

DESIGN LAB #8



MATERIAL

LOOPS

PATHS TO A CIRCULAR FUTURE



Kunstgewerbemuseum
Staatliche Museen zu Berlin



Hans Sauer
Stiftung

Das
Kuratorium
Preußischer
Kulturbesitz



BERTELSMANN

DAIMLER



KPMG



SIEMENS



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WELCOME ADDRESS

SABINE THÜMMLER

DIRECTOR OF KUNSTGEWERBEMUSEUM
STAATLICHE MUSEEN ZU BERLIN

A Museum of Decorative Arts is a place where materials meet. Its collection is a juxtaposition of different material states from the history of object production. At the Kunstgewerbemuseum Berlin, material also determines the different responsibilities of the curators and restorers, meaning that, except for the design collection, objects are categorized and cared for according to their materials – metal, wood, ceramics, and textiles. Conservators do intensive research on the life expectancy of materials: How do we preserve these materials from decay? How can we preserve an object for future generations?

Circular economy in general pursues the goal of maximizing material longevity. Society has been faced with a serious and global material problem of its own making. Based on the exploitation of finite resources, production and consumption have radically accelerated over the past 70 years, generating a material output that is almost impossible to manage.

A circular economy counters the concept of a linear use system: Technological material that is not biodegradable – for example metal or plastic – is kept continuously in the production and recycling cycle. Within this cycle the material can change its form or be given a new purpose altogether. The second cycle takes in biodegradable material and returns it to nature where it serves as a nutrient. In other words: planned obsolescence in the best ecological sense. *The Design Lab #8 Material Loops – Paths to a Circular Future* demonstrates the various ways in which designers, researchers, and companies approach the problem of materials on both an experimental and a practical level. With the Design Lab series, Claudia Banz has created a platform for trailblazing topics such as the

present topic of circularity, for which she deserves our deepest gratitude. I would also like to express my heartfelt thanks to the two co-curators: Barbara Lersch of the Hans Sauer Stiftung, who contributed significantly to the project with her extensive expertise on the circular society. And Kaja Ninnis, who was a vital source of ideas for the exhibition as well as the publication. Tatjana Junker is responsible for the very successful design of this reader. I would also like to thank the exhibitors who have made their current projects on *Material Loops* available for the duration of the exhibition, as well as Alessandro Colombo, curator of the Recò Festival for Circular Economy in Prato, who has selected the Italian contributions. Last but not least, a big thanks goes to the cooperation partner for *Design Lab #8* and the Hans Sauer Stiftung with its chairman Ralph Boch for the very fruitful cooperation.

RALPH BOCH

CHAIR OF THE HANS SAUER STIFTUNG MÜNCHEN

According to the latest research, the mass of man-made things now exceeds that of the so-called biomass, i.e., the mass of all living things on earth – all humans, animals, and plants combined. Scientists capture this epochal upheaval in the concept of the Anthropocene or, better yet, the Capitalocene: The age in which humans, or more precisely, the man-made capitalist mode of production and consumption, have become the most important factor influencing biological, geological, and atmospheric processes. And: The mass of things has been doubling for about 100 years at a rate of roughly 20 years.

Circularity, as a comprehensive implementation of the principle of recycling, is considered a promising strategy to ideally stop this development altogether or to at least slow it down considerably. Design and designers play an important role since they were and are important actors, not to say accomplices, in the 'take, make, waste' approach of the prevailing linear forms of production and consumption. However, design also harbors a lot of potential for advancing on the path to less consuming circular futures: This ranges from a design of products and services geared towards circularity and new forms of use to an expanded understanding of participatory development and (co-)design of new social and socio-technical practices and structures, such as the social design lab of the Hans Sauer Stiftung. The design lab uses the guiding principle of a circular society to capture the idea that a fundamental change in the handling of resources requires a far-reaching transformation of society as a whole: ultimately, this affects all patterns and structures that constitute the conditions for the design, the use and re-use of materials and things. There are enormous design

tasks to be accomplished here, no less than the creation of a completely changed social and material culture. It is important to know that designers and activists as well as businesses and cities have already embarked on such paths, as shown by the many examples of *Design Lab #8: Material Loops – Paths to a Circular Future*.

I would like to take this opportunity to thank all those who made this reader and the lab possible and contributed to its conception and implementation. Every one of you can contribute individually to making the concept of circular society a reality.

Our work in exploring new, visionary fields of work needs strong partners who support the foundation in bringing the theoretical work to life and make it accessible to the broader public. We would therefore like to take this opportunity to thank the Kunstgewerbemuseum Berlin and its Director Sabine Thümmeler for this fruitful cooperation. In addition to my colleague Barbara Lersch, who supervised this project and its content on behalf of the foundation, I would also like to express my special thanks to the initiators of the project Claudia Banz and Kaja Ninnis for being true team players and an overall very exciting and friendly collaboration. The foundation has benefited a great deal from it and we did learn a lot.

WELCOME ADDRESS

ALESSANDRO COLOMBO // ARTISTIC DIRECTOR RECÒ FESTIVAL PRATO

Prato has always been circular- circularity runs in the DNA of the city's people. The concept of waste as resource is rooted in agriculture and later found its way into the textile industry. The town is well known for the abilities of its merchants; they were making good businesses by regenerating wool from second-hand clothes (rags). They had wool and not one single sheep in town. I believe this to be an excellent summary of how circular economy works.

The writer Curzio Malaparte (born Curt Erich Suckert) said "In Prato, where everything finally comes to rest: glory, honour, pity, pride, the vanity of the world".

Today, institutions and entrepreneurs still live this tradition and mindset in an even more complex ecosystem where resources such as water play a central role. Prato's textile industrial district is one of the largest in Europe and serves fashion brands all over the world. Thanks to the raise of awareness towards more sustainable items Prato now plays a central role in the global fashion industry. This positive trend has reached both luxury and fast fashion sectors; customers require more ethical products, so brands must find a credible solution to this demand.

Recò, the festival on Circular Economy was initiated in 2019 in collaboration with the Municipality of Prato and supported by the Region Toscana. The aim of the festival was to put circularity center stage. Industries and entrepreneurs were the main target group and the festival intended to stimulate exchange and detailed conversation.

Recò's first edition was an intensive four-days program with talks, conferences and workshops as well as performing art, contemporary music, theatre, storytelling, jazz, and classical music. One of the festival's main venues is the Museo del Tessuto, a wonderful example of urban regeneration. The building housing the museum, the historic Cimatoria Campolmi Leopoldo e C., is a

monument of industrial archaeology and the only large nineteenth-century factory built within Prato's medieval city walls.

For me, a festival is the strongest expression of a place's mindset – Tuscany is definitely enthusiastic about circularity. The following edition of the festival included two more districts, the Santa Croce (Leather/tanning) and Lucca and Capannori area (paper). Due to the circumstances, *Recò* has reinvented itself by turning the four days program, scheduled for the end of March, into an eight-months multichannel platform. The program not only features digital talks and conferences (*recòlive* stream) but also radio shows, which were 'tailor made' for the festival's contents and performances and ran over a longer period of time. Like for the first edition, we have created a section of the festival named "Open Factories". Each year we host site-specific performances on the premises of textile companies in Prato. In the past edition we turned the live performances into mini-documentaries that were broadcasted both online and 'on air'. *Recò*'s website now offers broad range of original content on circular economy. The aim for future editions of the festival is to engage more communities and support a circular attitude.

Circular economy is not a responsibility of a few people, but rather a collective mindset that must be promoted with all means possible.

INTRODUCTION: MATERIAL LOOPS

The future is circular: following this vision, *Design Lab #8 Material Loops – Paths to a Circular Future* and this reader present trailblazing design projects that reflect the potential of circular material. The network of participants stretches from Berlin across Germany and all the way to Italy's circular city Prato, our guest at *Design Lab #8*.

Design in all its disciplines plays a decisive role in the necessary transformation to a sustainable economy. While classic product design is losing relevance, perspectives of sustainable design are beginning to take on a leading role at the individual, collective, urban, and global level. All the more so as most of the resource consumption is already determined during the concept phase of object design. In this context, materials research is at the heart of the impending transformation. How can objects be designed to have a positive effect on the environment at the end of their life? How can finite resources be brought into an infinite cycle of material? What are the material cycles and recycling systems of tomorrow?

Divided into six main themes, *Design Lab #8* presents a selection of products and design projects, ranging from some materials and best-practice examples already implemented in the industry to more experimental works. A special focus is on the design incubators of the future, the design schools. At these institutions, research on and raising awareness of the various aspects of a circular society has been an essential part of design education for a long time. In *Design Lab #8*, students from the Kunsthochschule Weißensee, the Universität der Künste Berlin, the Kunsthochschule Burg Giebichenstein Halle, the Hochschule für Angewandte Wissenschaften und Kunst Hildesheim, and the Folkwang Universität der Künste Essen present their current work, introduce new possibilities, question traditional practices and encourage reflection.

In the first section, *Loops of the Collection*, we first embark on a search of sustainable design objects in the collection of the Kunstgewerbemuseum in Berlin and explore the beginnings of so-called 'green' design after the first oil crisis in the 1970s. Places for Looping Materials focuses

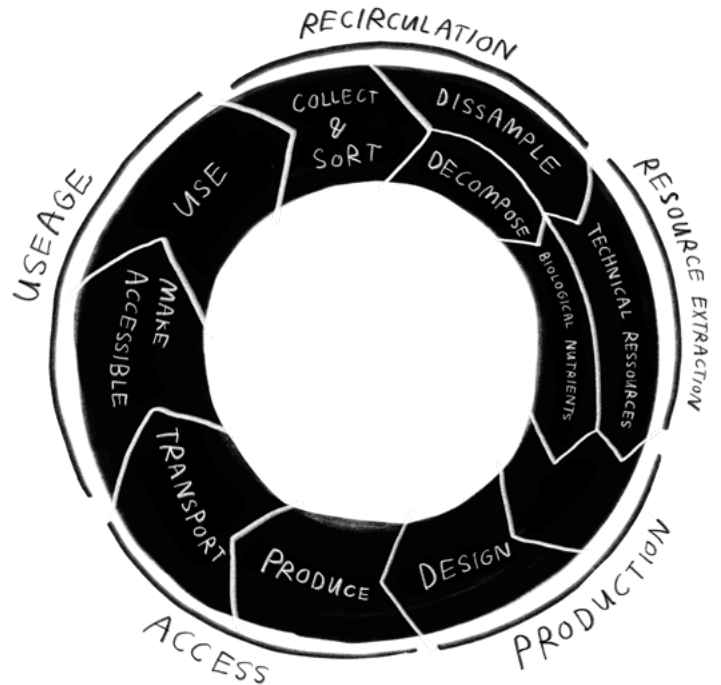
on places in Berlin where circularity is put into practice and materials are exchanged, processed, researched, shared, and designed. Plastic Loops introduces us to alternatives to plastic as well as possibilities for circular handling of petroleum-based materials. Fashion Loops re-conceptualizes the topic of 'fashion' by exhibiting the work of designers who are all making a radical departure from the prevailing production logic à la Fast Fashion. The category Waste Loops highlights the potentials of materials that were previously considered 'waste'. The reader concludes with ideas in the field of Speculating Loops: provocative thought experiments that confront the reader with a task that concerns us all: how do we want and need to act as a community in the future in order to achieve the goal of a circular society?

Curators: Claudia Banz, Barbara Lersch und Kaja Ninnis

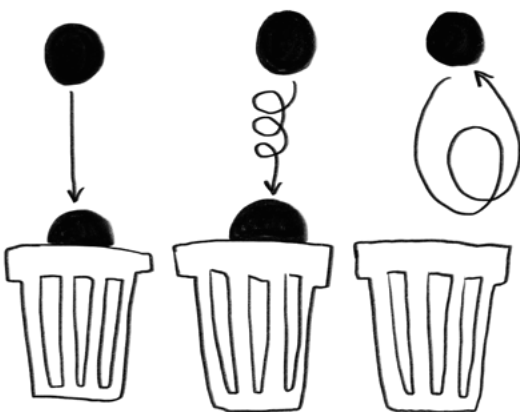
CIRCULAR ECONOMY

THE LINEAR SYSTEM IN CRISIS

The use of resources and things in the current economic and social model largely follows a linear pattern, that of 'take, make, waste': resources as well as natural raw materials or even processed products are largely landfilled or incinerated instead of being consistently recycled and reused. At the same time, the worldwide consumption of materials has increased eightfold in the past 100 years (1) and is expected to rise by a further 17 percent by 2050 (2). The direct consequences of our throwaway mentality are not only clearly noticeable ecological problems, but also an increase in social inequality and exploitation along globalized production chains. And we can also feel the consequences of the linear economy at a social level. The exhibition addresses the question of how to cycle raw materials and materials in general and how we as a society can work towards a sustainable future.



LINEAR ECONOMY RECYCLING ECONOMY CIRCULAR ECONOMY



THE NEED FOR TRANSFORMATION

Anders als das lineare Wirtschaftsmodell möchte die Unlike the linear economic model, a circular economy aims to interlink material flows to create a circular system. In the future, products and materials should be designed and constructed in such a way that they can either be repurposed at the end of their life cycle or reintegrated into a technical or biological cycle. Important factors for recyclability include a design with a long service life, repairability, dismantlability, the careful use of any resources involved in production, and of course the material itself. At the end of their first life, for example, products and resources can become material again which is returned to the cycle for a new use.

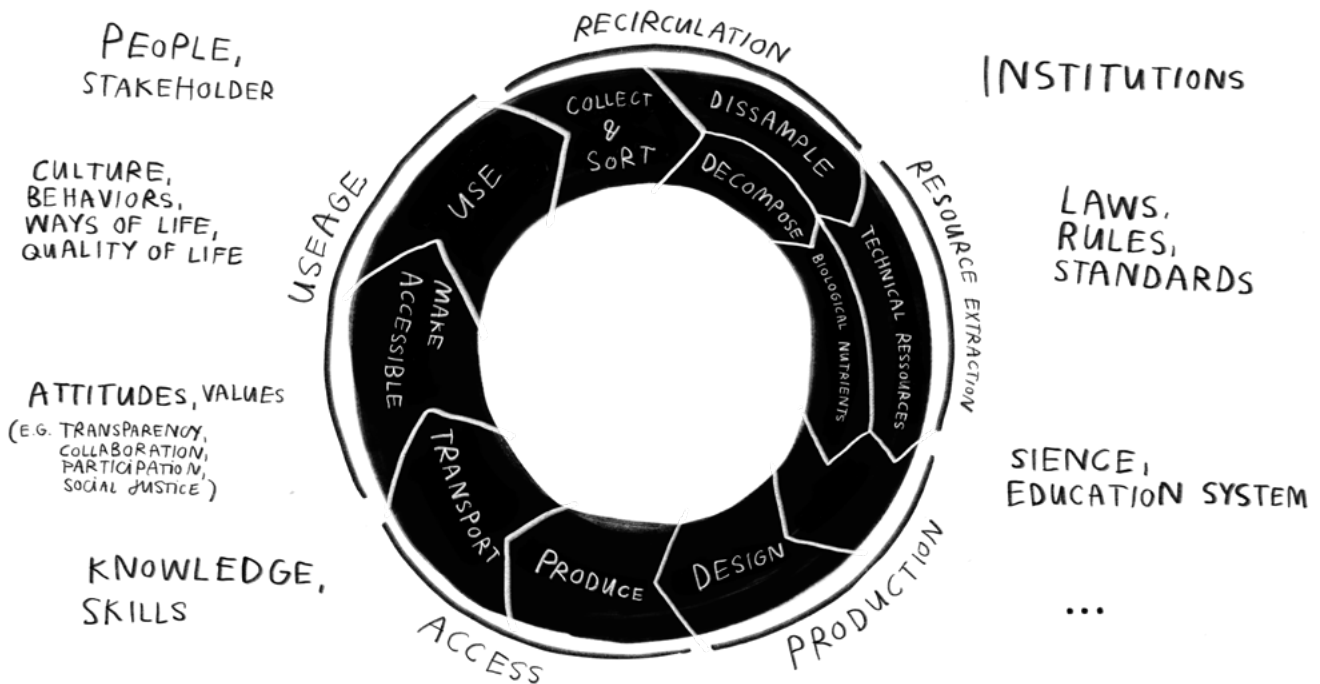
CIRCULAR SOCIETY

The circular economy is a promising sustainability strategy that could significantly change the way resources are used, both economically and socially. In recent years, the concept of a circular economy has become more widespread and gained relevance in politics, business, and science on a national and international level [3]. However, the consistent and effective implementation of a circular economy is a challenge that involves all areas of society.

makes it clear that the transition to a circular system is a task for the whole of society. More specifically, this means that circularity must become the guiding and structuring principle as well as principle of action in numerous areas of society, while the transformation always takes into account the social good. Cooperation, participation, building and sharing knowledge, transparency and accessibility are the only way to overcome and realign a society's linear rules, forms of organization, knowledge systems, as well as values and goals.

NO ECONOMY WITHOUT SOCIETY

That is why the model of a circular society goes one step further and tries to promote approaches that go beyond a technological and market-oriented focus. The model is to be understood as a vision of a fundamental socio-ecological transformation based on the concept of circularity. This idea of extending the concept of circularity, developed by the Hans Sauer Stiftung and others,



CIRCULAR MATERIAL

Material and material consumption are at the heart of the problems occurring in a linear economy. It is assumed that 80 percent of the resources used are already determined during product development. This means that with their choice of materials, designers as well as producers have a great responsibility in the socio-economic transformation to a circular system. Once in the hands of the consumer, the material can ultimately become a recyclable product.

References: [1] Krausmann, Fridolin; Gingrich, Simone; Eisenmenger, Nina; Erb, Karl-Heinz; Haberl, Helmut; Fischer-Kowalski, Marina (2009): Growth in global materials use. GDP and population during the 20th century. In: *Ecological economics*: Jg. 68 (10), S. 2696-2705. [2] United Nations Environment Programme (UNEP) (2011): *Towards a Green Economy. Pathways to Sustainable Development and Poverty Eradication, Sustainable Development*. Verfügbar über: <https://www.unenvironment.org/explore-topics/green-economy> (Letzter Zugriff: 09.03.2020) [3] Geissdoerfer, Martin; Savaget, Paulo; Bocken, Nancy M.P.; Hultink, Erik J. (2017): The Circular Economy – A new sustainability paradigm? In: *Journal of Cleaner Production*: Jg. 143 S. 757–768.



PRATO

CIRCULAR CITY MEETS DESIGN LAB# 8

The city of Prato is located in the northern part of Tuscany (Italy), just 17 kilometers from Florence. About 200,000 people live in the municipality which has gained international popularity in the 19th century for its textile district that represents about three percent of European textile production today. Prato is on its way to becoming a circular city – a city that functions entirely according to the principles of a circular economy. The transition is to be completed by 2030 and realized through the innovation of production processes, the revivification of urban space, and the strengthening of social cohesion.

Recycling techniques for textile 'waste' were developed and implemented in Prato as early as the 19th century, earning the city a reputation as one of Italy's most innovative industrial locations. For example, Prato was the first industrial area to set up a closed water cycle to reuse and clean wastewater more than once before returning it to the environment.

Today, circular thinking is part of the city's DNA. For years, the businesses of Prato's textile district have been a prime example of the revaluation of textile recycling. Waste from textile production and second-hand clothing from all over the world are consistently recycled. Many



(alle Bilder) © Fernando Guerra (alle Fotos von "Partnerstadt Prato")



Italian companies are now applying the Prato-model.

More recently, Prato implemented another principle of circularity: the limitation and reuse of waste from the construction sector, one of the largest sources of waste in Europe. According to the slogan “Rethinking the City”, existing buildings are repurposed and transformed. The historic textile factory *Cimatoria Campolmi Leopoldo e C.*, for example, a 19th-century industrial archaeological monument, which today serves as the city’s cultural center as a museum and municipal library.

Prato’s operational plan not only focuses on repurposing buildings and spaces, but also strengthens social cohesion at city level by building an inclusive and supportive community based on the principle of the sharing economy and creative reuse.

The annual Recò Festival is another feather in the city’s cap and extends the scope of its mission of a circular society to the artistic space and makes Prato a great role model of circularity put into practice. For the *Design Lab #8 Material Loops - Paths to a Circular Future*, different actors from Prato were invited to present their projects in the categories *Fashion Loops*, *Places for Looping Materials* and *Plastic Loops*.



DESIGNPROJECTS

A large, stylized yellow brushstroke graphic that underlines the title 'DESIGNPROJECTS'. The stroke is composed of several overlapping, horizontal bands of varying lengths and positions, creating a layered, hand-painted effect. It starts from the left edge and extends across most of the width of the page.

LOOPS

FROM THE COLLECTION

FROM ECO TO CIRCULAR DESIGN

1968 saw the first issue of Whole Earth Catalogue, a compendium of product recommendations and information for more sustainable living. In 1972, during the first oil crisis, the Club of Rome published its report *The Limits to Growth*, which highlighted the close interconnection of social lifestyles, economic growth and the finiteness of resources. In the same year, the first major United Nations environmental conference was held in Stockholm.

In the niches of industrial society, an alternative production scene unfolded that adopted practices of do-it-yourself and recycling. The design discourse was expanded to include concepts of green, ecological, and sustainable design. It failed, however, in bringing about a hoped-for paradigm shift in the reality of design and manufacturing processes. On the contrary: since the 1980s, design has continuously developed into an international economic and competitive factor, and thus into a rapidly interchangeable consumer good.

The collection of sustainable design of the Kunstgewerbemuseum Berlin from the last decades of the 20th century turns out to be only a few objects. This also reflects the established conventions of museum collecting with a focus on so-called authorial design. Furthermore, most of the objects reflecting these early beginnings of an alternative design culture are by male designers. In 2020, José Hendo, the first female designer to follow a circular practice, was added to the collection.

REGAL, 1989

Hans Peter Stange

Corrugated board, colored varnish
KGM, Inv. Nr. 1989,20
stange-design.de
info@stange-design.de



© Staatliche Museen zu Berlin, Kunstgewerbemuseum

In 1979, Hans Peter Stange submitted his diploma thesis in industrial design at the Universität der Künste Berlin: a stool made of corrugated cardboard. This work laid the foundation for the company that he still runs today together with his wife Mechtild Kotzurek-Stange. STANGE DESIGN has been designing and producing cardboard furniture since 1985 and is one of the pioneers in the field of sustainable design. The narrow shelves from the collection of the Kunstgewerbemuseum were originally designed by Hans Peter Stange as a storage system for his children's Lego bricks.

STANGE DESIGN furniture is made 60 to 90 percent from recycled paper. The furniture surfaces have a high fresh fiber content to ensure stability and durability. The company works with suppliers who manufacture FSC-certified materials and produces in-house to avoid additional transportation. A starch glue, which is obtained from corn or potatoes, for example, is used to glue the paper webs together. The colored surfaces are printed with water-soluble varnishes.

Since the 1960s, designers such as Peter Raacke and Frank Gehry had been experimenting with using paper as a material for manufacturing furniture. They were all united by the vision of creating products with low manufacturing costs that were as mobile as they were inexpensive and targeted at the younger generation in particular. At the time, cardboard furniture reflected the newly raised environmental awareness that also constituted a counter-movement to the prevailing consumer culture and its supposedly perfect design. Even though cardboard furniture has still not made it into the mainstream, there are now manufacturers who offer a wide range of products for alternative furniture consumption.

Philippe Starck, execution: Saba, Hannover
Sawdust and wood flour, formaldehyde-free
glue, water-soluble paint
Kleber, wasserlösliche Farbe
KGM, Inv. Nr. 1995,16
starck.com

TELEVISION JIM NATURE, 1994



In 1994, French designer Philippe Starck created the portable television Jim Nature on behalf of the French electronics manufacturer SABA. At a time when plastic television casings were the norm, he chose an unexpected alternative: the shell elements are made of press-board, which is composed of chips glued together under pressure. The plastic frame is coated with water-soluble paints. The simple screw connection of the coarse shells makes the case easy to disassemble and recycle.

The wooden exterior as well as the instruction manual, which features a green and brown television illustration with the image of a tree on the screen, evoke nature-oriented and environmentally friendly associations. Although ecological aspects have become more prevalent in Starck's work since the 2010s – for example, the Broom Chair (2012), which is made of 90 percent industrial waste – it is doubtful that environmental protection was the guiding principle in the design of *Jim Nature*. It is more likely that this project was driven by the trend of preoccupation with sustainability, back then limited to external appearances, and triggered by the increased ecological awareness in the 1990s.

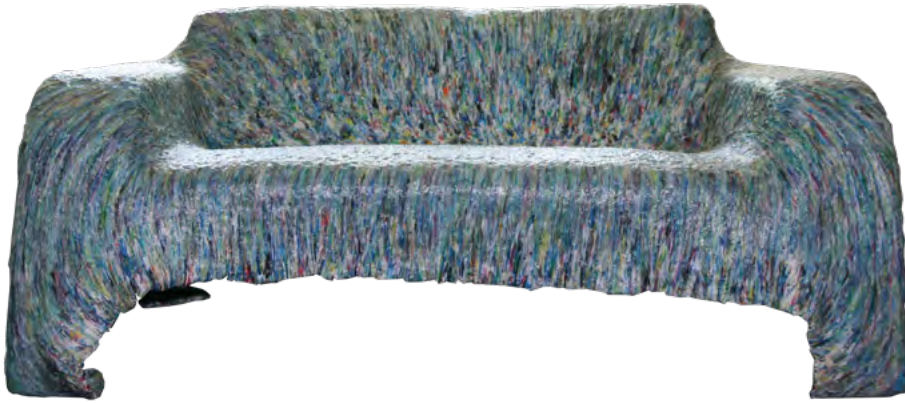


© Staatliche Museen zu Berlin, Kunstgewerbemuseum (1)
© Thomas Bach (2)

Just a few years earlier, the designer wowed the international market with emotional designs such as the *Hot Bertaa* kettle (1990) and the *Juicy Salif* lemon squeezer (1990). The design of these objects is not at all concerned with environmental consciousness; it rather aims at an exterior that is as expressive as possible – a visual stimulus to buy. Due to the objects' partial lack of functionality, they have been called 'stylish' and 'marketing-oriented' on several occasions.

Bär + Knell (Beata Bär, Gerhard Bär
und Hartmut Knell)
Used plastic packaging
KGM, JLG 1997,2
baer-knell.de

© Staatliche Museen zu Berlin, Kunstgewerbemuseum



SOFA CONFETTI, 1994

The sofa *Confetti* is made of plastic granules obtained from recycled plastic waste. Since the 1990s, the trio of artists and designers Beata Bär, Gerhard Bär, and Hartmut Knell have been working on transforming plastic waste into product design. Their artistic-ethical strategy was a sensation at the Milan Furniture Fair in 1993: Upcycling was not on the agenda of established designers at that time. Bär + Knell obtained the material free of charge from the Deutsche Gesellschaft für Kunststoffrecycling and discovered the specific know-how for the melting process in a company in Saxony, where small plastic particles were melted together at 180 degrees Celsius to form a plate. This was followed by further experiments in a domestic oven, which ultimately led to a malleable material that is stable enough in solidified form and does not require any further supporting structures. About ten kilos of waste are processed into a piece of furniture without the need for additional binding agents or color additives. The furniture's color is determined by the color of its material: the many shades of blue, for example, stem from Lenor and Pril bottles, the preferred cleaning agents in Germany at the time. While other design made from recycled plastic

tends to neglect its source material, Bär + Knell promote its visibility: With their colorful unique designs, the trio wants to create, as they put it, "reflections of our consumer society."



© Bär + Knell, Bad Wimpfen/Berlin

ROBE "AMAZONE", 2008

Stephan Hann

Cotton, Tetra Pak, Velcro

KGM, Inv. Nr. 2010,35

stephanhann.com



© Stephan Hann, Foto: Itai Margula

The dress was produced in the studio of Berlin fashion artist Stephan Hann. In 2002, he developed the first objects from the Tetra Pak series in collaboration with Tetra Pak France. This design is made of unused milk carton webs that were cut into small squares and sewed together to create a fish scale effect.

Stephan Hann completed an apprenticeship in menswear tailoring at the Deutsche Oper during the end of the 1980s, went on to study scenography and fashion at Kunsthochschule Weißensee, and subsequently spent several years in Paris. He describes his designs as „recycled couture.“ Hann’s oeuvre includes dresses made from photo negatives, telephone book pages or cloth handkerchiefs. In 1994, the Kunstgewerbemuseum Berlin dedicated a solo exhibition to him entitled *Naturgewalten*.

Sustainability is secondary for Hann in his choice of materials. Many of the materials he uses are unused. His focus is rather on materials that are abundant in everyday life and therefore receive little attention. In the context of Hann’s „Recycling Couture,“ the supposedly worthless materials are transformed into fashion, which in turn bestows a higher value on these everyday materials.



© Sven Stornebel

OTHER SIDE HOCKER, 2010

The stool is from the Other Side furniture series and entered the collection of the Kunstgewerbemuseum through a donation by designer Sven Stornebel in 2011. Stornebel processes recycled material – old furniture from the street, chipboard or plywood – by sawing it up, layering it and gluing it together. The name refers to the supposedly unsightly cut edge, which, for this object, becomes the aesthetic leitmotif for the combination of diverse wood materials.

Sven Stornebel grew up in the former GDR where he came into contact with wood at an early age in his grandfather's wood workshop. He underwent vocational training as a carpenter and further training as a state-certified wood technician and form and room designer. Finally, he obtained a degree in design at the Hochschule für Angewandte Wissenschaft in Schneeberg.

Stornebel has been working with recycled materials since his studies. In 2016, he took over as head of department of the creative workshop NEUE ARBEIT of the Diakonie Essen and founded the KRONENKREUZ brand. It offers long-term unemployed and refugees the opportunity to train in design and crafts, apply their new skills in workshops – from bookbinding to sewing – and also sell their work. More than eleven years later, the wood workshop is still producing the Other Side furniture series.

Sven Stornebel

Recyclingholz, Schaumstoff mit Weißgrund, geölt
KGM, Inv. Nr. 2011,100
stornebel.de
info@stornebel.de



© Staatliche Museen zu Berlin, Kunstgewerbemuseum

ANTONERICK PPF, 2020

José Hendo

Cotton, bark cloth
KGM, Inv. Nr. 2020,1
josehendo.com
info@josehendo.com

The ensemble ANTONERICK PPF (Past Present Future) was created by upcycling a traditional wool jacket and a men's coat that were combined with a biodegradable bark cloth. The cloth is made from the bark of the Mutuba tree, which is native to Uganda. In 2014, the Ugandan-born, London-based designer José Hendo founded the initiative *Bark To The Roots* (B2TR) to promote the use of bark cloth around the world and to increase knowledge about the use and production of the natural material. Bark cloth is recognized by UNESCO as an intangible cultural heritage. In keeping with the overarching motto of José Hendo's work, "R3 – Reduce Reuse Recycle," upcycling

is a key element in the design and production process. The zero-waste approach and a material-saving cut create fashion that is timeless and resource-efficient.

The rustic natural material and upcycled fabrics complement each other. The designer uses wood and bamboo cones as closures which add practical and aesthetic details. ANTONERICK PPF is a materialized manifesto for the responsible use of resources: it demonstrates how to extend the life of a garment, reduce waste, and thus connect the past and present with the future. The ensemble was exhibited in 2019 as part of the exhibition *Connecting Afro Futures. Fashion x Hair x Design* at the Kunstgewerbemuseum in Berlin and is now part of the museum's collection.



© José Hendo, Foto: Tony Wellington

STATEMENT: STEPHAN HANN

Fashion designer
stephanhann.com

What responsibility could and should fashion designers assume in promoting circular social actions and practices?

SH: „As fashion designers it is our job to present alternatives. I have been trying to hold up a mirror to our world of consumerism for over thirty years, for example by turning packaging and residual materials into fashion. In the 80s, my work was disregarded as the rebellion of a youngster; over time my work has become well-established in this process of a paradigm shift. Initially, I had a quite playful approach to my work and over time, it became a very personal life goal of mine.“

What role does material play in a societal transformation towards a circular society?

SH: „When choosing the material for their fashion designs, designers lay the foundation for a garment that is geared towards circularity, that can be disassembled into its individual components after use, and subsequently reappear in a new form – like a butterfly.

In my opinion, we need to fundamentally rethink particularly the durability of materials and their service life span in our everyday lives. I'd like to illustrate this with three brief examples:

When I went to Paris in 2000 and started working for various high-class fashion labels, I decided to wear second-hand clothes. It provided a good counterbalance to the Parisian luxury world – and I got a lot of praise for it.

During an exhibition, a visitor gave me her mother's silk wedding dress from the 1940s (and she said „Mr. Hann, you'll make something of it“). Shortly thereafter, I was invited to the Benedictine monastery of Admont in Styria. I was asked to develop new church paraments. This wedding dress was the basic fabric for one of these garments.

My mother ran a home for the elderly. As a child, I spent a lot of time there and heard many stories from old ladies about their past. They also share stories from their ‚textile life‘, which was shaped by many ups and downs. Basical-



ly, there was one „good“ dress and one for everyday life. This was equally true for the shoes. The handbag usually matched both dresses.“

From your perspective, how has the topic of appreciating materials and things changed over the last ten years?

SH: „The last decade has seen a shift in our thinking. More and more people care about what materials are used to make our clothes and how they are produced. The constant focus on the topic by journalists and artists raised public awareness. One impressive experience for me personally was my participation in the Ethical Fashion Show in Paris in the fall of 2011. I was very impressed by the founder of the show, Isabelle Quéhé. Her commitment to the renewal of fashion is remarkable.“

PLACES FOR LOOPING MATERIALS

PLACES OF CIRCULARITY IN BERLIN UND PRATO

In the spirit of a circular society, special emphasis is placed on establishing and promoting circular practices. A participatory approach for putting circularity into social practice as well as new forms of social thinking and acting, which include all members of society across sectors and functions, are a prerequisite for overcoming the socio-cultural patterns of the “linear age” – and thus for achieving a circular society. Circular practices enable all members of society to act and function in a circular way. However, circular action also requires enabling, activating, and inspiring starting points: places of circular practice. There are various approaches in this regard, such as the creation of best practice examples in architecture and the design of buildings, the establishment of workshop

locations for knowledge transfer about new practices, and even new and innovative business models. Below are several examples of what these *Places for Looping Materials* might look like. They are an important and integral part on the way to a circular society.



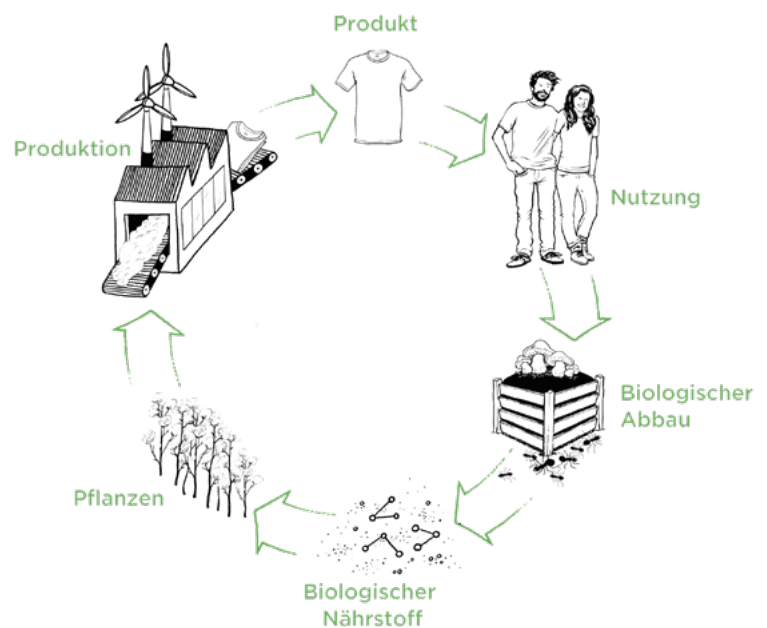
(alle Bilder) © Cradle to Cradle NGO

C2C LAB

Cradle to Cradle NGO
 c2c-lab.org
 info@c2c.ngo

The C2C LAB in Landsberger Allee in Berlin is realizing the world's first comprehensive refurbishment of an existing commercial unit in accordance with the circular Cradle to Cradle® approach. In a former pharmacy, reinforced concrete from the former GDR meets innovative material economy.

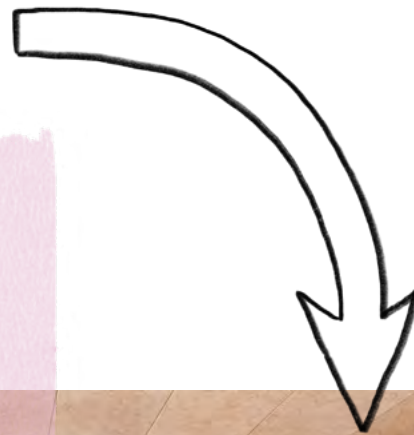
The East Berlin prefabricated concrete slab building from 1986 was equipped with contemporary and versatile rooms. The materials used in the one-year refurbishment process meet Cradle to Cradle® criteria. This means they are not harmful to humans or the environment and can be kept in the technical or biological cycle forever. Everything is installed in such a way that all materials can be retrieved and recycled separately without any residue. In the rooms you will find carpets that bind fine dust; floor tiles made of wood that are taken back by the manufac-



© Cradle to Cradle NGO, Grafik: Christian Buchner

turer after use and recycled into new tiles; wall paints that do not emit toxic gases; lamps whose individual parts are completely recyclable and that adjust their light to the biorhythm.

The lease for the C2C LAB was signed and works began in 2018. Today, the Lab at the center of Berlin comprises 400 square meters and has become a real laboratory, education center and head office of the Cradle to Cradle NGO. With this project, the organization wants to go beyond promoting circularity as a concept only and actively live the idea of a circular society.



NOCHMALL

The NochMall is a department store for second-hand goods managed by the municipal cleaning services of Berlin. Furniture, clothing, electrical appliances, household goods, toys, books and much more are sold on more than 2,000 square meters. In addition, NochMall is a place to experience circular economy and climate protection in real life.

Berliner Stadtreinigungsbetriebe, AöR
nochmall.de
info@nochmall.de

Since August 2020, NochMall has been offering facilities to start-ups, initiatives, and businesses to exhibit their sustainable products in pop-up stores; it organizes repair cafés and upcycling workshops and offers events with pioneers from the reuse-use and environmental scene.



© NochMall GmbH

NochMall is the municipal cleaning services' contribution to the zero-waste strategy of the State of Berlin. The goals of the project include conserving resources by extending the life cycle of products, avoiding up to 4,000 tons of CO2 per year by reusing used goods, creating 20 new fair-paying permanent jobs, offering a wide range of goods at low prices that also allow people with lower incomes to shop, and implementing a varied environmental education program to raise awareness of waste avoidance, reuse, and recycling.



© NochMall GmbH



© NochMall GmbH, Foto: wolfgangson.com

HAUS DER MATERIALISIERUNG



© Haus der Materialisierung, Foto: Raquel Gomez

ZUsammenKUNFT Berlin eG
hausdermaterialisierung.org
hdm@hausderstatistik.org

The *Haus der Materialisierung* (HdM) is a center for sustainable use of resources. It is the starting point for establishing and disseminating cycles of used materials, food, ideas, and objects. Workshops with courses, lending and repair initiatives, social and educational work, urban gardening and exhibitions provide enable the development of circular-based practices. At HdM, resource-conserving ways of living are developed and tested in order to jointly tackle necessary social changes.

The HdM is located at Alexanderplatz in the *Haus der Statistik* (HdS) building complex. The model project Haus der Statistik was developed by five cooperation partners (Koop5) from civil society and administration as a place for working and living. Pilot projects help to test the emerging neighborhood in terms of its potential in contributing to the common good and sustainability.

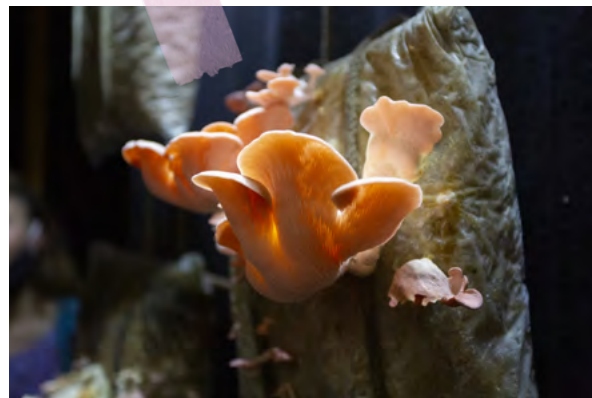
Since its opening in September 2020, the HdM has served as a focal point for people and initiatives involved in shaping material and social cycles. Visitors can get involved in workshops, take part in performances, experience lectures, see exhibitions, give new life to used objects and get inspired. The HdM is currently home to 25 projects.



© Haus der Materialisierung, Foto: Raquel Gomez

Pilot Use Projects:

Kunst-Stoffe e.V., kunst-stoffe-berlin.de
Material Mafia, material-mafia.net/ueber-uns
Ort schafft Material, ortschafftmaterial.org
Selbstgebaute Musik, selbstgebautemusik.de
Freifunk Berlin, berlin.freifunk.net
SearchWing, searchwing.org
BAUFACHFRAU Berlin e.V. |
Projekt Restholz vermöbeln, baufachfrau-berlin.de
Kostümkollektiv, kostuemkollektiv.de/werkstatt
Berliner Stadtmission,
berliner-stadtmission.de/komm-und-sieh
FahrArt, fahrart.com
NIE Drucklabor, nie.zone
Raumlabor, raumlabor.net
Habibi Ship, habibiship.fun
Extinction Rebellion Bau AG, extinctionrebellion.de
Zebraap - MITKUNSTZENTRALE + Gästezimmer,
mitkunstzentrale.de
Queer im Quartier - BerlinRepair, berlinrepair.org
mrtz Forschungswerkstatt - Cosum, berlin.cosum.de
circular berlin, circular.berlin
**Technische Universität Berlin – Institut für Technischen
Umweltschutz – Fachgebiet Kreislaufwirtschaft und**



© Haus der Materialisierung, Foto: Raquel Gomez

**Recyclingtechnologie, Projekt: Reallabor Zirkuläres
Wirtschaften im urbanen Raum: Kompetenzaufbau und
Umweltkommunikation im „Haus der Materialisierung“
in Berlin**, [circulareconomy.tu-berlin.de/menue/forschung/
geofoerderte_projekte/hdm](http://circulareconomy.tu-berlin.de/menue/forschung/geofoerderte_projekte/hdm)
ZKU, zku-berlin.org
Merijaan, merijaan.de
Meltmeister, meltmeister.de
Upcycling Mobi, upcycling.mobi/de/landing.html



© Haus der Materialisierung, Foto: Raquel Gomez

Baupalast

baupalast.berlin

hallo@baupalast.berlin

BAUPALAST



© Haus der Materialisierung, Foto: Raquel Gomez

The Bauhof is conceptualized as research and practice project in the making and has been taking shape on the Dragonerareal in Berlin since 2020. Named after the listed Guard Dragoon Barracks, the site was saved from privatization in 2018 in a joint civil society action and now serves as a model project in which new ways of cooperative and community-oriented urban development are being tested.

The project begins with historical research on an early circular site in Berlin, the Bauhof in Kreuzberg, which enabled bottom-up urban development in the 1980s as a materials warehouse and carpentry workshop. In addition, there is concept development and research on archiving, processes, and formats of local knowledge and on the transfer of design knowledge and different design approaches. Historical and contemporary circular practices enter into dialogue which in turn promotes circular literacy and diverse conceptions of a civil society.

The individual contributions of the project partners, who became part of the project thanks to their diverse expertise and interests, are merged to form a comprehensive outline for a collaborative project that will be realized in an urban context over the summer of 2021. The goal of the project is to demonstrate and apply the potential of alternative, solidarity-based cycles through materials and their meanings. The project will be curated and implemented, among others, by Alexander Römer (Construct Lab / Büro for Urban Practice), Dr. Kim Förster (University of Manchester) and Dr. Anna Schäffler (CoCooN).



© constructlab, Foto: Nils Koenning



© constructlab, Grafik: Livia Egger



© constructlab, Grafik: Livia Egger

RECÒ FESTIVAL PRATO

Recò Festival Prato
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info@recofestival.it

In 2019, Prato hosted the first Circular Economy Festival in Italy. The Recò Festival is part of the participating administration's broader promotional strategy aimed at raising awareness of the circular economy and environmental issues in general among civil society and production sectors. The program includes numerous activities that appeal to young audiences and families, as well as professionals and businesses. Part of the festivals are lectures, meetings, seminars, conferences, exhibitions and other cultural events hosted in textile and clothing businesses in the industrial area of Prato. The entire Recò Festival 2020 took place online and involved the production sectors of paper (Lucca) and tannery (Santa Croce).



© Recò Festival, Foto: Marco Badiani



© Recò Festival, Foto: Marco Badiani



© Recò Festival, Foto: Alexandra Korey

The festival provides a space for the Italian discourse around circular economy, but also points beyond national borders: in 2020, leaders of the international movement discussed the global Green New Deal, waste reduction, reuse, recycling, new business, and consumption models as well as new strategies for considering waste a resource in an alternative economic model.



© Recò Festival, Foto: Marco Badiani

STATEMENT: DINA PADALKINA

Founder of circular.berlin
circular.berlin

What kind of circular action do we need in urban contexts in order to make our society fit for the future?

DP: „Basically, we can answer this question from the perspective of supply and demand. Regardless of whether our actions are circular or not, there must be a supply that corresponds to the principles of the circular economy. New technologies and innovations and especially materials that can be recycled play an important role in this context. On the demand side, consumers need to know about these alternatives and prefer them to conventional offerings – until circular behavior is established as a social norm.

The implementation and dissemination of ideas and solutions that drive social innovation is something we all must do. We must not only question our needs and consumption patterns, but also rethink decades-old processes, systems, and routines. Even in a circular economy, we must conserve our remaining resources for future generations and limit our current overconsumption – we must find balance. Our societal frameworks must fundamentally change if they are to enable said balance of supply and demand and combine it with sufficiency. This change must range from our education to our legal system. A transformation toward a sustainable society is a lengthy process and it requires courage to change our current lifestyles.

Furthermore, our society will not be fit for the future if everyone works individually on single solutions. Material cycles can only be closed if we network, rely on cooperation and think systemically. This is precisely the approach promoted by Circular Berlin.“

What role does material play in a societal transformation towards a circular society?

DP: “Whether we actually close the technical and biological material cycles depends not only on the material. The technological systems and the behavior of the population are essential. The history of plastics (synthetics)



has shown that we can produce diverse materials from synthetic and semi-synthetic polymers. But is this really necessary? Of the many different plastics in circulation, only very few, higher-quality ones, can be recycled. Optimal recyclability would be guaranteed if we would limit ourselves to a manageable number. This means, the role of some material is dependent on its qualities: We must ensure that we use and create certified, 100 percent recyclable materials. Information on materials should be transparent and available to the public. Only in this way can material cycles be closed and the transformation to a circular society succeed.”

PLASTIC LOOPS

FANTASTIC PLASTIC ?

Plastic has shaped consumer society like no other material since the 1950s. Be it plastic bags or Barbie dolls, the „material of the future“ has conquered all areas of everyday life across all generations. From the new plastic compounds developed in chemistry labs around the world, designers created colorful and optimistic life-worlds. Nowadays, there is hardly a designed product that does not contain plastic. These innovative materials fulfill important functions in different social contexts.

On the other hand, the current conventional production, use, and disposal of plastics is massively damaging the environment. This is most visible in the increasing plastic pollution of the oceans. One major area is plastic packaging, which currently accounts for 60 percent of the waste generated. The future vision of a new, circular plastics economy for Europe is currently being negotiated in the

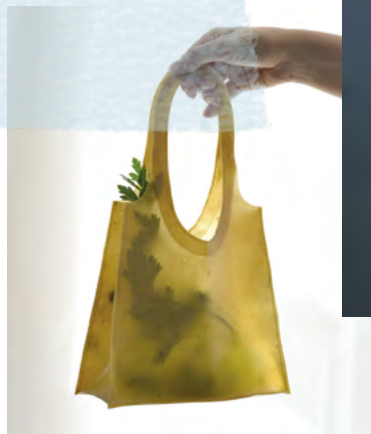
European Parliament. This includes bans on single-use products, a requirement to use recycled ingredients and the introduction of new deposit systems.

Against this background, the task for designers has changed: New, more pessimistic life-worlds demand a responsible approach to petroleum-based materials. The projects on display demonstrate the enormous recycling potential of plastic as a technical resource and give insight into the possibilities offered by innovative materials research into bio-based plastics.

SONNET 155

Lobke Beckfeld, Johanna Hehemeyer-Cürten

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(alle Bilder) © Lobke Beckfeld, Johanna Hehemeyer-Cürten

SONNET155 is a fully compostable material made from cellulose waste and pectin from fruit peels. Designed by Johanna Hehemeyer-Cürten and Lobke Beckfeld of Kunsthochschule Weißensee, the bag symbolizes the pursuit of a product that conveys sustainability as an aesthetic value. The minimalist and simple design of the bag highlights the special texture and translucency of the material. Obtained from cellulose waste from the textile industry

and pectin, a plant polysaccharide (multiple sugar) and by-product of juice production, the result is a composite material that can be sourced and produced locally. The material is fully compostable and can be integrated into a biological life cycle.

Each bag is unique, one of a kind in the subtly varying





textures and vibrant pastel colors created using natural pigments. The material's look-and-feel is similar to a kind of translucent leather, with the advantage that it is biodegradable in water or soil. The duration of decomposition of *SONNET155* is comparable to that of a recyclable paper bag. In this way, the bag can be worn, used, and loved until it begins to disintegrate.





© OBJEKTE UNSERER TAGE

2020 X-CHAIR.

Design: Hermann August Weizenegger

hermannaugustweizenegger.de

mail@hermannaugustweizenegger.de

Manufaktur: Objekte Unserer Tage

objekteunserertage.com

info@out-design.com

Sales: ROTASIN

rotasin.de

info@rotasin.de

The *X-Chair* is a plastic chair designed and produced according to the Cradle to Cradle® principle. Inspired by the brutalist architecture of the Kunstgewerbemuseum in Berlin, designer Hermann August Weizenegger developed the *X-Chair* for the exhibition *Atmoism. Gestaltete Atmosphären*.

The black chair is made of 100 percent recycled polypropylene that is molded into the iconic X shape using the rotational molding process; and it is produced in the facilities of the family-owned business Rotasin located in the German state of Brandenburg. The chair is sold through the young furniture brand *OUT Objekte unserer Tage* in Berlin. Their credo is: everything made in Germany. The brand exclusively represents products that have been completely and sustainably manufactured in Germany. This also applies to the *X-Chair*. After years, end consumers can return the chair to OUT whereupon it is shredded into granulate at Rotasin and returned to the production cycle. Together, designers and companies are creating a sustainable and regional circular economy based on the Cradle to Cradle® principle.



© Michi Schnaus



© Michi Schnaus



© crafting plastics! studio, Foto: Evelyn Bencicová

CP!S

CRAFTING PLASTICS

cp!s crafting plastics studio
craftingplastics.com
studio@craftingplastics.com



© crafting plastics! studio, Foto: Adam Sakovy

crafting plastics! studio (cp!s) is a material and circular design studio based in Berlin and Bratislava, founded in 2016 by Vlasta Kubašová and Miroslav Král. The studio explores sustainable and transparent production processes in response to the ongoing problems of the climate crisis, which is driven by mass consumption and the irresponsible use of finite resources.

The design duo explores new ways of product development at the interface between science and design, from a simple craftwork approach to the use of high-tech machinery. The focus is on the potential of natural bioplastics, their properties, aesthetics, and value. The goal: to

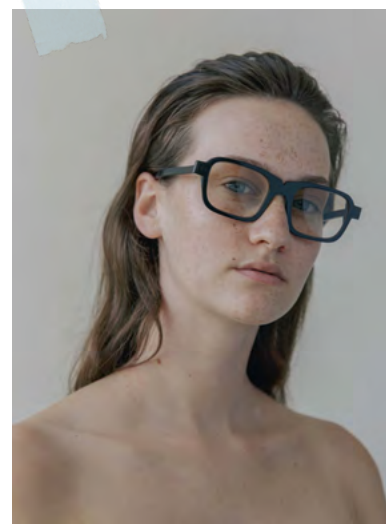


reclaim control over the life of products from raw material, to the final product, to its inevitable decay. In contrast to petroleum-based plastics, the bio-based counterpart is an alternative that allows for achieving this goal.

In 2018, the design duo in collaboration with materials scientists launched NUATAN, a brand of products made from 100 percent plant-based biopolymers derived from renewable, plant-based raw materials. NUATAN objects have a lifespan of up to 50 years and decompose in industrial, electrical, and domestic compost or in the soil within a few weeks.



© crafting plastics! studio



© crafting plastics! studio, Foto: Patricia Kvasnovska

DIGITAL VERNETZEN

FÜR DIE GESAMTE WERTSCHÖPFUNGSKETTE VON KUNSTSTOFFEN.

 cirplus



© cirplus GmbH

CIRPLUS

cirplus GmbH
cirplus.com
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cirplus, founded by Christian Schiller and Volkan Bilici, positions itself as a global, digital, and sustainable marketplace for recycled materials and plastic waste, targeting companies along the entire plastics and recycling value chain. In cooperation with DIN e.V., cirplus advocates standards for recycled plastic in order to create the greatest possible transparency in terms of quantity, quality, and price.

The company pursues the goal to simplify and increase the cost-effectiveness of the currently complex and confusing trade in recycled materials and plastic waste with the help of digital technologies. Disposers, recyclers, and converters are provided with an overview of global offers

and inquiries so that they can handle the entire transaction in one central location in the future.

cirplus offers potential for the plastics recycling industry in two respects: Firstly, it ensures that the use of recycled materials becomes more economically viable. This creates incentives for more waste to be recycled and not simply landfilled, incinerated or exported. Secondly, each ton of recycled materials saves up to 85 percent of the CO₂ emissions generated in the production of virgin material.



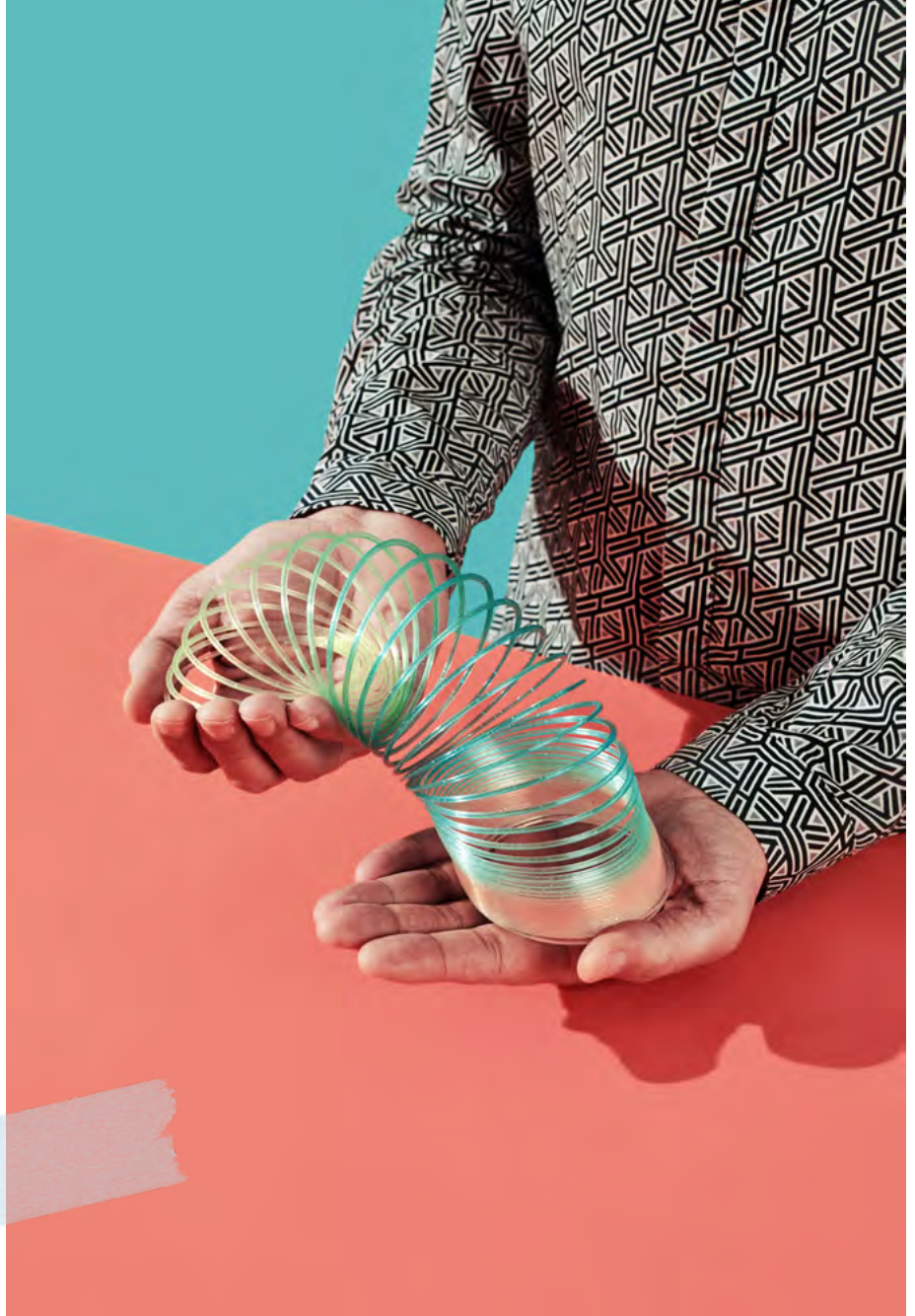
© Juan Moyano, Stocksy United

Holy Poly
holypoly.co
hello@holypoly.co

HolyPoly is a consulting firm for recycled and recyclable plastic which was founded by Johanna Bialek, Fridolin Pflüger, Pascal Haaf, and Matthias Röder. It consults businesses from the idea to the implementation on the way to a circular economy.

Most everyday plastic products could be recycled. But the circular economy is complex which is why brands need to radically rethink their products to make them recyclable. The more products are recyclable, the more products can be made from recycled plastic. When more recycled material is in demand, recyclers improve their infrastructure and make it easier for consumers to collect said recyclables. And if more products are designed to be recyclable, more high-quality material will be available to the industry. This is the only way to close the loop.

HOLY POLY



© Juan Moyano, Stocksy United

The core issue is always the product. HolyPoly helps manufacturers and their products to become part of the solution to the plastic problem and to initiate a true circular economy. This requires conceptualizing the entire value cycle so that it is closed from start to finish. From design to prototyping and mass production to marketing, HolyPoly helps rethink the use of plastic, produce more sustainably, and rewrite the history of plastics: 100 percent recycled and 100 percent recyclable.

Konglomerat e.V.
konglomerat.org/werkbereiche/plaste
vorstand@konglomerat.org



(alle Bilder) © Konglomerat e.V.

KUNSTSTOFFSCHMIEDE



The Kunststoffschieme in Dresden is an open workshop and development lab for plastic recycling processing in the neighborhood. Anyone can drop by and process their own waste and use their own hands to turn it into something relevant and useful for everyday life: Kitchen accessories, bike parts, desk utensils, and more. You can injection mold a product in five minutes or spend months learning about product development and engineering processes. The Kunststoffschieme is designed in such a way that you can get started quickly and advance in skill and technique whenever you choose to do so.



Through the handling of the material itself, in contrast to merely thinking about the plastic issue, Kunststoffschieme inspires and empowers people to deal with plastic differently. You are a consumer, disposer, producer, and designer at the same time. The Kunststoffschieme establishes relationships to and generates in-depth knowledge of materials and cycles. Circular thinking and above all circular action starts with people and their everyday lives. The *Kunststoffschieme* is a place where these new behavioral patterns of a circular society can be lived and made applicable to other contexts.

FROSCH

Werner & Mertz GmbH
frosch.de



(alle Bilder) © Werner & Mertz GmbH

Verschlüsse aus
100% PP-Recyclat
Gelber Sack

100% PET-Recyclat
Gelber Sack
+ Flaschensammlung

Nachhaltige
Pigmente in
Verschlusskappen

Nachhaltige
Druckfarben

100% HDPE-Recyclat
Gelber Sack Sammlung
+ erstmalig für
Kosmetik zugelassen

100% hochwertig
recyclingfähiger
Standbodenbeutel
mit trennbarer
Farbebene



The packaging as well as the cleaning solutions of the Mainz-based family company Werner & Mertz, whose brands include Frosch, Erdal and green care Professional, are Cradle to Cradle® certified.

Holistic recyclability of packaging materials, as embodied in the Cradle to Cradle® principle, are realized thanks to the development of modern sorting and material technologies. Together with the partners of the Recyclate Initiative, Werner & Mertz developed bottles and closures made of 100 percent recycled PET, HDPE, and PP. In this way, packaging design already takes recyclability into account. The production of sortable plastic packaging improves the necessary recyclability of plastics.

For more than 150 years, Werner & Mertz has been established on the European market as a manufacturer of cleaning and care products. The company operates according to the principles of environmentally friendly and sustainable business practices and holistic sustainability is steeped deep in their corporate tradition. Reinhard Schneider, Chairman of the Frosch Management Board, won the German Environmental Award in 2019.

Mariplast S.p.a.
repiu.it
info@repiu.it

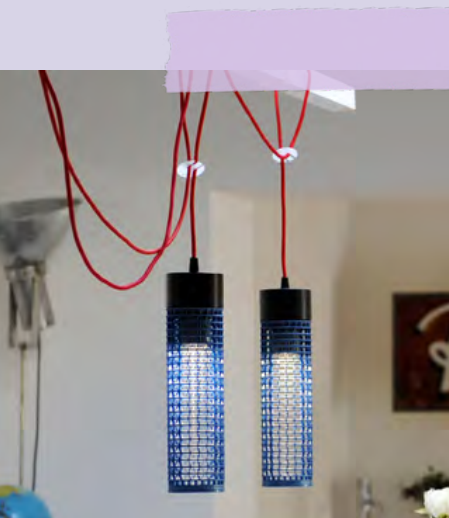
RE+

Re+ is an Italian brand for sustainable lighting. It was born from the 50 years of experience of the company Mariplast, which had been producing plastic supports for all stages of yarn processing since 1969: Spinning, twisting, winding and, yarn dyeing. The diffusers of the lights are created on a machine originally developed for the production of plastic bobbins on which yarns were dyed for the textile production in Prato. The diffusers are made of 100 percent recycled production waste. The simple construction of the lights allows for easy disassembling into individual parts and therefore easy repair.

Re+ sprang from the idea of using already existing resources, machines, and forms to transform technological industrial objects into democratic design objects. The products were created in collaboration with designer Stefano Giovacchini and architects Sabrina Bignami and Alessandro Capellaro.



(Alle Bilder:) © Mariplast S.p.a.



STATEMENT: ECKHARD WEIDNER

Chair of the Fraunhofer Cluster of Excellence
Circular Plastics Economy CCPE
ccpe.fraunhofer.de

What kind of circular action is needed in the field of plastic recycling in order to make our society fit for the future?

EW: „Too much plastic waste is not re-used as material or ends up in soils and oceans. We must change the way we handle, perceive, and manage plastics. The entire plastics value chain must be transformed from a linear to a circular economy. The basic idea is simple: reduce the extraction of fossil resources, avoid end-of-life losses while simultaneously enable genuine circularity of plastics. The implementation, however, is complex: circular economy is more than efficiency improvement and recycling; it is aimed not only at closing the loops but entire circular product systems across the entire life-cycle. Circular materials can make an important contribution here. So far, there is a lack of suitable opportunities for networking across value creation stages and life cycle phases.“



FASHION LOOPS

FASHION - WASTE

The fast fashion industry has become the success model of the fashion world. Since 2000, there has been a boom in the production of cheap clothing, at the expense of the environment and textile workers. The textile sector is one of the industries causing the highest air and wastewater pollution. More than 100 toxic and harmful chemicals are used along the textile chain. The production of one T-shirt alone requires about 2500 liters of fresh water. The low prices in fast fashion changed consumer behavior and society's appreciation of clothing. Fast fashion has mutated into throwaway fashion and, with 1.3 million tons of used clothing in Germany alone, is bringing the used clothing recycling system to the brink of collapse. So far, fiber-to-fiber recycling, which involves separating the different fibers that a mixed fabric contains, has been too costly and always required the incorporation of additional new material resources.

That is why fashion urgently needs new circular business models. Fashion Loops puts pioneering projects from the fashion center stage and proves the possibility of resource-saving production of high-quality clothing that is durable, repairable, and recyclable. Consumers can make a decisive contribution to the urgently needed change in the system by sustainably increasing the life cycle of their own clothing.

Jonas Stracke

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jonas-stracke.com,
jonas.stracke@gmx.de

Increased textile waste worldwide increases the urgency for high-quality textile recycling in a closed system. As part of his master's thesis at the Hochschule Niederrhein in Mönchengladbach, Jonas Stracke developed fabrics made of 100 percent recycled yarn. The project *Textilrecycling in Äthiopien* was initiated jointly with the *Gesellschaft für internationale Zusammenarbeit* (GIZ) in Ethiopia.

TEXTILRECYCLING IN ÄTHIOPIEN, 2021



(Alle Bilder.) © Jonas Stracke



The innovation of this project is the production of high-quality yarn from garment industry waste with artisanal and traditional methods. This marks a significant step forward compared to previous textile recycling, because the industrial fiber recycling process so far requires adding new virgin material to be economically viable. Spinning with the traditional spinning wheel overcomes this hurdle in production. The end result: a purely recycled yarn.

The manufacturing process of recycled yarn provides the framework for studying different techniques, colors, and structures. The variability of this high-quality yarn is reflected in this research series. Jonas Stracke cooperated with Andreas Möller from the Weberei Hamburg for the production of the yarn.



(Alle Bilder.) © Woford AG

ZERO WASTE COLLECTION AURORA

Woford AG

company.woford.com/de/nachhaltigkeit/cradle-to-cradle-certified-collection

The *Aurora* collection from European apparel manufacturer Woford was designed in line with Cradle to Cradle® (C2C) principles. C2C pursues a production model that mimics nature. When a tree loses its leaves or falls over in the forest, its decomposing components contribute to the growth of new trees and nourish organisms in its environment. Nothing is wasted or lost. Woford has embraced this design philosophy in a full collection of tops, a pair of pants, leggings, a dress, stockings, and accessories.

Woford changed their production of clothing for the *Aurora* collection, allowing customers to return their



Aurora product when they no longer need it. Wolford uses the old *Aurora* products to make new yarn for other products or biogas, thus closing the loop. All fibers used for the biodegradable products can be composted. After they are returned, Wolford turns them into biogas for their production facilities or humus as nutrient for the ground. Once the recyclable models are returned, the material is broken down into synthetic and biodegradable fibers. One fiber type is composted, while the other fiber type is processed into new yarn.



MIMYCRI



(Alle Bilder:) © mimycri e.V.

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mimycri, founded by Nora Azzaoui and Vera Günther in 2016, is a Berlin-based social enterprise that has been combining the topics of migration and environmental sustainability.

Together with their Greek partner ANKAA Project, the team pursues the vision of creating professional perspectives for refugees and at the same time transforming already existing material, such as broken inflatable boats belonging to refugees, into high-quality bags and backpacks. As a non-profit association, they stand for integration, upcycling, and contemporary design with a story.

mimycri has set itself the task of creating positive examples of truly sustainable action and business practices. The two founders believe that the economy of the future will serve people and the environment, and that the path towards this economy offers many creative opportunities. Based on their credo, mimycri also offers a consulting service to help companies better define and communicate their visions.







(Alle Bilder:) © Bis es mir vom Leibe fällt

BIS ES MIR VOM LEIBE FÄLLT ALTERATION ATELIER

**Bis es mir vom Leibe fällt |
Veränderungsatelier**
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Bis es mir vom Leibe fällt is a studio and association for the creative use of used textiles in Berlin. It was founded in 2011 by Elisabeth Prantner. A team of skilled designers and tailors repairs, adapts, helps clients with (re) appropriating and repurposing, re-designs, re-tailors and upcycles; and provides support along the entire work process. The staff has an extensive repertoire, ranging from simple alterations and sophisticated restoration work, to the development of new and personalized repair ideas, to updating and upcycling.

The atelier considers this millennia-old method of repair as a solution to the damage inflicted onto the environment and people as well as an incentive for change: repair as a way of creating something new, as a means of change in a world in need of repair.

In its work, the team mainly uses existing, recycled or ecologically produced materials. In addition, it developed a range of finished products: garments and jewelry made from disposable materials and other textile objects.

The association affiliated with the studio, a kind of 'school of change', offers the opportunity to actively get involved in change. The association enables passing on the accumulated practical know-how so that it can be used for an environmentally friendly and aesthetically sophisticated approach to the things of everyday life. Through a series of workshops for schools, youth, and children's institutions, the association creates awareness for a responsible use of resources and promotes self-determined aesthetics among young people.

Become A-Ware is the association's latest project and positions itself as a reaction to the 'returns madness' in online shopping. In Germany, 110 million items of clothing ordered online are returned every year. 30 percent of these no longer end up in the primary goods cycle, and a considerable proportion simply ends up in the trash. Of the almost 80,000 tons of old textiles generated in Berlin each year, 43,000 tons are incinerated.



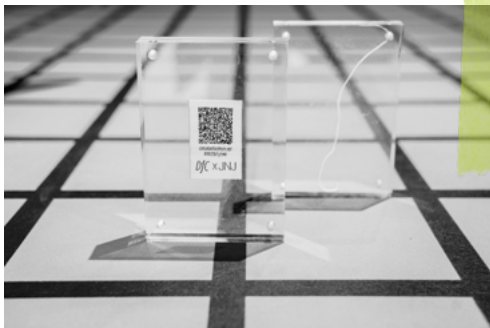
CIRCULAR.FASHION

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circular.fashion, founded by Ina Budde and Mario Malzacher, is a company for sustainable transformation that drives the implementation of a circular economy in the fashion and textile industry using innovative systemic and digital solutions.

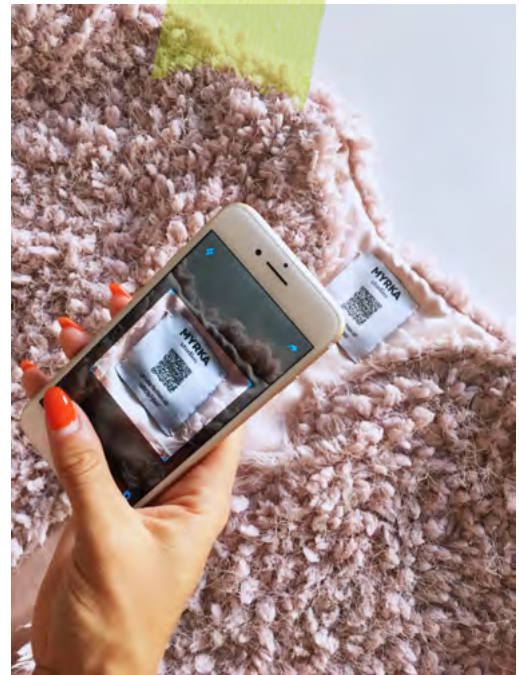
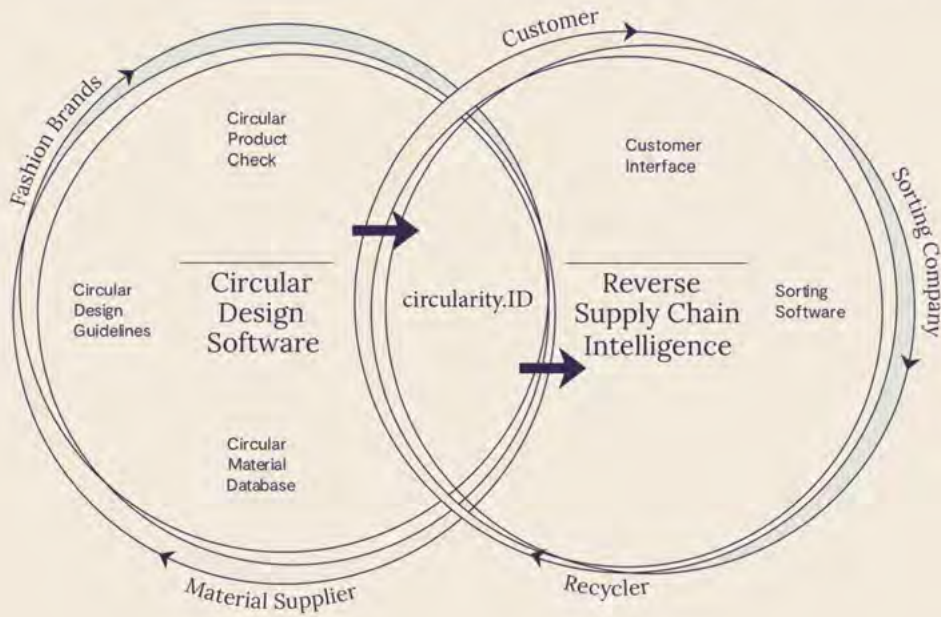
The Berlin-based startup offers a platform that gathers knowledge and tools to make garments circular from the outset and ensures a transparent flow of information between all stakeholders in the supply chain. The business supports fashion brands through consulting and workshops that develop solutions for circular products and business models. In addition to training, circular.fashion operates a digital platform, the Circular Design

Software for material suppliers, fashion brands, and recyclers, which offers a material library, design guidelines, and a product development tool. Garments are tagged with a circularity.ID to inform end-consumers and sorting businesses of return points and material composition, with the goal of recycling and regenerating textiles back into new fibers in a closed loop. The company believes that a holistically conceived shift to a circular economy is essential if we are to survive as a society in the future. The circular.fashion system is designed to enable today's products to become tomorrow's resources.



(alle Bilder.) © circular.fashion

The circular.fashion system



SILFIR GmbH
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SILFIR



(alle Bilder): © SILFIR GmbH

The *Soft Workwear Uniform* is a simple unisex two-piece that is suitable for all body shapes. SILFIR, founded by Hannah Kromminga, defined its design values as comfort, wearability, durability and timelessness and as an overall offer for future-oriented consumers who desire a minimalist wardrobe in the spirit of zero waste.

SILFIR offers a holistic Cradle to Cradle® service: Customers have the option of sending in garments for touch-ups, color refreshing, or the recycling program, which extends the life of each garment. The consumption of water, CO₂ emissions, and waste is reduced by up to 60 percent when garments are worn three times longer than usual.

The outfit is made of Lenzing-Tencel, a cellular fabric obtained from sustainable forestry. The production of the fabric uses approximately 50 percent less water than

other natural fibers or viscose. The fabrics are made and sewn exclusively in Spain and Portugal to ensure short production routes and fair working conditions. As soon as the lifecycle of the garment comes to an end, SILFIR recycles the fabric into yarn and uses it in the production of its own sweater.

The Soft Workwear Uniform is equipped with the circularity.ID developed by circular.fashion.



MANTECO S.P.A.



Manteco S.p.a.
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The textile manufacturer Manteco S.p.a. from Prato has a long history of sustainable practices. In 1943, Manteco was founded as a small spinning mill by Enzo Anacleto Mantellassi, who began producing sustainable yarns by recycling old military clothing and blankets. The company's commitment to sustainability has remained unchanged to this day; the company now uses its generations of knowledge to find innovative solutions to the challenges of the present. Circularity is an important solution strategy. The design of new collections is based on the avoidance of waste, the recycling of products and materials, and the regeneration of natural systems.

Manteco's *Project43* tackles the problem of textile waste generated before the fabric reaches the consumer. Manteco offers garment manufacturers a partnership with the aim of recovering residual materials from the production process, regenerating them and turning them into new luxury fabrics. With the extension of the *Project43 – Project53* – the company is also making its textile recycling expertise available to garment manufacturers who do not use Manteco fabrics. In this way, even unsold or low-quality knitwear makes it into the textile cycle.



(alle Bilder:) © Manteco S.p.a.

RIFÒ - CIRCULAR FASHION MADE IN ITALY

Re-think Your Jeans is a collaborative circular economy project by Rifò, a Prato-based circular fashion brand founded by Niccolò Cipriani. Their innovative process feeds old jeans to the recycling process, putting into practice the principles of ethical and sustainable fashion.

The recycling project started in February 2020. The material cycle consists of several steps and requires the cooperation of different actors. First, the consumer checks the composition of the jeans to be recycled. All garments made of 95 to 100 percent denim cotton are suitable for collection. They then take the jeans to a collection point in a NaturaSi organic supermarket and receive a 10-euro voucher for the online store of the circular fashion brand Rifò. The network of collection points is constantly expanding but is currently still limited to the area around Prato.

The collected jeans are then forwarded to Recoper, a group of cooperatives involved in the collection and recovery of used clothing. After pre-sorting, the jeans undergo a revivification process at Pinori Filati, a manufacturer of recycled yarn in the textile district of Prato, which transforms them into new sustainable yarn. Without additional dyeing, the yarn is characterized by varying shades of blue.

The new yarn is used to create sustainable products at Rifò, such as bags, hats or a denim cotton sweater.



(beide Bilder:9 © Rifò S.r.l.)



Rifò - Circular Fashion Made in Italy
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STATEMENT: LAVINA MUTH

Corporate Responsibility Managerin at
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What kind of circular action do we need in the fashion industry in order for our society to become sustainable?

LM: „I believe that the fashion industry can generate ideas for social change, but I don't believe that society will become sustainable through the fashion industry alone. People and systems change the world, not technologies or individual industries. This is why I have great hopes that society will have the courage not only to redefine consumer behavior and the use of both finite and renewable resources, but also to make ownership more equitable.

As a sustainable fashion brand, we still want to lead the way and set an example, despite the great challenges for implementing a circular model! As a company, we can offer products and services together with our manufacturers, but above all we can inform and educate. And at the same time, everyone – our community, friends, and

customers – must join in. Without cooperation along the entire value chain, and that includes both industry and consumers, a circular economy will not be feasible. In the future, consumers will play a completely new role in the value chain, as they will basically become secondary raw material suppliers by using take-back systems to return their worn-out clothing to sorting, resale, rental, and recycling companies. It is therefore up to all of us to use resources as responsibly as possible! As an industry and manufacturer, we have extensive opportunities to scale this process, and thus a special responsibility.“

What role does material play in a societal transformation towards a circular society in your work?

LM: „Materials and supply chains are not only the focus of my work, but also „where the magic happens“ as I always say. It's not just about revolutionizing the industry according to ecological parameters, but more importantly about bringing value back into the supply chains and implementing smarter, regenerative systems. The fashion industry is a sector that was built based on exploitation and rests on modern slavery even today. Building the so-called „reverse material supply chain“ definitely has a transformative character: creating sorting, reselling, lending, and recycling companies generated jobs and old goods are given a new value. At ARMEDANGELS, for example, we founded the ARMEDANGELS Organic Farmers Association in India two and a half years ago, an association of almost 500 small farmers who are currently converting from conventional to organic regenerative cotton cultivation. We support our partners in the challenging conversion of agriculture and at the same time create fair and direct payment mechanisms. For us, this means a transparent and secure cotton source. The cotton is processed with other recycled fibers into circular textiles and turned into our great ARDMEDANGELS products. The project and our work in turn supports the local economy and promotes social justice. Nearly 40 percent of our small farmers are women.“

WASTE LOOPS

THE END OF WASTE

Linear industrial production processes often generate unwanted by-products that are understood as 'waste', for example animal organs from the slaughterhouse or unused scrap metal from the metal processing industry. Disregarding the potential of material and the resulting waste of material is baked into the industrial recycling system. This also affects individual consumer behavior. The following projects – in the spirit of circular material use – consider industrial waste streams as a valuable resource for new circular products and material systems. It is the responsibility of the designers to identify these potentials, to make them usable in the networking of different industries and disciplines and thus to give the material a second, third or tenth life.



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WYE

A world where there is no waste generation and every resource offers added value for the environment – this approach has become the mission at the design label WYE, founded by Franziskus Wozniak and Ferdinand Kraemer. In the long term, the Munich-based label wants to revolutionize the understanding of materials and their use, especially in the furniture industry.

Production exclusively uses resources that can be returned to their respective material cycle. The company's own wood-based material Neolign® was developed for this purpose. It consists of 83 percent chips, a by-product of the wood processing industry, thermoplastic polymers, and color pigments. Neolign® is suitable for processes such as extrusion, injection molding and 3D printing and can be reused in these processes at any time.

WYE opposes a culture of reduction and avoidance. The goal should not be to reduce a harmful footprint, but rather to increase positive impact on the planet. The label sees itself as part of an ecosystem and seeks to create products that have a positive impact on people and their environment.



(Beide Bilder:) © WYE GmbH



FECAL MATTERS, 2019

The design project *Fecal Matters* by Nicholas Plunkett, Elisabetta Goltermann, Melissa Kramer, and Lobke Beckfeld was created in the greenlab of the Kunsthochschule Weißensee around the theme Green Design 8.0 – Circular City: Mapping Berlin’s Waste Streams. The students investigated the design potential and possible applications of recovered cellulose from toilet paper. Can recycled toilet paper be worn as clothing on the body or even be used as eating utensils?

Fecal Matters addresses issues of personal habits and their social context. Toilet paper has a bad reputation because of its cultural connotation, its origin, and its use. So, where exactly are the boundaries of an interaction with used hygiene products? Where is the limit after which there is only disgust, and can design push said limit? The project uses a communication and design strategy to encourage an open-minded interaction of waste products and new materials. At the same time, it informs about the ecological footprint of toilet paper.

Nicholas Plunkett’s master thesis *11 percent* is in line with the concepts behind *Fecal Matters*. The dinnerware set is a critical design project and is made from recycled porce-

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© Lobke Beckfeld, Elisabetta Goltermann, Melissa Kramer, Nicholas Plunkett

11 PERCENT, 2021

lain and reclaimed cellulose. The cellulose fibers contain 11 percent water residue. These can have traces of fecal matter, hormones, medications, and other minerals. In the porcelain, these residues sinter and show up as black inclusions and were identified as calcium carbonate, copper, zinc, iron, and aluminum. The tableware is hygienic, as it is fired at 1250 Celsius, and conventional malignant bacteria die off at 130 degrees Celsius. The bacteria are eliminated, but what about the disgust? Does it persist? In project *11 percent*, the digested and forgotten food returns to the table and is immortalized in the dishes



© Nicholas Plunkett



INNER VALUES 2018

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Tobias Trübenbacher's *INNER VALUES* project is about soft, aesthetic seating furniture made from the leather of tanned cow intestines and pig bladders. The furniture was created as part of a 2018 semester project at the Hochschule für angewandte Wissenschaften in Munich. The project wants to bestow positive values on the traditionally negatively associations with what is considered waste products from the slaughterhouse and thereby question today's waste culture as a whole.

Prices for animal products have fallen significantly with the introduction of factory farming and industrialized food production. While farm animals were assigned a particularly high value as a holistic resource only a couple of decades ago, production today uses only those parts of an animal that are easiest to process and guarantee the highest profit. This has led to a situation in which more



(alle Bilder:) © Tobias Trübenbacher, Nikolai Marciniowski



than half of a slaughtered animal in Germany is sent directly to the rendering plant, which means, it ends up in the garbage can.

With the increasing alienation from the slaughtering process, consumers grew more and more disgusted with animal by-products. The majority of people considers offal to be repulsive and inferior. But is offal really nothing more than garbage? Is our rejection of these products justified? Or, if we must kill an animal, shouldn't we use and appreciate all its resources?





(alle Bilder.) © Lilli Margarita Gruber

STAHLWANDEL, 2020

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Stahlwandel is the bachelor project of Lilli Gruber, student at the Hochschule für angewandte Wissenschaft und Kunst Hildesheim / Holzminden / Göttingen. Her project addresses the environmentally harmful extraction of hard coal and iron ore and its further processing into steel. Steel production not only pollutes the air, it also extracts considerable amounts of water from nature and pollutes it after use with the pollutants that remain in the water.

In order to conserve resources and our environment, *Stahlwandel* objects are made from directly recycled new scrap, i.e., production waste, such as laser cutting scraps or punching waste. This allows us to avoid the emissions that occur during production, but also during the recycling of steel in the steel mill.

The original form of the production waste is partially preserved, thus revealing the special history of the raw material. *Stahlwandel* objects are intended to bring joy to their user and, as a 'conversation piece', to prompt a discussion around the social and ecological consequences of steel production.

Stahlwandel highlights the diversity in the use of new scrap: Four different designs for a small-series production of tools were created out of the same production waste: pry bar, hoe, and knife.





© Lucas Riedl

RELEA

Burg Giebichenstein Kunsthochschule Halle

Alles im Griff, 2020

Lucas Riedl

www.lucasriedl.de

Gemischtes Doppel, 2020

Sina Dreßler

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RELEA, ALLES IM GRIFF, 2020 GEMISCHTES DOPPEL, 2020

RELEA (REcycled LEAther) is a new type of material made from recycled leather. The chair *Gemischtes Doppel* and the table *Alles im Griff* stem from a design project at the Burg Giebichenstein Kunsthochschule in Halle lead by Prof. Klaus Michel and Maren Englisch. The project focused on students testing RELEA's potential for furniture construction.

The project is a reaction to the approximately 1.4 million tons of leather waste generated worldwide that cannot be recycled and is therefore incinerated. The production of upper leather consumes more energy than the production of steel.

Unlike previous recycled leather, RELEA has a high load-bearing capacity and can be used as upper material. The material is easily deformable and tear-resistant, which enables deep drawing, mold gluing and similar processes.

Alles im Griff

Alles im Griff is a desk with a work surface and drawer handles, made of RELEA, designed by Lucas Riedl. The detail of the handles is what gives the object its name. The handles combine the innovative properties of the leather fiber fabric: it is dimensionally stable while also flexible. The handles emerge from the surface as if they were made from a single mold, creating a minimalist and functional detail. Between the two tabletops, the table offers generous storage space and allows for clever cable management. The leather work surface has a pleasantly soft feel and ensures particularly quiet typing and computer mouse movements. The easy assembling of the drawers and tubular steel legs with the birch veneer plywood tabletops allows for a quickly installed and individually adaptable workstation.



© Sina Dreßler

Gemischtes Doppel

Gemischtes Doppel is an armchair designed by Sina Dressler, whose arm and backrest are made of RELEA. The rectilinear chair frame made of solid ash wood is framed by two curved and molded parts. Like an embrace, the curved backrest and generous seat nestle around the seated person and provide a comfortable seating experience. The flexibility of the material and the soft yet non-slip feel support this effect. Under the armrest, the molded parts are screwed to the chair frame. This concealed connection supports the overall minimalist impression of the chair.

The pressure-pressed shells of the armchair consist of five layers of material with different properties. The necessary stability is created by the inner layers of denser leather fiber fabric in combination with veneer plywood. The top layer is covered with an anthracite leather fiber fabric. The detail of the differently colored layers masking up the form-glued shells is the chair's guiding design feature.



(alle Fotos) © Esther Kaya Stögerer, Jannis Kempkens

BLACK LIQUOR, 2020

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BLACK LIQUOR is a project by Esther Kaya Stögerer and Jannis Kempkens that explores the creative potential of black liquor.

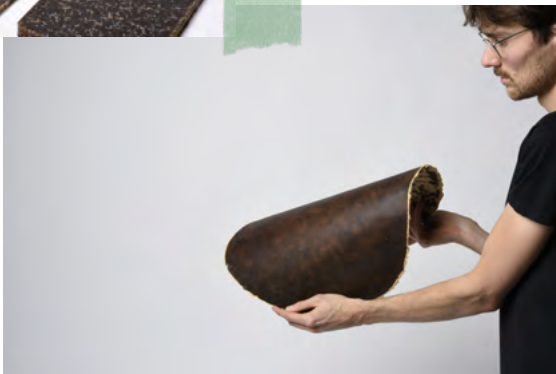
Black liquor is a by-product of the paper industry and a largely underestimated material. In Germany, 98 per cent (50 million tons per year) are incinerated. But black liquor contains a promising biopolymer: lignin. As the second most abundant polymer on earth, it could play an important role in the transition from petroleum-based to biobased materials.

Designers and scientists cooperated in their research on BLACK LIQUOR and developed new and possible future applications for the polymer. The resulting materials are harmless in production and use and are based on renewable raw materials and industrial by-products. As such, they help to transform previous waste streams into new material cycles and prevent CO₂ emissions. This has resulted in a range of material properties and applications: from solid board materials for furniture construction to flexible leather alternatives for the fashion industry.





The project was created in 2020 in cooperation between greenlab, Kunsthochschule Weißensee and the Fraunhofer Institute for Wood Research, and the Wilhelm-Klauditz-Institut WKI as part of the research project *Thinking Lignin Design*, funded by the Fraunhofer Network Science, Art and Design.



EPITHEL, 2018

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Thalea Schmalenberg's project Epithel tested the potential of lime from discarded oyster shells and ceramic industrial waste for the production of ceramic jars. The project was created at the greenlab of the Kunsthochschule Weißensee. Shell limestone is a natural resource for calcium carbonate, which is needed, among other things, in the production of ceramic glazes. The project name refers to the oyster's epithelial cells, which are responsible for the structure of its shell. The shell accounts for around 90 percent of its sales weight. Against the background of the large quantities of oysters consumed daily in restaurants and the shell waste this produces, the project asks the question: To what extent and in what context can the calcium carbonate of the lime mined on a large industrial scale be substituted by this naturally occurring raw material?

The second half of Epithel addresses ceramic waste. Every day, several tons of ceramic waste from industry are dumped in landfills, creating a significant problem. The ratio of end products to production scrap is 1:5, which means that only about 20 percent of the products actually end up for sale. While scalded clay can be ground and added back to the fireclay, glazed ceramics have no defined secondary use.



(Alle Bilder:) © Thalea Schmalenberg



Epithel and its objects summarize the attempt to bring two waste materials of different contexts back into a sustainable cycle and to juxtapose the resulting, different material qualities. Shell limestone forms the main component of the developed glazes, which provide a visual contrast to the built-up surface structures of the 3D-printed material synthesis of ceramic fracture and shell limestone. Epithel elevates waste materials to an aesthetic level and reveals their potentials in the circular use of material.

STATEMENT: SUSANNE SCHWARZ-RAACKE

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**What responsibilities could and should designers
assume in promoting circular social actions and
practices?**

SSR: „With their curiosity and their special ability to think outside the box, designers can initiate development processes and create the images, models, and visions of a successful future that we need in order to finally take action.

A socially, economically and ecologically functioning circular economy requires an extremely wide range of expertise, which is why we need to collaborate with different social actors and scientists, whose findings influence our design concepts and prototypes. We are accustomed to working with open-ended questions and to developing the appropriate knowledge methods in order to design solutions. In this sense, designers are in a position to combine many parameters together in a meaningful way.

At the greenlab of the Kunsthochschule Weißensee, we have been working intensively on material cycles in recent semesters and, together with other research institutions, have developed materials that can be recycled, examined them for the possibilities of different processing techniques, and demonstrated their potential for application. These approaches are promising and must now be examined for their scalability.

The generated experience-based knowledge must be documented in such a way that it provides the basis for further knowledge generation. Because there are already very many interesting and good examples on which we can build.“



What role does material play in a societal transformation towards a circular society?

SSR: “Recyclable materials are an important prerequisite for the transformation to a circular economy. Instead of ‘disposing’ of or incinerating materials we absolutely need a different resource management and new logistics systems that take into account the return, separation, sorting, and recycling of materials and products. Resources are finite and should remain in use. Products should be adapted to their service life –there are no sustainable materials per se, but they need to be analyzed and optimized depending on their context.”

SPECULATING LOOPS

DESIGN EXPERIMENTS FOR POSSIBLE FUTURES

The tradition of design as a proven means of solving problems goes back to the discourses on the holistic design of our living environments at the end of the 19th century. In current times of ecological, economic, and social crises, strategies and cultural techniques of design are gaining new relevance with regard to future-oriented action. This is demonstrated by the more recent design approaches of the last ten years, such as critical or speculative design. On the borderline between art and design, speculative designers, such as those represented in *Speculating Loops*, create objects or installations that draw attention to a specific ecological, political, or technological problem and provoke thought with playful,

shocking, or humorous narratives. It is not primarily about the design of new utopias and new things of use, but about the responsibility of designers and the possibility of creating alternative present designs and future scenarios.



(alle Bilder:) © Andi Wagner

METASTABIL, 2019

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For his master's thesis Andi Wagner developed *metastabil* at Burg Giebichenstein Kunsthochschule, Halle, in 2019: a speculative scenario of objects based on decay as a design principle. A metastable design proposes future (un)viable options for how we might confront Anthropocene-related issues on a material level. It questions the conventional division into stable and unstable structures and shows the potential in addressing this dichotomy. Metastable design attempts to counteract the accumulation of things that sooner or later get in our way. The smallest possible intervention in various connecting structures leads to the exhibited objects disintegrating





into their individual components. Instead of making materials biodegradable or products repairable, the objects are preserved on a material level in such a way that they can be used to make something new. There is no need for costly deconstruction or complex reprocessing of the raw materials or individual elements. The 'reset button' is immanent in all objects since each object can be reconstructed after its decay.

Among other things, this is made possible by existing predetermined breaking points, which make the decay predictable and controllable. Predetermined breaking points prevent individual elements from taking damage elsewhere and in turn enable resetting and rebuilding the same or a different structure. In this way, a metastable design shifts the emphasis and establishes a balance between the construction and deconstruction of objects.



THE GREAT SMOG ,2019



(alle Bilder) © Ina Turinsky

Ina Turinsky

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The Great Smog is a speculative design experiment on the Anthropocene. It was developed by Ina Turinsky from Burg Giebichenstein in Halle as part of her master's thesis in 2019.

Based on the historical event in London in 1952, the title *The Great Smog* symbolizes a nebulous time in which the boundaries of the 'natural' and the 'artificial' were blurred. As ecological problems intensify, a concept is introduced into scientific and public discourse that unifies the changes and traces them back to man-made influ-

ence: the Anthropocene. At the center of the practical debate are altered material cycles. Natural raw materials are taken from the environment, made usable for humans and eventually find their way back into the ecosystem in a completely new form. How is nature going to react to these new cycles?

The observations result in a speculative scenario based on three fictitious apparatuses, which exaggerates future raw material mining in the technology of „animing“. The scenario focuses on the industrial mining of metallic



raw materials at a time when conventional ore mines are exhausted. With the help of „Animinig“, metals can be extracted from animals. Three mining methods are used in mobile grazing facilities: Dialysis makes so-called „critical loads“ in animal blood accessible. The shearing device combines the cutting and burning of collected fur in a machine. The milking machine makes use of the dialyzer’s mode of operation. Coupled to the teat cups, the milk containing raw material is passed through two filters. Metallic components are selectively bound by means of diffusion.





(alle Bilder.) © Sabrina Großkopp

SCHLARAFFENSTADT 2040, 2018

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Schlaraffenstadt 2040 is a design fiction for the city of Oberhausen, where in the future all inhabitants will be supplied with urban-produced food. In addition, Oberhausen will use Germany's first recycling system for wastewater from the entire city. The work was created in 2018 as a master's project by Sabrina Großkopp at Folkwang Universität der Künste.

In 2040, Oberhausen city dwellers will produce their own plant nutrients for urban food production. A bonus system literally turns excrement into gold: garbage chutes connected to the sewage system and public toilets are equipped with sensors. If excrement or organic waste is shredded and flushed away, users receive bonus points credited to their nutrient accounts. These can be re-





deemed for new food or fertilizer. At the city's wastewater treatment plant, the waste is processed into high-quality liquid plant food and returned to consumers. The plant nutrients can be obtained via so-called fertilizer cans and mixed as needed for the cultivation of food crops.

In today's wastewater treatment plants, the substances filtered from the water are mainly incinerated. Valuable nutrients for the cultivation of food crops are lost. The design fiction shows how possible elements of a nutrient cycle system could be designed and function when the system has already been extended to an entire city and made the daily-life infrastructure of its inhabitants.





© Mind the Fungi, Foto: Custrim Cerimi

MIND THE FUNGI, 2018-2020

Mind the Fungi is an artistic-scientific research project that explores the potential applications of fungi and fungal biotechnology. It began with several forest field trips in the fall of 2018, where tree fungi, such as tinder fungus (*Fomes Fomentarius*), were collected from damaged or dead tree trunks. Fruiting bodies of fungi consist of tightly packed microscopic cell filaments that, invisible to humans, also pass through wood, soil, and other substrates, thereby forming a finely branched three-dimensional growing network – the mycelium.

In the course of research at the Department of Applied and Molecular Microbiology at the Technische Universität Berlin, headed by Prof. Vera Meyer, and the Department of Digital and Experimental Design, headed by Prof. Sven Pfeiffer, methods and technologies were developed to produce composites from the tinder fungus and test them

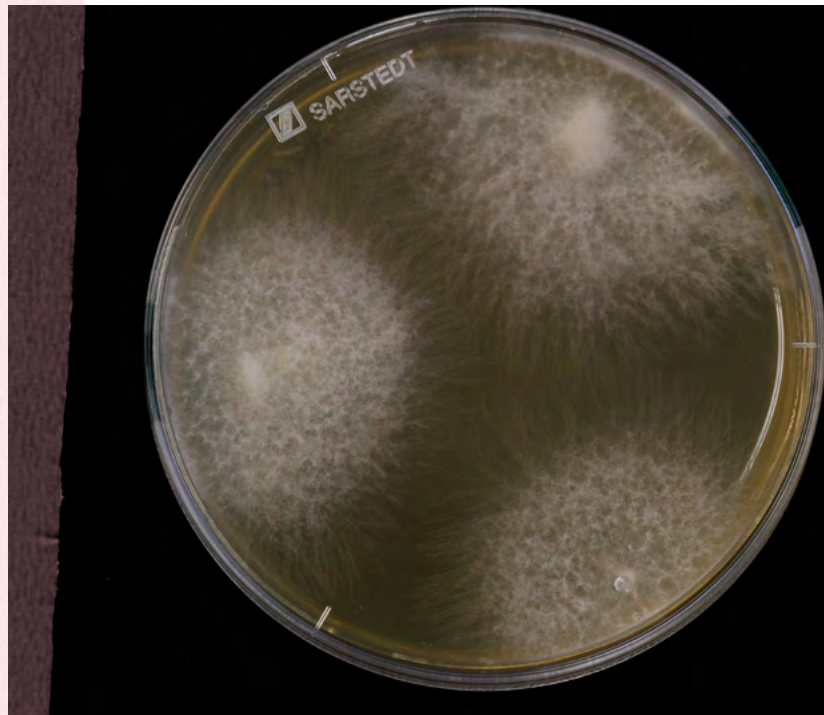
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© Mind the Fungi, Foto: Custrim Cerimi

for potential uses in the building materials industry and architecture.

The starting point for the collaboration was the mushroom brick shown here, a three-dimensional mushroom-plant composite based on hemp hurds. Based on these initial results, speculations could be made about future construction with mushrooms: Are mushrooms the concrete of tomorrow? Will people in the future be able to grow their own homes from local mushroom cultures and wood residues from native trees? To what extent do we leave the design of the house of tomorrow up to the mycelium?



© Mind the Fungi, Foto: Bertram Schmidt

STATEMENT: MAREIKE GAST



**Professor for Industrial Design, Material I
Technology I Sustainability
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discuss a wide variety of product (the life cycle phase of use is often more relevant than that of production).“

What role does material play in a societal transformation towards a circular society?

MG: „Materials and resources are the central starting point and motivation for a transformation towards a circular society – it’s about (radically) slimming down our resource consumption. The circular economy or society, which aims to use materials and resources longer and more intensively (instead of constantly mining or planting new ones), plays a role in this. Circulating materials alone, however, are unlikely to be enough to achieve the desired goal – as desirable as the idea of infinite production and consumption as long as you maintain a material cycle is. It is not even theoretically possible to obtain materials of the same quality without loss: Recycling metal alloys often does not allow recovery of all components, paper fibers shorten with each recycling, pencils are even intended for abrasion, just to give a few examples. In order to exploit the potential of the cycles, it is necessary not only to look at individual materials and recycling technologies, but to network many actors. Design is able to conceive and test concrete applications and products in iterative and explorative processes. Above all, participatory design methods favor multi-perspective views. Exploratory material and technology experiments also contribute to leaving familiar paths behind and open up new possibilities.“

What is the role of speculative design in promoting circular social action and practices?

MG: „A transformation of social action is not something that can and should be planned and directly shaped. Rather, scenarios and artifacts that can be experienced enable a discourse on which paths are individually and socially desirable. Experimentation and diversity play central roles in this process. Design in general, not just speculative design, often functions as a key element in interdisciplinary collaboration and corresponding communication through its unique ability to abstract and represent all perspectives, aspects, and contexts. It builds an important bridge between disciplines and users. In the design process, the development of scenarios and artifacts – at the level of material, technology, product, user, businesses, and structural levels – concepts, ideas or even systems are not only conceived and formulated, but also visualized. This makes it possible to experience and

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