optional)
- You will also need a microwave and measuring tools.

The Ratio I mixed with was 1 part corn starch and 1 part water. Feel free to change this based on the use of your plastic.

For a more rigid plastic, add more corn starch.

For a more flexible/ squishy plastic add more water.

I mixed them in a sandwich bag.

If you want to add in some vegetable or canola oil (I used canola) it will help keep it together a little bit.

For every 2 cups of MIXED water and corn starch I added 1 tablespoon of oil. But of course you can change this based on your intended use of the plastic.

Make sure to get all the bumps of corn starch out ; you want it to be completely dissolved. It should look a bit like milk.

For a mixture totaling 2 cups (1 cup water and 1 cup corn starch) I nuked it for about a minute.

This of course could change based on the wattage of your microwave. I believe that mine is somewhere around 1000 to 1400 watts.

If you're not sure how long to keep it in for just watch it until it turns to a solid yellow color.

The longer it is in the less flexible it will be but be careful not to leave it in too long or it will become very brittle and crumbly.



* Original recipe retrieved from the internet before adaptation

Real life design assignment

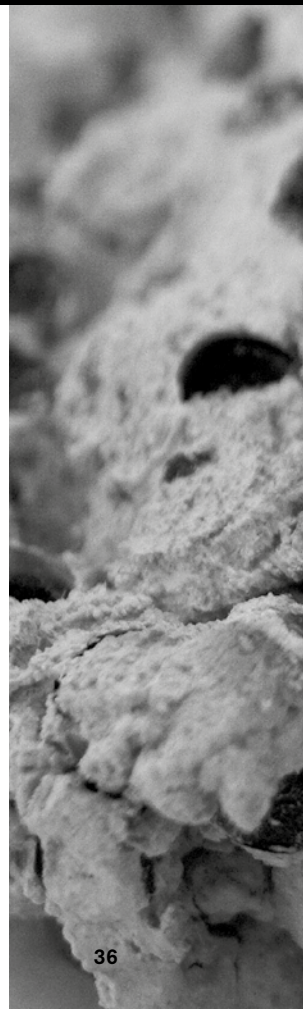


In the second half of the workshop students were challenged to use the biobased materials they developed in their experiments in a real life design assignment.

A producer of industrial hemp, a company for office furnishing and an undertaker each provided one assignment that the students could choose from. After careful consideration, the students decided to work on the undertaker's assignment, which posed several interesting design challenges in the light of the sustainable funeral services he provided. More precisely, students were asked to redesign a reusable jewellery pouch that, after a period of mourning, could serve another function. The students defined that function to be that of a candleholder, a memorial lantern, or a box to hold seeds that represented new hope.

In the process the students had to keep the entrepreneur's strategy in mind while fulfilling the assignment. The undertaker was looking for new products that could extend his field of business whilst meeting the current interest of his clientele and matching his sustainable business profile. The prototypes of the students worked as sensory anchors against which ideas could be instantly checked in the creative conversation between the stakeholders.

In his reflection on the workshop outcomes, the undertaker mentioned the broad range of perspectives and the thorough and personal approach, as two factors that truly surprised and inspired him.

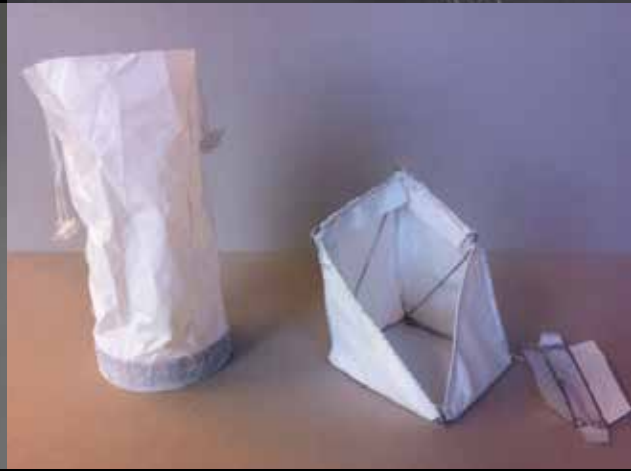




Evert de Niet (undertaker): “Can you design a mourning pouch that we can use for small valuables (like jewellery) of the deceased for the relatives? It should be re-usable after the first period of mourning and it should have a new functionality”

Mourning box Prototypes

The mourning box that we have designed is intended as a pouch for the valuable objects of the deceased, for the relatives, to be taken home. After a while, the pouch can also be used as for example, a vase on the grave or at home. In addition, the product is foldable and thus can be easily stored. An additional feature of the pouch was to use it as Chinese lanterns during ceremonies and commemorations since it is reusable. The product can be produced in different colours. Material: organic plastic and bamboo frame.



"I love it that your way of thinking is so insightful. Beautiful things are being thought. Beautiful is that you say: "When it's fragile it will make you even more sad...so we don't use glass in our design."





"Concerning the design: its material is refined and transparent. Very good to use sheep wool inside the box to make it fire resistant so a memorial candle can be placed in it. The candle is a very good idea...my clients will like it. The good thing is that it is designed for the period of mourning because then people need ceremony. Thinking further about ceremonies, lampoons will fit perfectly in the celebration of All Souls, that happens more and more."



"Everyone opened his mind, it is done with feeling .and yet very concrete."



"Your reference to the image of a crow is surprisingly good ; it exists in the world and is not recognisable as an object of mourning, but at the same time it is. Also, the crow is a nice reference to undertakers as they are often referred to as crows..."



Value of Waste/ Shelters



Building on earlier workshops, this series looked at a wider exploration of biobased materials. The focus was on the 'Value of Waste': the smart re-use and re-design of existing materials and new products. The materials involved were either biobased or could be recycled for re-use.

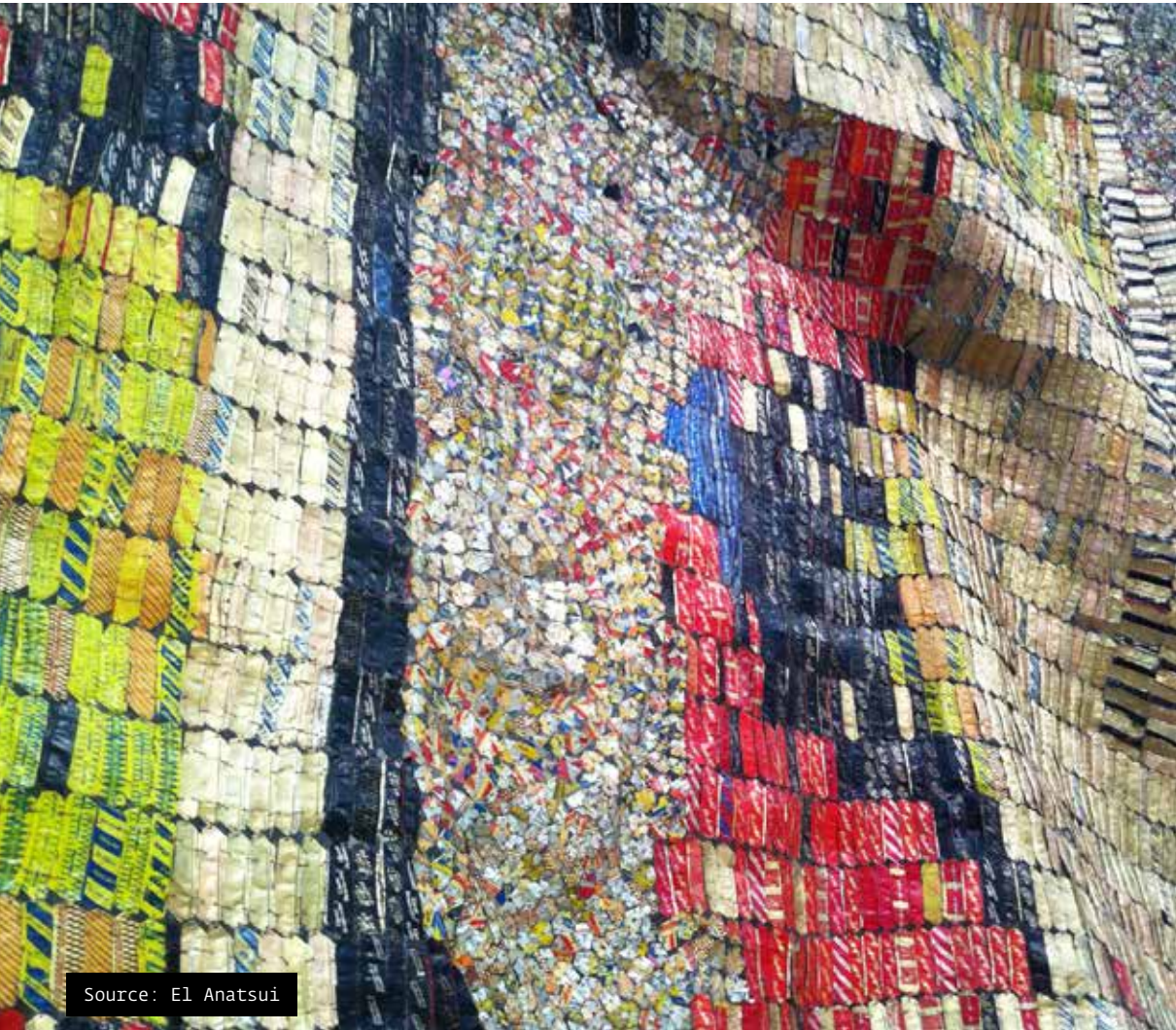
The aim was to build upon the growing environmental awareness of the students and the role they can play in real life situations. The focus was on design with a strong combination of experiential-functional characteristics. In earlier workshops the exploration was directed on small scale objects, in this workshop we aimed to combine different materials to create larger spaces suitable for living.

In the first part of the workshop, students worked on the design of a shelter made from a selection of these materials, taking the experiential-functional aspects into account. In the second part of the workshop, the artists and designers were challenged to build and test their own design; a shelter in the natural environment that they would sleep in (mid-winter) for one night.



The artist as agent of change

Nathalie Beekman



Source: El Anatsui

Nathalie Beekman is parttime project coordinator for the Research Centre Art & Society PSI of Art Academy Minerva. She has a background as artistic director of Pavlov Medialab and specialises in interdisciplinary collaborations between artists, scientists, architects and entrepreneurs. She was a co-host of the Value of Waste workshop in November 2014 at Art Academy Minerva and developed the workshop concept together with Minerva tutor and architect Klaas Pieter Lindeman.

Introduction

In reference to the workshop series about the Value of Waste, in this article I will elaborate on our communal exploration regarding the attitudes and skills that artists and designers need in order to fulfil their role as agent of change, specifically in sustainable innovation. To begin with we'll look at the reason why artists could consider to take on this role. Subsequently I'll attempt to define what this role means and elaborate further on the experiments based on raising environmental awareness. Then I'll turn to the examples of two artists from different times and continents, Thoreau and El Anatsui, who both in their own way inspired us in this attempt; Thoreau by creating a unique 'first user experience' and El Anatsui by his poetical use of the experiential properties of waste material. The aim was to explore this agent of change role to make it more concrete to the art students and ourselves as 'researching hosts'.

As the workshop was aiming for a wider exploration of sustainable materials, these involved either waste materials, to be recycled for re-use or re-design, or biobased materials. The main focus was on the 'Value of Waste'.

Art & biobased economy

In the last decade, we have seen the rise of a biobased economy, triggered by the urgency of a climate crisis, a steady decrease of biodiversity and an accumulation of waste. This new type of economy sets a major challenge to governments, entrepreneurs and consumers alike, as a whole different mindset is needed in order to act and participate in the new developments. In this process one must leave the comfort zone of the fossil fuel based economy and enter a new situation in which a whole set of assumptions must be redefined; a paradigm shift that asks for another open and multifaceted way of thinking.

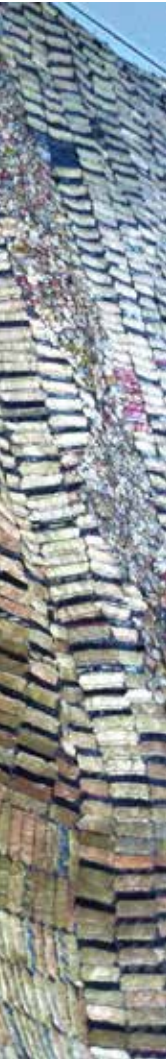
I argue that artists can play a role as agent of change in this transition process because they are especially fit to work as catalysts in innovation processes, as art is exactly this: open and multifaceted.

In his book *The Intelligent Eye*, Perkins describes certain characteristics of art, namely 'multi-connectedness'; "*Art typically allows and encourages rich connection-making...*" and 'wide spectrum cognition': "*looking at art thoughtfully recruits many kinds and styles of cognition...*" (Perkins, 1994) that support this assumption.

Artists as agents of change

In the workshops our focus was on the role of artists in sustainable innovation. We aimed to create an awareness of this particular interpretation of the artist as agent of change among students of art academy Minerva. As they are the designers of the near future they can bring about sustainable change.

In general there are several ways that we can look at this agent of change role. One of them is to see artists as 'mind changers'; who influence the way of thinking and acting of the public "*by creating meaningful frameworks for reflection or critical exchange by asking unusual questions*" (Helguera, 2011) and as I want to argue: by evoking ambiguous experiences. Or to see it in a more applied way: artists can be creative instigators and partners in sustainable, innovative and cultural developments.



Experiments

This rather abstract description had to be materialised in the workshops to bring it back to the level of the students and their development. In order to achieve this we used *hands on* 'multi-sensorial' experimentation, real life design assignments and created a framework for reflection.

During the workshop we reflected on several characteristics of the agent of change role. The overarching one is 'raising environmental awareness'. This can be defined as a holistic mind frame which encompasses a wide-spectrum cognition and a well developed sensitivity to calibrate with the actual world we live in; patterns and developments, chances and urgencies.

For this reason we worked on developing skills that would enhance the environmental orientation and that would sharpen the senses. We used sensory experiments, such as blindfolded form research, inspired by haptic design (Wendrich, 2011) to explore sensorial skills as to create an awareness of which senses are involved in the creative act. We also created a real life situation in the design process in which we were looking for the experiential properties of waste material. Giving the assignment to both design *and* inhabit a shelter made of waste materials in the woods, created a 'first user experience' for the students. This evoked a profound awareness of design as a 'multi-sensorial experience'. Less than half of the students that participated managed to sleep in their own shelter for one night, as their design was conceived from a visual perspective only .

The sensory experiments showed us how much one relies on visual perception and how underestimated our tactile perception is. The first user experience made us aware of how much the value of design is defined by its interaction with its users and environment. For artists these are important lessons in the context of shaping their 'sensitivity toolset', which is important because as design will become more and more an interactive tool for change making, this assumes a well developed sensitivity.

Thoreau and El Anatsui

Complementary to these experiments we reflected on the examples of two very different artists who are both change makers of mind sets in their own right: writer Henry David Thoreau (1817-1862) and visual artist El Anatsui (1944). We suspected that Thoreau could tell us something about the value of a first user experience; to test your assumptions and concepts in a real life situation. This is what we aimed to achieve in the workshop in which the students designed, built and inhabited their own shelters in the woods. As for El Anatsui, we wanted to focus on his use of waste materials in his monumental art works, in order to see how the experiential and physical properties of waste material can be powerfully interwoven. This was very much an inspiration in the workshop as a large emphasis was placed on how to define and make use of the experiential qualities of waste materials and to a lesser extent, biobased materials in the design of a shelter.





Thoreau inspired the world in a twofold way. First he wrote a 'manual for self-reliance'; a reflection on living in the woods of Walden Pond in a self built hut with nearly no means to live. Several followers founded communes for alternative living (some were literally named 'Walden') based on his thought provoking book.

Secondly, another way in which he brought about a change of mind frame to a greater public was his 'personal declaration of independence'; a book in which he pleads for 'the duty of civil disobedience' of all citizens, as a means to correct the inadequacy of national governments. This book was an inspiration for people like Gandhi and Martin Luther King, who used civil disobedience as a means to peaceful change.

With both publications Thoreau created meaningful frameworks for reflection and critical exchange by asking unusual questions and by evoking ambiguous experiences, thus influencing a change of thinking and acting.

He did this by creating a cycle of experience and contemplation- and by doing so connecting the very personal with the general, which is very much part of the artist's make up. His act of stepping out of the comfort zone to redefine what is essential, by testing his principles in real life, putting himself on the line and sharing this with a wider audience in order to evoke change, is not unlike the challenge we stand for to redefine our assumptions in this transition phase to the biobased economy.

To bring this back to a much smaller scale; students in the workshop playfully re-enacted Thoreau's act of living in the woods as a quest for 'essential living' to test their assumptions and in doing so, created their own cycle of experience and contemplation.

As for the theme the 'Value of Waste', we looked at artist El Anatsui, born in Ghana, Africa. He makes among many other things, monumental tapestries of waste material, in particular of liquor bottle caps. The choice of waste material that he is using in these tapestries is not an accidental one: liquor was used as a slave trading device by the chiefs in West Africa. By using liquor bottle caps he makes us aware of the greater life cycle of waste material as it captures our memories and history. This points at the experiential qualities of waste material that artists should take into account; the stories and meaning it beholds. El Anatsui shows how these can be woven as poetical layers into a tapestry and by doing so his work tells us a rounded story of environmental awareness.

Part of this story involves the fact that his tapestries are produced in his local community, a small town in Nigeria (Nsukka). His own environment is part of the creative process; he provides employment and shares his wealth. For the students in the workshop his example underlined the value of environmental awareness and specifically the significance of the experiential properties of waste materials.

Afterword

In the Value of Waste workshop a communal exploration of students led to more insight into the role of the artist as agent of change and why they could consider to take on this role. We highlighted the urgency of sustainable change and the role that artists can play, based on characteristics of art like *multi-connectedness* and *wide spectrum cognition* (Perkins, 1994). The students made some initial steps in their explorations of the attitude and skills that artists need in order to fulfil the promise of change that is at the heart of this role. This was done by experiments based on raising environmental awareness. Sensory experiments showed an overwhelming visual orientation and thus a need for a more multi-sensorial approach to design. Furthermore, an experiment with designing and inhabiting shelters as a playful re-enactment of Thoreau's Walden experiment, had a profound impact on the students' awareness of the importance of the experiential and interactive qualities of design. Concerning the theme of Value of Waste, students learned from El Anatsui what it means to use the different layers of stories and meanings of waste material.

We invite young artists to continue this journey of discovery in the coming years.

Retrieved from

- El Anatsui, 2013. A million pieces www.nytimes.com/2013/02/10/arts/design/a-million-pieces-of-home-el-anatsui-at-brooklyn-museum.html at 17-04-2015
- Helguera, P., 2011, Education for Socially Engaged Art, NY: Jorge Pinto Books.
- Perkins, D., 1994, The Intelligent Eye: Learning to Think by Looking at Art, LA: Getty Publications
- Thoreau, H.D., 1854, Walden, or Life in the Woods, Boston: Ticknor and Fields
- Wendrich, R., 2011, Distributed Cognition, Mimic, Representation and Decision Making, Proceedings of Virtual Reality International Conference (VRIC 2011),
- Richir, S., Shirai A., Editors.

Blindfolded design

"Inspired by the haptic design strategy of Wendrich (2011): blindfolded design. The hands can't easily overrule the eyes..."



"we participated in an experiment in which we played with and formed the material into a shape whilst blindfolded. This was a fun learning experience; to be so dependent on your other senses. Your hands feel a product and your head makes an image of it straight away, on the basis of the information that you already know. You tend to make exactly the same image that you already know, so it was a challenge not to do that and to feel what you had in front of you."

Vinyl Shelter

Deborah Smit, Marije Miedema,
Victoria Romp



Shelter made of vinyl (600 waste records). The experience of the contrast of nature and industrial waste material. The biggest challenge was to find technical solutions for the structure of the shelter and to make a space out of it.



Hemp Shelter

Saskia Kerssies, Vera del Grosso, Marjolein Meijer

Hemp comes from the hemp plant. A hemp plant consists mainly of three parts that are used for different materials. The seeds are processed into oil and oil cake (what is left after the oil, used as animal food). The fiber from the bark of the plant is mainly used in the textile and paper production for bioplastics and in the building industry (for example as insulation and felt). The wood contains about 60% of the crop mass and is used, amongst others thing, as bedding and as a base for various building materials.

Through its light and robust features hemp is particularly interesting material for cars due to its economical character, for light bicycle frames and even for making artificial hips. Indoors it is very suitable for furniture such as chairs and tables.

What associations are connected to the material? Farm, rabbit, outdoor life... it looks like hay. We attempted to make hemp in one form. We casted wood glue on the hemp and then spun it on a round shape. The results: wood glue mixes well with water and dries well and it remains still quite flexible after 1 layer.

We did an experiment as an additional feature for our shelter; we mixed wood glue with tonic. It seems a nice idea as it can glow in the dark. Tonic contains quinine that lights up under influence of UV light, but the tonic produced the same results as using water.

It seemed a very good idea to make a waterproof hemp rug because we found that hemp in combination with glue remains

flexible, you can then fold it or take it as a roll and throw it on a frame and Voila, you have a shelter. After sleeping it can be carried very easily.

We made an experiment in which we played with and formed the material into a shape whilst blindfolded. This was a fun learning experience; to be so dependent on your other senses. Your hands feel a product and your head makes an image of it straight away, on the basis of the information that you already know. You tend to make exactly the same image that you already know, so it was a challenge not to do that and to feel what you had in front of you.

We made a shelter of hemp. This is a biodegradable natural product. We have chosen a spot in the woods. Around this are trees where we constructed our shelter so that the trees became a part of it. We think that over time it will be covered with moss, leaves will fall on it and this will turn into compost again. This will be a good breeding ground for plants. On the inside of the shelter there is recycled plastic for insulation and making it waterproof so our shelter won't disintegrate easily.

We wanted to tie the hemp sheets around the trees, so we used the trees in the forest as an element in the construction. Also, we wanted to connect the sheets with each other by means of braiding with plastic or rope.



Earthship

Marieke Gunnewijk, Kevin Rooi,
Lance Schmale

Our shelter is part of nature , both in visual design , as well as in experience. It offers the functionalities of a shelter for protection against the natural elements, at the same time it evokes an experience of living close to nature, even blending in with nature. It seems like the shelter has always been there, as it fits so well into its surroundings.



Bamboo & Jute Shelter

Nine Marije Ligtenberg

Create a first hand user experience: "Build a shelter from waste material and sleep in it for a night, mid-winter"

Me and my shelter – Nine-Marije Ligtenberg

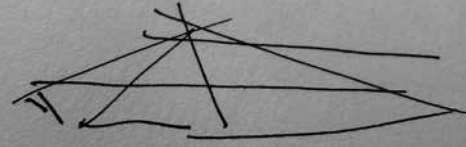
For several weeks I have been busy with making a shelter that will be my berth for one night.

Autumn leaves that are now present in such large quantities they can protect me. It's waste material of the autumn season and at the same time it's biobased material. So I have my 'canopy-shelter' and a location. I have to bring this shelter from the art academy to the woods and try to get it settled somewhere in there. I think it's going to be quite a journey.

In order to have a somewhat comfortable night and to be able to sleep, I should at least have a dry surface. I really need a tarpaulin sheet under my biodegradable shelter. And will I be able to fall asleep? I'm going to stay over night anyway. That is part of the game.

My shelter and me. With minimal materials I have created a small space where only I fit and can lay down in. It's made of bamboo, jute, leaves, sisal rope and biodegradable glue. It is mostly waste material and most of it is not sustainable. After a while the shelter will fall apart. It is completely biodegradable.

Finally the shelter is ready. I have been busy with it for so long, that it really became my 'child'. It's special to experience the value that an object obtains, when you spend enough time and energy on it, and design it to your very own vision.





I arrive at the house in the forest. Somewhere I find a ditch with two planks bridging the gap. Behind that is a piece of land covered with moss. A bit elevated, between trees and beside a boggy piece of ground adjacent to a little fence. Plants that grow here are of a lighter shade of green than elsewhere in the forest. This matches my shelter well. This will be my island with lots of frogs jumping around.

Unfortunately I did not succeed in making my shelter water proof. The intention was to make it water proof using bees wax. This did not happen. Now I hope it is not going to rain.

I get into my sleeping bag and slide into my shelter. It will stay dry tonight. I get used to the dark and begin to see the silhouettes of the trees. It's a beautiful sight. I smell the cold outdoor air. I smell jute. It feels like I'm in the bag of Santa.

Here I am laying down in the forest. ...Why am I not sleeping outside? Against what is the shelter protecting me? I wouldn't like to lay down outside. Maybe it's just a matter of 'if I don't see it, than it's not there'. There are lots of animals around. I hear them but don't see them. I am not afraid, really. My whole shelter is a delicacy for the animals through the glue made of flour and sugar.

Morning...my shelter is still there. Even in full sunlight it is barely visible in its environment.

...I have experienced my shelter fully and intensely. From design to work in progress to transport to 'user experience'

My shelter is not sustainable, it will decay, but that is not so bad as it will eventually be incorporated and used for the production of new leaves, new fibres and new twigs.

New shelters will grow out of it...

Worthless in a physical sense, valuable in an imaginative sense. That is my shelter. The last leaves have been glued onto the surface. The shelter is ready. In my green overall I blend in with it.

I rent a tricycle and I load my shelter. I bike through the city. People are looking at me a bit amazed. "What kind of thing is she carrying on her tricycle?" "It is my shelter. I am going to sleep in it tonight"

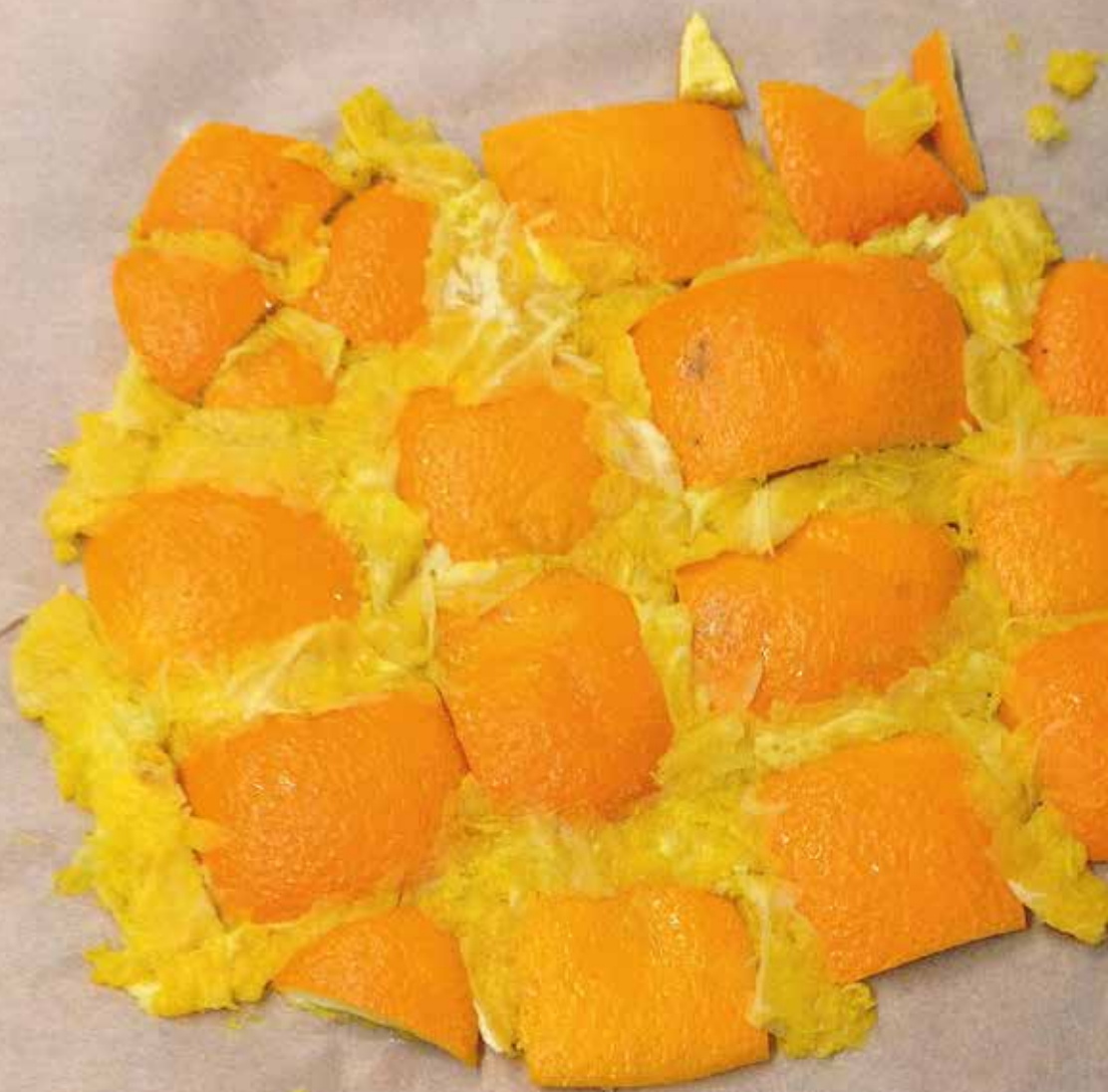
I bike with my face in the sun.... I bike with the shelter into the wide world. I am free to go where I like. This morning an old class mate died of cancer. The sun shines on my face. I think about Marc. I am free. He is also free. He is dead. Life is strange and beautiful.



Value of Waste/ Life cycle of materials

Continuing on from the previous workshop, where waste materials were researched with a strong focus on the experiential qualities of design, we returned once more to the theme 'Value of Waste'. The experimentation was now directed towards material driven design, in which knowledge of the material properties is crucial. It involves exploring the life cycle of waste materials, the different stages of the cycle, and the design possibilities at each stage. A central question was: what new materials create new functions and new dedicated actions? Students began hands-on material research based on the life cycle of materials, reflecting on their daily use, functions and dedicated actions.

The start of this workshop was hosted by TU Delft graduate Anouk Zeeuw van der Laan, who made research into material driven design with waste coffee ground as design material.



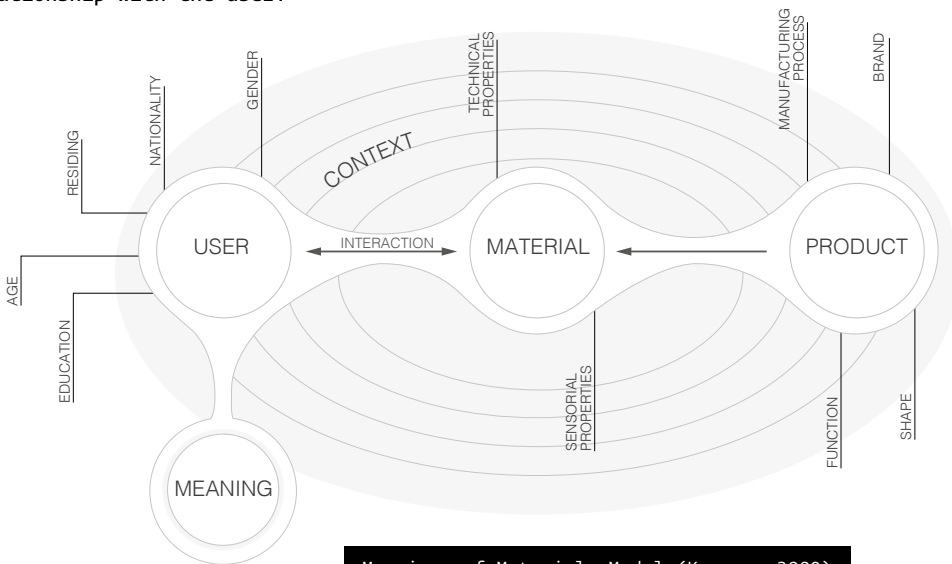
Material driven design

Anouk Zeeuw van der Laan

TU Delft graduate Anouk Zeeuw van der Laan, industrial design engineer, was invited by Art Academy Minerva to do a Workshop Material Driven Design as part of the 'Value of Waste' workshops. Earlier she has done research into the question how waste coffee based-materials can be designed both technically and experiential to optimize the material (and product) experience. She describes this experience as a result of the material's technical properties and its experiential properties. The latter involves the aesthetic experience, the emotional experience and the meaning experience. She found many qualities are best perceived when they are multi-sensory, although designing paradoxical experiences can lead to more exiting emotions. In addition the embracing of imperfections as an aesthetic creates economic opportunities for the industry of bio-composites and creates opportunities to have a more rich and enduring relationship with the user.

Waste

Waste is surrounding us. The worrisome part is, that we are becoming accustomed to waste and wasting. Today's society is built on rapid and mass-consumption. Are we aware of what we waste and in what quantity? What if the mass-wasted materials have a higher potential than initially anticipated? Consumption is our biggest problem, but design is our best solution for behavioural change (Acaroglu, 2013). Exploring sustainable waste streams and investigating the waste materials can deliver new opportunities. The first step is to understand the properties of the material. Find out the material's technical properties – those that are measurable and comparable properties, e.g. density, thermal behaviour, UV resistance etc. – by research or simple experiments with the material. Identify the material's experiential properties: how does the material gratify our senses; whether the material has any prejudice meaning for instance due to its origin; and does the material evoke a specific emotion?



Meanings of Materials Model (Karana, 2009)

Well Proven chair
by van Aubel/Straw,
who made a new
composite material
combining wood
shavings and bio
resin

Retrieved from www.lin-morris.com/well-proven-chair-by-marjan-van-aubel-and-james-shaw/



Vision

Once one is familiar with the material and has a proper understanding of its strengths and weaknesses, it is time to construct the future for the material by creating a vision. Using the insights of the material, a vision can help to express what to trigger, evoke, activate, elicit and feel and by whom in which context. (Hekert, Van Dijk, 2011). The purpose of the vision is to place the gained knowledge regarding the material in a different, perhaps unexpected context and to develop it by exploiting properties of the material.

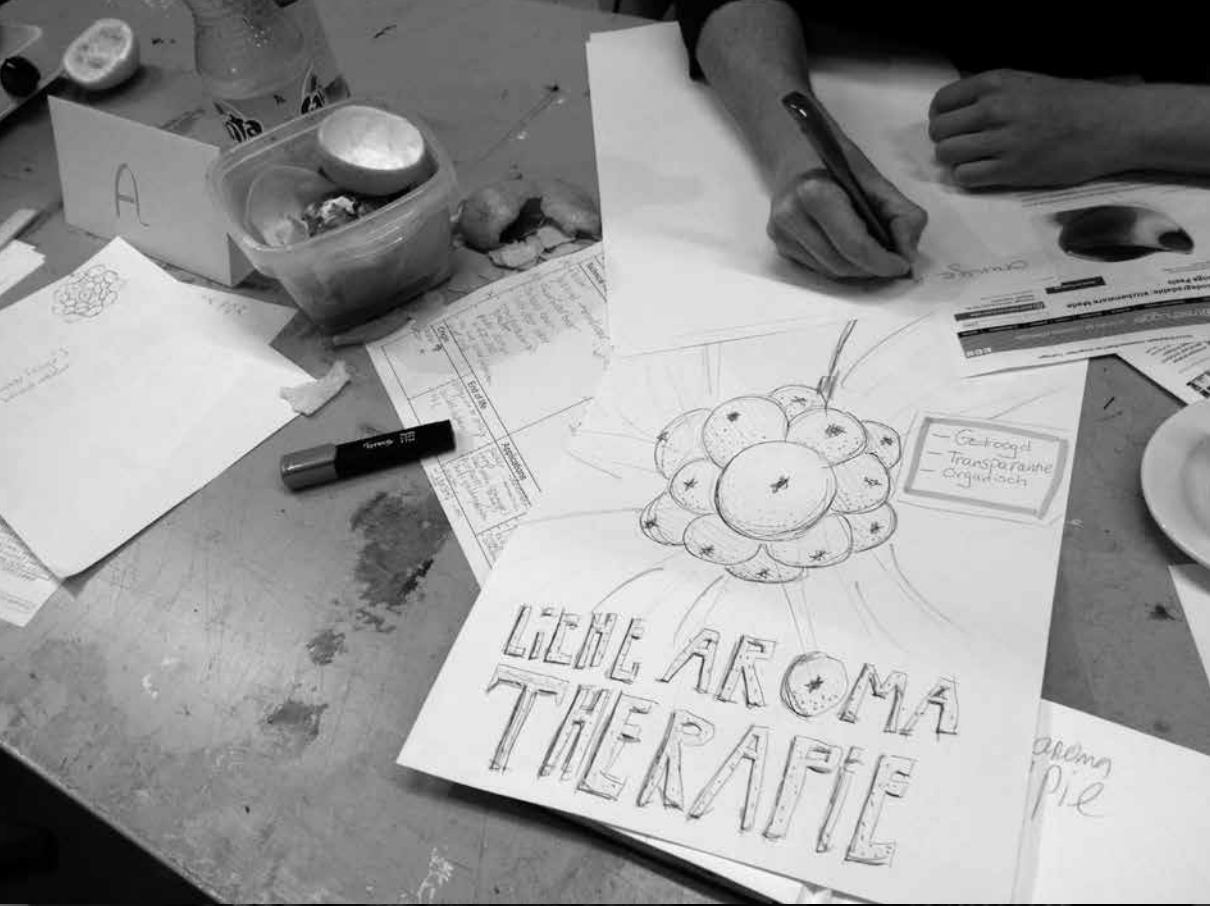
Hands on

Finally in an experiential hands-on session the material can be shaped and complemented to meet the vision. Ideally the process exists of a series of experiments that at the end help to present the best of the properties that are required to meet the vision. Because the goal is to create value with the waste material, applications of the material have to be considered at this stage. It is important to understand the limitations of shape and form, production techniques, impact of external influences such as weather, when thinking of an application.

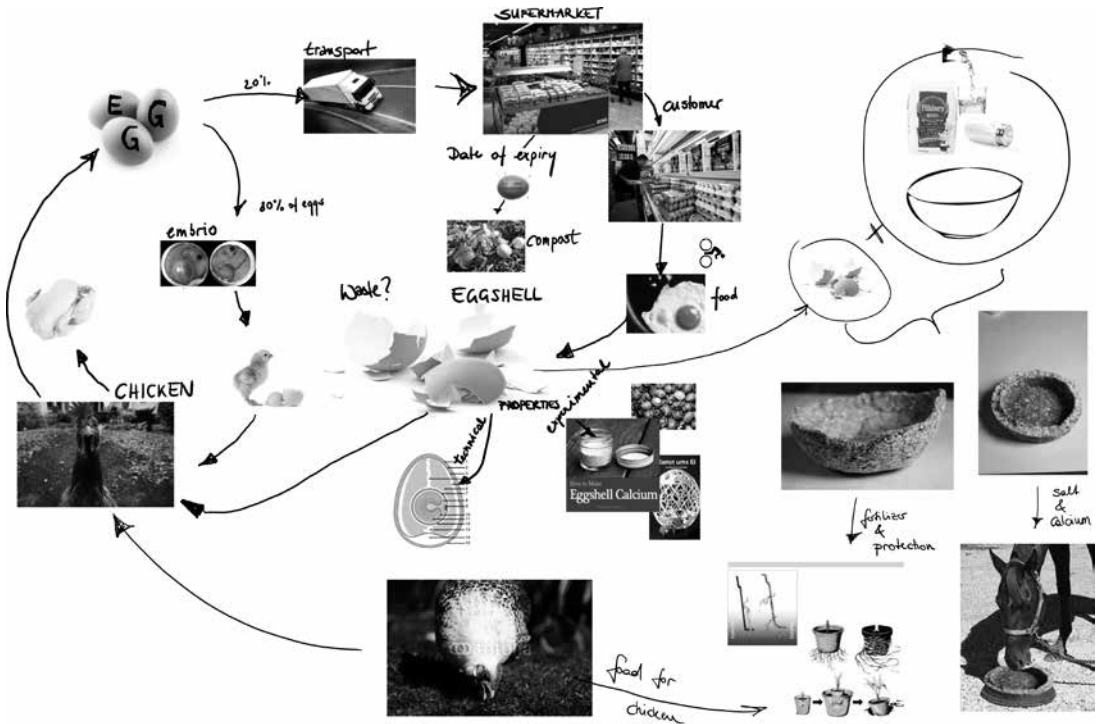
Workshop

In the workshop at Art Academy Minerva the focus was on the exploration of different organic waste materials such as orange peels, peanut shells and potato peels. I divided these materials between 5 groups of students. They were asked to pre-research 3 qualities of the material that they thought are technical properties and 3 others that are experiential properties of the materials. This pre-research helped participants to understand the potential and opportunities of the material. It gave a direction to start the session with. When creating a vision it helps to already have insights in what the possibilities of the material are. Most importantly, having the material available in abundance allows the participants to experiment freely. Further on they needed to pre-research examples of existing applications of these materials embodied in specific products. During the actual workshop we used tight timeslots of alternating experiments and short pitches showing the research in progress; this worked very well.

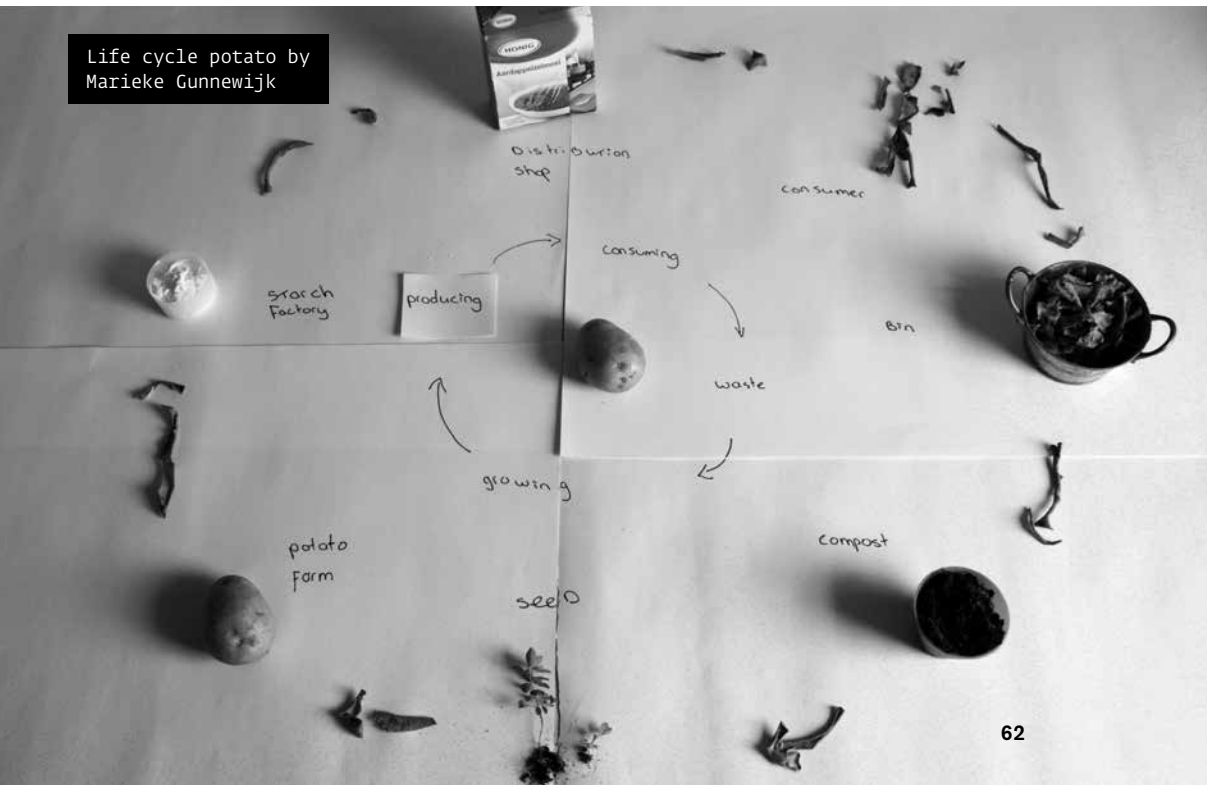




Life cycle eggs by Sonja Muraauer



Life cycle potato by Marieke Gunnewijk



Can I make the lifeline longer? What are the possibilities?

First I wanted to try to make ceramic out of coffee grain completely bio-based. Because of the fibres in the coffee grain it's very easy to bind the material with a kind of glue or clay. I made a salt and flour based clay and I wanted to see if I could replace the flour with coffee grain. I made a couple of experiments every time with a little bit more flour.

When I scoured one of the experiments the texture that appeared was very interesting. From the clay I created a cup that can be used as a coffee cup for a couple of times by applying different kind of oils onto the cup. The oils are giving the coffee a different kind of taste. Making the coffee more rich of flavour. After a couple of times the cup can be used as a pot for the fertilisation of a plant into the ground.

Coffee clay is made of 100g coffee grain, 50g salt, 6sp flour and 50 ml warm water. The clay is baked in the oven on 160 C for 60 min.



Next steps

The outcomes of the CCC-reloaded CREALAB and the workshops described in this booklet, offer many new ideas and inspiration for the next steps. Currently we are investigating if and how Academy Minerva, HUAS, could connect with the larger database. To share and disseminate our knowledge, and to learn from other the contributors in the ever increasing community of artists, designers and industry who are exploring the material aspects of a biobased economy.

This project brought forward many new and worthy alliances with the industry in the North Netherlands. Conversations are taking place at this point in time, about how to proceed further in the regional networks. One of the Academy Minerva's technical workshop instructors has shown interest in the field of bio based expertise throughout the project, and we are looking forward to continue this collaboration in the daily art academy praxis. In the meantime the research around training and exploring the artists' and designers' roles as agent of change has become a research theme centre-wide. Moreover, this is also a subject for new plans among several partners that were involved in CCC-reloaded CREALAB. Besides more in-depth research into the materials, the innovative applications might be among the next steps to come. For now we hope that you caught some bio based inspiration that is relevant for your own daily practice and motivates you to contribute to a more sustainable society!

Dr. Anne Nigten

Centre of Applied Research & Innovation Art & Society
Minerva Art Academy - Frank Mohr Institute
Hanze University of Applied Sciences, Groningen
March 2015

Centre of Applied Research & Innovation
Art & Society

The research group Popular Culture, Sustainability & Innovation is part of the Centre of Applied Research and Innovation Art & Society of the Hanze University of Applied Sciences Groningen

The research centre encompasses the practice based research of Academy MINERVA, School of Fine Arts, Design and Pop Culture and the Prince Claus Conservatoire, School of Performing Arts. The research groups in the centre carry out research into innovation of the arts in relation to changes in society. The aim is to contribute to the development of artists, designers and musicians by helping them to become learning, inquisitive and entrepreneurial artists in society. The results of this research are used in the education of artists as well as in the profession.

RESEARCH GROUPS

Lifelong Learning in Music

Professor: Dr. Rineke Smilde

Lector: Dr. Evert Bisschop Boele (leading lector)

Popular Culture, Sustainability & Innovation

Lector: Dr. Anne Nigten

Image in Context

Lector: Dr. Anke Coumans

www.hanze.nl/kunstensamenleving

European Union



The European Regional Development Fund



Hanze
University of Applied Sciences
Groningen
Centre of Research & Innovation
Art & Society



creative city challenge
reloaded: CREALAB

The Interreg IVB
North Sea Region
Programme



*Investing in the future by working together
for a sustainable and competitive region*