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METABOLISM
– ‘Sustainable
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A Possible Role For DIY Materials in Prototyping Sustainable Futures

Author: *Prof. Aart van Bezooijen, Paula Rache*

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Short Bio of the Author: *Born in Berlin, Paula Rache is a graphic designer and researcher. In her freelance work she focuses on connecting design and society in order to strengthen people's critical and creative thinking. Aart van Bezooijen is a Dutch industrial designer with an obsession for materials. He established a collection of materials for teaching at the "Burg Halle" and currently works as a Professor of Material Driven Design at the Free University of Bozen-Bolzano. Material Stories is the focus of Paula and Aart's joint work between collaborative exhibitions, publications and interdisciplinary workshops.*

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Abstract

Materials and design develop together. Due to their mutable character, understanding materials requires personal engagement with matter. The importance of new materials is often discussed in the context of innovation but a perspective that looks beyond economic issues allows a more conceptual approach to materials in design. DIY materials focuses on creating materials by ourselves including hands-on experimentation and often involves (re)considering overlooked and waste(d) resources. This group of creators, or material designers can be seen as a new group of players in the field of design working towards a responsibly designed future. Creating new material aesthetics proves to be powerful in sparking our imagination. Combining DIY materials with digital tools generates a kind of hybridisation of materiality supporting visual storytelling and future-thinking. The selection of material ingredients can help in focusing on specific scenarios. The use of DIY materials in scenario making can be an effective tool for futures related studies such as speculative design and eco-social design. We see a strong potential for DIY materials combined with digital tools in the context of future scenario making for supporting the ability to give direction to ones' own future.

About Materials and Design

LOOKING BACK

History shows that new forms and aesthetics result from using a new or unused material, while in other instances the material or manufacturing process is developed to realise the designers' ideas. The development of plastics opened up a whole new world of aesthetics and possibilities for designers back in the 1960s in the same way digital manufacturing is doing it today. In short, it is important to see that materials and design develop together.

UNDERSTANDING MATERIALS

The ongoing development of materials and design demonstrates their dynamic and mutually beneficial character. Also, due to the transformable character of materials, we cannot rely on general or indirect knowledge. "Plastics can be as clear as glass, as sharp-edged as stone, and as metallic as aluminum. Aluminum can look like quicksilver, wood can look like plastic" (Antonelli, 1995). Understanding materials requires personal engagement with matter in order to explore its' qualities and opportunities based on its' mutable character.

NEW MATERIALS

The importance of materials research and the application of new materials are often discussed in the realm of new product development. 70

percent of all innovations in Germany are related to materials (Fraunhofer, 2016). This demonstrates the role and importance of materials in today's economy which is highly competitive and driven by an ongoing development of new products and solutions for both consumer and business markets. Within a growing economy, developing new materials and technologies is key in keeping ahead of competitors on a global scale.

NEW CONTEXT

But what happens when we shift the perspective on materials and design away from economics? Also, seeing design merely as a practice to turn material resources into future objects would be too narrow a view. Due to the growing resource scarcity and environmental pollution resulting from years of ignorance, many young designers are rethinking their role in society with the possibility of becoming practitioners that help us to move towards a less consumption based and more sustainable society. They develop a new mindset which allows a different and more conceptual relationship with materials in design that goes beyond form and function.

New Context – New Relationship

REDISCOVERING MATERIALS

Besides applying readymade materials developed by the industry, many designers are demonstrating a more hands-on approach by exploring and even developing new materials themselves (Franklin & Till, 2019). Designers such as Dave Hakkens play an important role as agents of change through alternative ways of processing (precious) plastics. More bio-based resources such as eggshells and human hair demonstrate the big diversity of materials which are being (re)discovered in the context of a more experimental and less wasteful society.

DIY MATERIALS

The do-it-yourself approach is not limited to products being self-made. Just like the shape of a product, materiality can also be designed. With the help of material ingredients and proven recipes, do-it-yourself materials allow a hands-on approach within the (material) design process, training our sensorial skills to better understand, create and select the appropriate materiality within your project. Creating our own materials goes beyond material selection in design and actually brings us back in touch with the stuff our world is made from.

WASTE MATTERS

What we consider waste tells us a lot about the use and abuse of material resources within our society. Working with industrial scraps or food waste as “material ingredients” can be very effective in addressing conflicts and creating awareness for societal issues. A good example is

Studio Basse Stittgen, who started working with a material made of cow blood, which sparked a conversation about the industrial processing of animals and why this cannot be left alone to industries, since it matters to our society as a whole and therefore calls for a wider debate (Müller & Bäumer, 2022).

MATERIAL DESIGNERS

Material designers can be seen as a new group of players in the field of design by finding new purpose through the design, redesign, reform, reuse and redefinition of materials which goes beyond the traditional design of things. The MaDe project demonstrates an important role of designers in demonstrating what a material can be in the immediate, near and far future, implementing positive social, economic, political and environmental change across all sectors towards a responsibly designed future (Clèrries et al., 2021).

Making Futures – Not Things

POWER OF AESTHETICS

DIY materials are often based on basic ingredients and shared recipes which can be used and adapted to ones' specific needs. A good example are Miriam Ribul's online recipes (Recipes for Material Activism, 2014) which documents both recipes and photos of the foreseen outcomes, demonstrating their qualities and aesthetics. Besides the actual use of self-made materials for applications – the process of creating new material aesthetics itself often seems to spark our imagination. Understanding the new material aesthetics often comes with "it feels like..." observations and "what if..." questions.

HYBRIDIZATION

Adding a digital dimension to the DIY materials can be a very powerful way of opening new perspectives during the process of creation and imagination. Digital photography, lighting equipment and even video animation make it possible to capture different material qualities such as translucency, surface textures, color gradient, elasticity, fluidity, etc. often revealing unseen details and unexpected properties. Low-tech materials and high-tech equipment seem to be a promising combination for visual storytelling, future-thinking, and serious play (Van Bezooijen, 2021). Bringing these material and digital worlds together has led to the hybridisation of materiality, image, light and sound surpassing the distinction of what is natural or artificial.

WORKSHOP REFLECTIONS

Combining the creation of DIY materials with the development of future scenarios can be done through different methods. Going from the physical creation of new material aesthetics to future-thinking related

to mental exercises can be quite a challenge but it seems to be facilitated by bringing in photography or video making. The selection of working materials or better material ingredients, can help to focus such as vegetal ingredients resulted naturally in a speculation on a “Plant Based Future”. Discussing scenarios through different aspects such as the future of food, clothing, health, politics, mobility and living are helpful in matching the (photographed) material samples as speculative artefacts within the scenario.

OPPORTUNITIES FOR DESIGN

The creation and use of DIY materials has the potential of becoming a practical tool in providing content for future scenario making due to its abstractness and ability to spark our imagination. The role of materials can create new opportunities for a more speculative design, which is more about the creation of ideas instead of things (Dunne & Raby, 2013). Also in the field of eco-social design, which is strongly related with the transformation of (future) societies, DIY materials can make transformation more tangible with the help of physical artefacts or spatial experience. Finally, the scenarios themselves often provide inside views from the thought experiments of the workshop participants in exploring alternative futures (Wie Wachsen? / How To Grow?, 2020).

Conclusion

We experience that there is a big step between hands-on making and imaginary thinking. The use of digital photography and video can transform self-made materialities into something more abstract and experimental, allowing us to look at it from a different and more speculative perspective.

Putting DIY material workshops in the context of scenario making allows the students to discuss and reflect topics on a more meta level which goes beyond the object or product. This is also why we stay on the level of using material aesthetics and do not continue any prototyping towards functional (product) applications.

The sensorial experience of the making process and the outcomes of the DIY materials process seems to be helpful in linking up with a future experience or situation. Material properties such as fragility, translucency, deformation, touch to the skin and even natural smell played a role in the discussion of people’s experiences in future scenarios.

DIY materials have a potential in finding new applications but with additional digitalisation and animation steps, they can be ingredients in creating speculative worlds and future scenarios. One of the strong

effects of adding a digital dimension is enabling the hybridisation of materiality.

The ability of making things ourselves supports ownership and self-empowerment in the field of design. DIY materials in the context of future scenario making might go a step further. With the help of material ingredients and appropriate digital tools we are able to support young creators in their ability to give direction to ones' own future.

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□ IMAGES_P0010-3



Material
Workshop
documentation

□ IMAGES_P0010-2

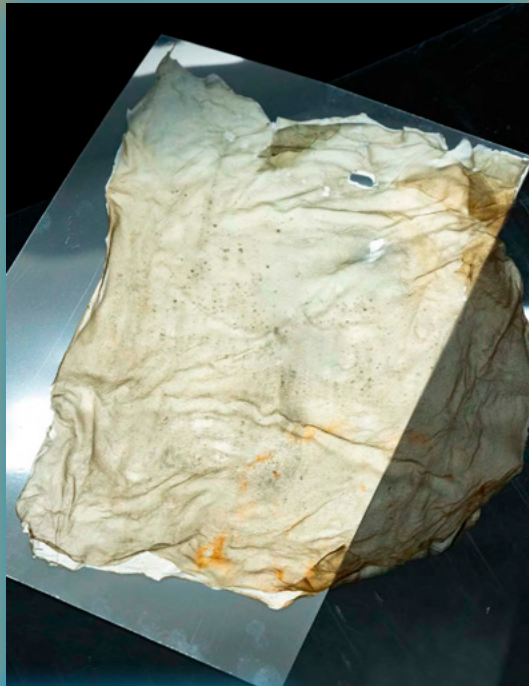


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Material
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documentation

IMAGES_P0011-5



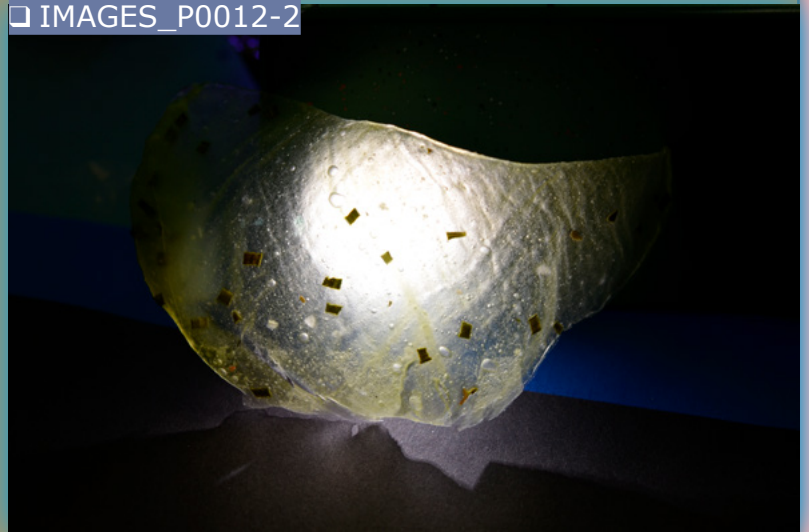
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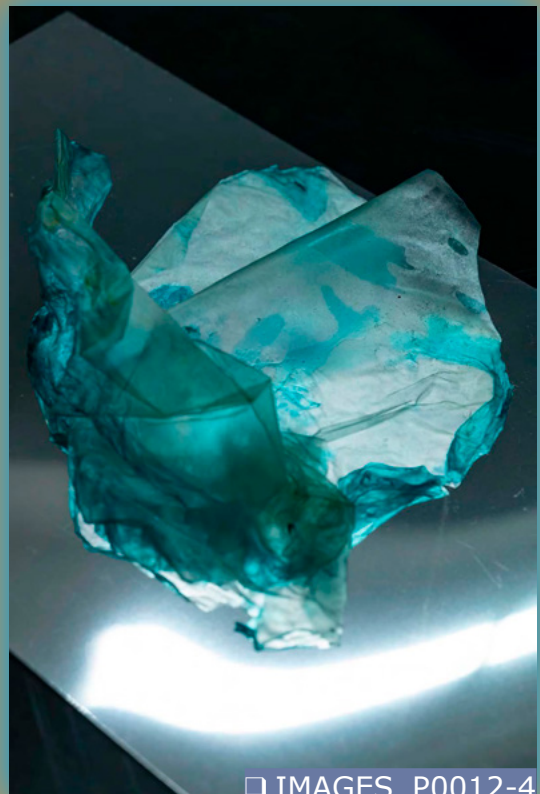




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Material
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Material
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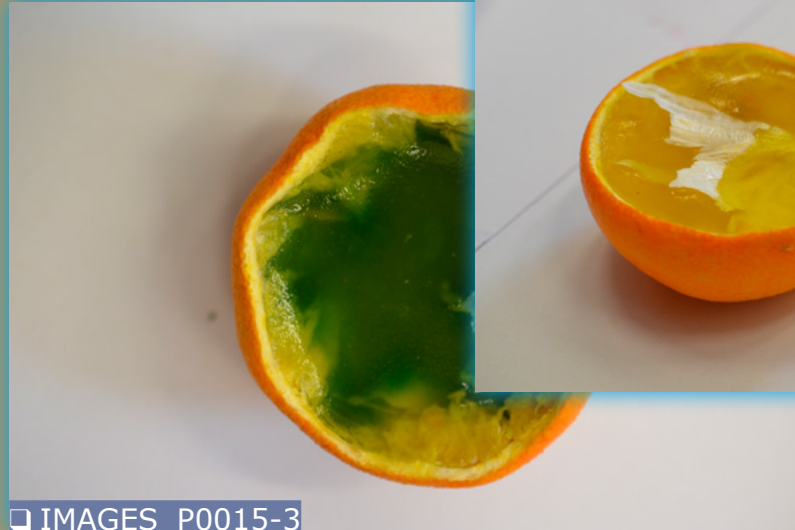
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Material
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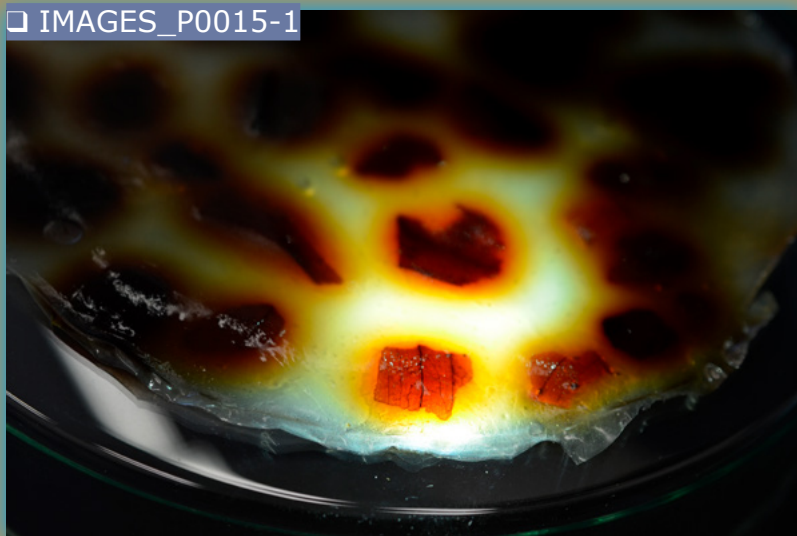


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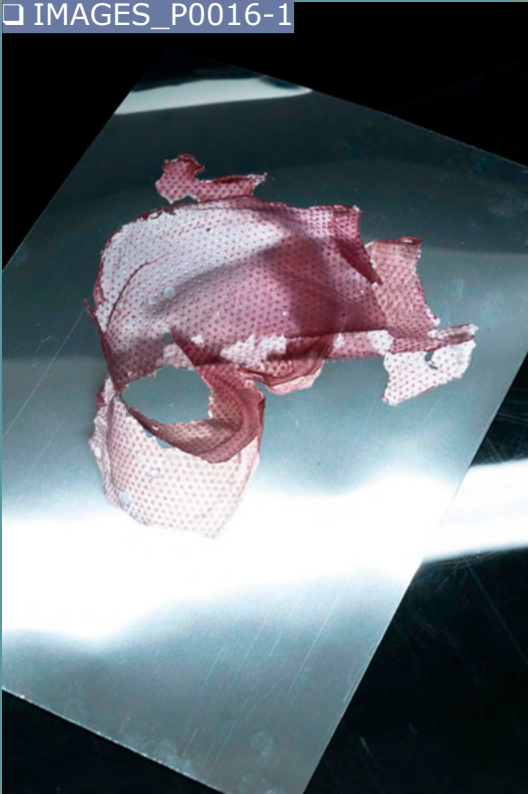


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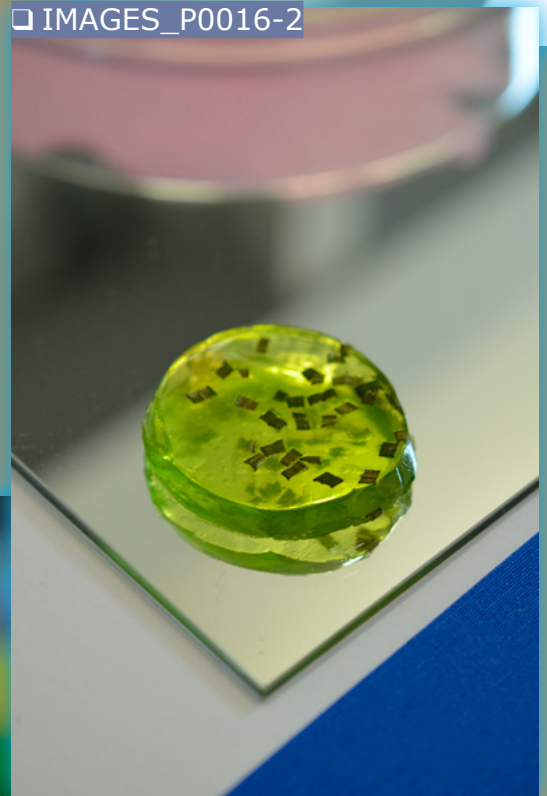
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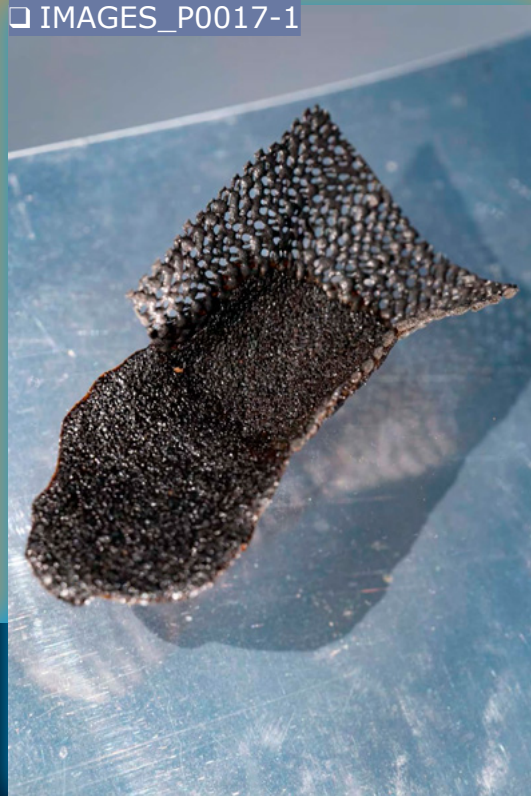


Material
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IMAGES_P0017-1



Material
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IMAGES_P0017-4



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