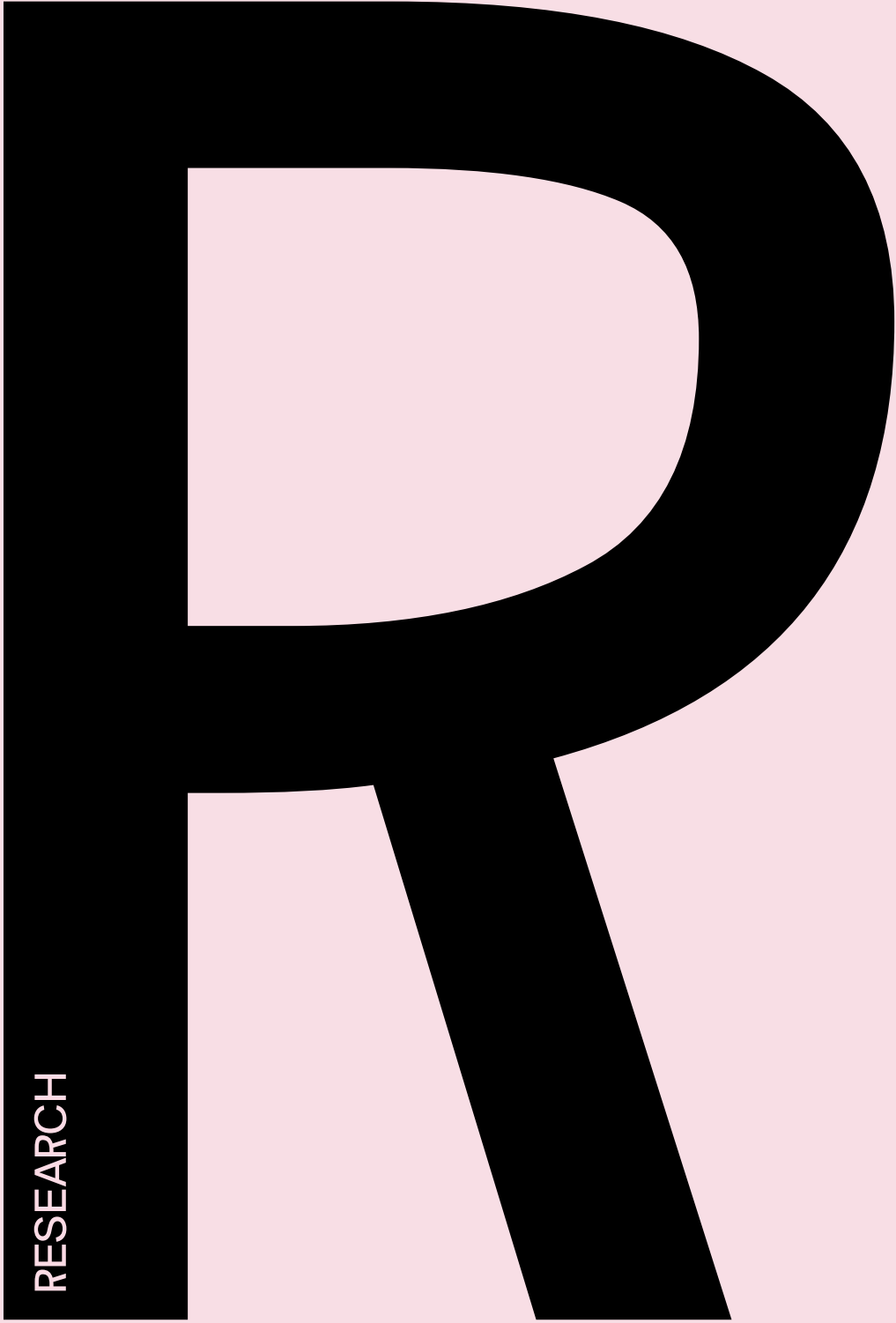


RESEARCH



The gulf between industrial design and cultural design has widened to the point of minimal contact. In this section we hunt down a renewed connect, looking to brands and designers committed to building this bridge; to those that invest in research and collaborations for products or systems that find a deeper understanding of the social and political role of design.

ABOUT

RESEARCH

REALITIES

Research + Realities

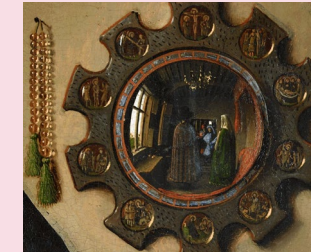
01	pg. 163	ETERNAL LIGHT AND A SPOTLESS MIRROR	Jordan Söderberg Mills
02	pg. 166	TOTOMOXTLE	Fernando Laposse
03	pg. 169	GREEN IN A BLUE WORLD	Candiani
04	pg. 173	RED MUD	Studio ThusThat
04-A	pg. 176	THIS IS COPPER	
05	pg. 179	FAMILIAR EMOTION IN A NEW MATERIAL	Ann Demeulemeester x Serax
06	pg. 183	PRINTING MICROALGAE	María Boto Ordonez
	pg. 186	PRODUCTS	Various

01

ETERNAL LIGHT AND A SPOTLESS MIRROR



1.



2.



3.

JORDAN SÖDERBERG MILLS

ETERNAL LIGHT AND A SPOTLESS MIRROR

Research + Realities

Light can be many things to many people; it can be a symbol of enlightenment, it can provide a source of energy to help plants grow, and, clearly without it we cannot see.

The 14th century painter Jan Van Eyck was arguably one of the first master light designers; he used light in his works to produce an impressive rendering of Catholic mysticism. In his *Ghent Altarpiece* painting (also known as the *Adoration of the Mystic Lamb*), which is currently being restored at MSK Ghent, Van Eyck manages to harness the presence of light from outside of the frame of his painting in a way that casts a shadow over the figures within it. This intriguing presence of the effects of light from a seemingly invisible external source has become the starting point for Jordan Söderberg Mills' latest site-specific installation, *Eternal Light and a Spotless Mirror* at Design Museum Gent.

Söderberg Mills was inspired by Van Eyck's masterful use of light. The work encourages a viewer to think more about the unseen omnipresent source of life, but also makes an audience contemplate what happens to the images they project outside the frame. Both ask questions of a viewer's acceptance of a light source they cannot see directly but can only experience in its refractions. On the one hand, Van Eyck used light as a way to build upon the 14th century Christian society's use of beautiful stained glass windows and ornate objects as an indication of God's majesty and leadership. Whilst, on the other, Söderberg Mills uses light in a way to reflect back and challenge the viewer's devotion to their hand-held stained-glass digital devices.

Eternal Light and a Spotless Mirror has allowed Söderberg Mills to frame his work around an idea rather

SODERBERGMILLS.COM

163



4. than from an experience. It's a research-led process, which has made this specific project different from his previous light explorations. The project is driven from a desire to explore the meaning of light rather than focusing on what light can do. In other words, it becomes more about the effect and the refraction than it does about the source.

Söderberg Mills' practice is about exploring the material qualities of light, scientifically understanding its behaviours and metaphorically uncovering its use in constructing society. With an education in both art history and architecture, plus the benefit of being a trained blacksmith, his studies have provided him with an insight into design, art and perception, which have culminated in a fascination of the physical nature of light. Söderberg Mills' works use light within his installations to create optical effects and challenge the mechanics of vision. Testing a viewer's understanding of the way they see, fascinates him "as once the piece is completed it becomes autonomous and the audience is free to independently interpret its existence in the space".

In physics, observing the reactions of a system to an input is important to developing an understanding of the forces involved, this is also true for Söderberg Mills' practice. The abundance of colours that are created as a result of his use of materials is just as important a reaction as the feedback he gets from an audience. Both aid in the development of his works and how they can be perceived.

Light from an external source does not go unnoticed; its power is seen in the art that is created from it.

Söderberg Mills explains the evidence of his thinking (the source) "often ends up in the physical object" (the outcome) refracting into an explosion of coloured light beams, interpretations, and personal experiences. The science of light supplies a plethora of coloured metaphors within Söderberg Mills' work that results in a new perceptual experience for its audience.

External Light and a Spotless Mirror, KleurEyck. Van Eyck's Colours in Design, Design Museum Gent. 18.05.2020 - 21.02.2021

→ Text by Emma Singleton

1. Adam from the Adoration of the Mystic Lamb, showing light and shadow. Yorck Pooject. License by Zenodot Verlagsgesellschaft.
2. The Arnolfini Portrait, Convex Mirror. Wiki Commons, public domain. It is believed that Van Eyck painted himself in the convex mirror at the centre of the work - an interesting convergence of subject and object that Söderberg Mills' mirror sets out to achieve with the viewer.
3. Adoration of the Mysis Lamb with inscription. Wiki Commons, public domain. The inscription above the Madonna in the Gent Altarpiece comes from the Wisdom of Solomon, chapter 7 verse 26: "For she is a reflection of eternal light, a spotless mirror of the working of God..." which Söderberg Mills explored literally and metaphorically.
4. Glass testing prototype.
5. External Light and a Spotless Mirror, installation view, Design Museum Gent.

Research + Realities

ETERNAL LIGHT AND A SPOTLESS MIRROR

Research + Realities

ETERNAL LIGHT AND A SPOTLESS MIRROR





1.



2.



3.

TOTOMOXTLE

Research + Realities

FERNANDOLAPOSSE.COM

TOTOMOXTLE

Corn is one of the top three most-grown plants in the world, however its main purpose is not to supply food for people but to be used to make biofuels, animal feed, ethanol, and bio-based plastics. As such, corn has largely lost its natural function and links to the land and communities it first emerged from.

TotoMoxtle is a new and precious material that is reconnecting corn back to its ancestry through collaboration with a small village in the south of Mexico. The material is a veneer made from the husks of ancient varieties of Mexican corn, producing a valuable and visually striking reminder of the native and natural colours of Mexico. What's interesting is that the project thrives off of the diversity of colours from this native corn – corns that have made them unfit for a modern market obsessed with standardization.

The community of Tonahuixtla in the south of Mexico is the epicentre of the material's production. The village is an undeniably significant place to be working with native corn; located in a valley where the farming of corn dates back for centuries. However, as Fernando Laposse – a product designer and a founder of the project – points out, the reintroduction of native seeds to be farmed once again in the village was no easy task. With some of the native seeds technically classed as extinct whilst lying dormant for years in the vault of a seed bank, it was no surprise that many in the village were sceptical of any success. It became clear to Laposse that it was a risk to ask farmers to plant these ancient seeds on a large scale due to the obvious fact that their land is where they make their living. Therefore, Laposse with the help of community leader Delfino Martínez, decided to reuse Martínez's grandad's old farming plot from the 1970s as a testing ground for the ancient corn to avoid jeopardizing the other villagers' livelihoods.



4.

Research + Realities

After trial, error, drought, advice from agricultural scientists and expertise given from the seed bank, Laposse and Martínez achieved a successful crop. The farmers in the village began to gain trust in the ancient seed varieties whilst also developing an understanding, through science, of why and how their traditional methods of farming worked so well.

From this moment production of the rare, valuable and precious new veneer material started. It began small and broke social traditions in the village by encouraging women to work; since most of the men had migrated to the United States in search of a better income to help support their families back in Mexico. Much like the growing of the native seeds the people of the village soon began to accept this shift in gender roles. They witnessed the project *TotoMoxtle* increase in yield, gain prestigious commissions and sustainably provide a salary five times the Mexican minimum wage.

The project works on two fronts: material development and social economic rejuvenation. Both of these are within an overarching philosophy to include the indigenous people in the world economy without sacrificing their core philosophies and vision of harmony with nature. In this respect, Laposse as an endemic designer, has become the Robin Hood of his field – taking money from wealthy and supportive collectors to give to those in the village who really need it.*

In the future the project is looking to invest more into the development of an infrastructure within the



5.

village, making the construction of the material more efficient to grow the output they produce.

TotoMoxtle, with its seasonal colour surprises, proves that diversity in native corn – opposed to that which is genetically modified – can and does provide a sustainable product, food, and a supportive income. It ensures that the material is intrinsically connected to the final product.

* Laposse is keenly aware of how material is sourced; he questions its links to nature, its locality and fosters local relationships at its origin. Just like a chef is concerned with his ingredients so too is Laposse about the quality of his materials.

TotoMoxtle is featured in KleurEyck. Van Eyck's Colours in Design, Design Museum Gent.
18.05.2020 – 21.02.2021

1. Separating the corn from the husk
2. Traditional farming bull plough
3. TotoMoxtle team of young mothers
4. Saul, who lives in the village
5. Fernando Laposse making the marquetry
6. (Next page) Hanging corn

→ Text by Emma Singleton



TOTOMOXTLE

CANDIANIDENIM.IT

Research + Realities

Research + Realities

When does a fad become fundamental? When it comes to the clothes we wear the answer is now – if not yesterday. We all know that fashion thrives on the next big trend; it’s the nature of the beast. But due to the fact that in the last few years the industry, under intense scrutiny, has had to reconcile itself to the harsh truth that it is heavily polluting, when it comes to cases like Candiani Denim – a family-run mill founded in 1938 and known for its eco-friendly product – one is allowed a little burst of hope.

In the landscape of the Ticino Park, 40 km north of Milan, the home of Candiani Denim is spread into two different plants that cover a total of some 170,000 sq m. Everything here looks as tidy as possible: perfectly groomed grass, boxwoods and bushes of geranium, the effect is like a set design for a Jacques Tati movie. And like all good old stories of Italian enterprises, you’ll find no discontinuity between family and business: the Candiani’s still cultivate a habit of taking a stroll around the headquarters, every day, after breakfast and after dinner.

But what makes this a peculiar case is that much before the conversation on sustainability started, the company was there already. “We are obsessed with efficiency, and efficiency is the precursor of sustainability,” says Alberto Candiani via email. At 37 years old, Alberto is the fourth generation in the family business. As proof of the mentality that exemplifies Candiani, he often brings up a little story about his father, Gianluigi: “He will probably tell you [the mill] is never clean enough and would spot a spider web from 50 metres...”

Such attention to detail goes some way to explaining why, season after season it is pushing boundaries. But even more crucial to its low-impact approach has been the environment where the mill is located. “You have to consider that all our investments were made in the town of Robecchetto, which is included in a national nature reserve. The region, the institutions, have given us severe restrictions in terms of environmental impact,” explains Alberto. Consequently, the production has been designed

GREEN IN A BLUE WORLD

At Candiani's Ticino Park site, things look quite different. "Innovation and sustainability go hand in hand," muses Simon. Here they have developed dyeing technologies that allow them to save on water, energy, and chemical auxiliaries. "What we aim to teach our clients is that these technologies can help you reach the result you want, while saving on environmental costs," he explains. "We design our fabrics according to the final look they want to get." So, for a no-fade or clean look they developed a nitrogen dyeing technology, called N-Denim, able to achieve a very deep penetration of the colour in the yarn, that reduces the number of dyeing baths from seven to two and avoids hydrosulphites and fixation agents. "But if you want the typically washed-denim look, the vintage vibe, there is an easy fade technology." Simon is referring to Indigo Juice, which keeps the pigment very superficial on the yarn, so that when jeans are washed in the laundry it takes only a fraction of water, chemicals, and energy. An additional technology used at Candiani is a patented one called Kitotex, which uses chitosan – a natural polymer obtained from the exoskeletons of crustacean – for the dyeing and finishing process. It allows for substantial reductions in chemicals (-70%), water (-50%) and energy (-30%), giving the opportunity to fully replace PVA and other harmful substances.

In 2013, Candiani's headquarters created its own development centre, aiming to supply clients with tailor-made wash recipes in order for them to get the best from each fabric – one similar was opened in Los Angeles

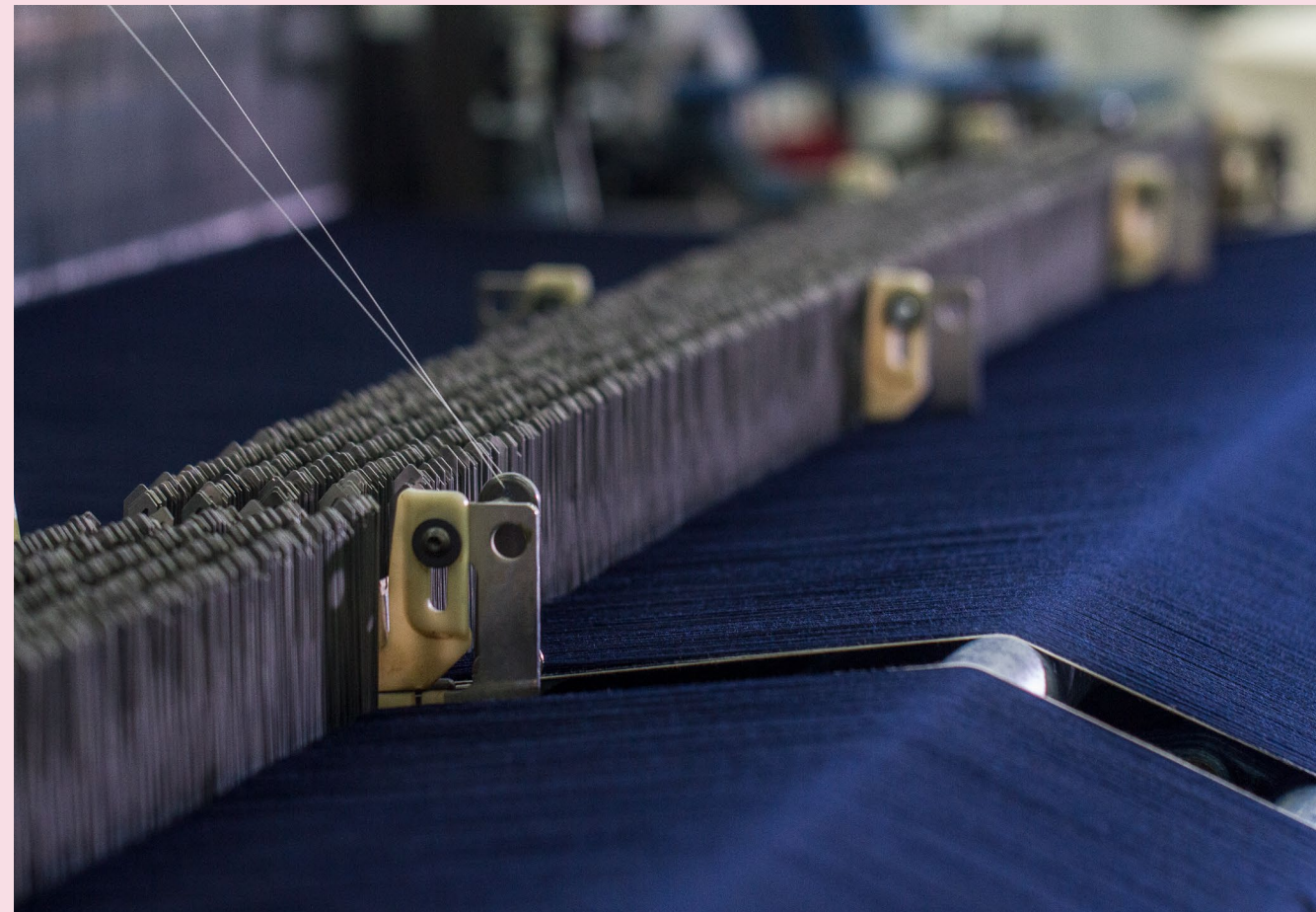
in 2016 for the US market. Today, the clients Candiani supplies can be recognized by 'Rivetto d'Oro' (a golden rivet) and among them there are Atelier & Repairs, Ace Rivington, MATIAS, Benzak Denim Developers, Denham, Closed, Dondup, Care Label, C.O.F. Studio (Circle of Friends), and Blue of a Kind.

"Often the good thing [about] a family business is not being driven by numbers, but by long-terms goals," adds Giuliani. "Our denim might cost three times the price than the one produced in Bangladesh, but the point is to make clients and final consumers understand the difference: some 30 years ago quality and price were directly correlated, but today the perception of values has been radically subverted. Nevertheless, what happened with food – we all know how to tell when it is good or not – can happen with clothing."

Candiani Denim's latest innovation is 100% biodegradable, stretch denim, which demonstrates that better denim can already be done. So, can a responsible response in the fashion industry definitely make a difference? "It will have to make a difference," says Alberto. "Fashion – as it is – will no longer be sustainable for the simple reason it's based on overproductions generating tonnes of landfill. I might say something crazy, but I claim we shall first of all produce less and then produce it better."

1-3. The materials, making and finished product of Candiani's low-impact approach to denim.

→ Text by Marta Galli



3.

RED MUD

04



1.



2.



3.

STUDIO THUSTHAT

RED MUD

Studio ThusThat has embarked on an exploration into finding new ways of transforming Red Mud – a waste of the alumina industry – into a series of ceramic objects. *Red* forms part of their work that is an ongoing investigation of industrial wastes and their uses.

Studio ThusThat, also known individually as designers Kevin Rouff, Paco Böckelmann and Guillermo Whitembury, is a studio concerned with bridging the gap between academic research, scientific industry, and the everyday.

This project is a simply worded but very complex investigation: how many people question not only where the materials we use come from but also what wastes are left in their wake? Some do, but... Aluminium for instance, is ubiquitous to our world and is touted as a material of the future, yet behind it are vast landscapes of industrial waste invisible to the public eye.

Bauxite residue, alternatively known as 'red mud', is a by-product of refining bauxite ore into alumina, the precursor to aluminium. It is composed primarily of metal oxides that lend the material a vibrant red colour. This waste packs an alkaline punch and is difficult to neutralize. Plus there's a lot of it; for every part of aluminium made, up to 2.5 tonnes of red mud is created, totalling to over 150 million tonnes of red mud produced annually. The residue is currently left in giant hazardous disposal sites visible from space.

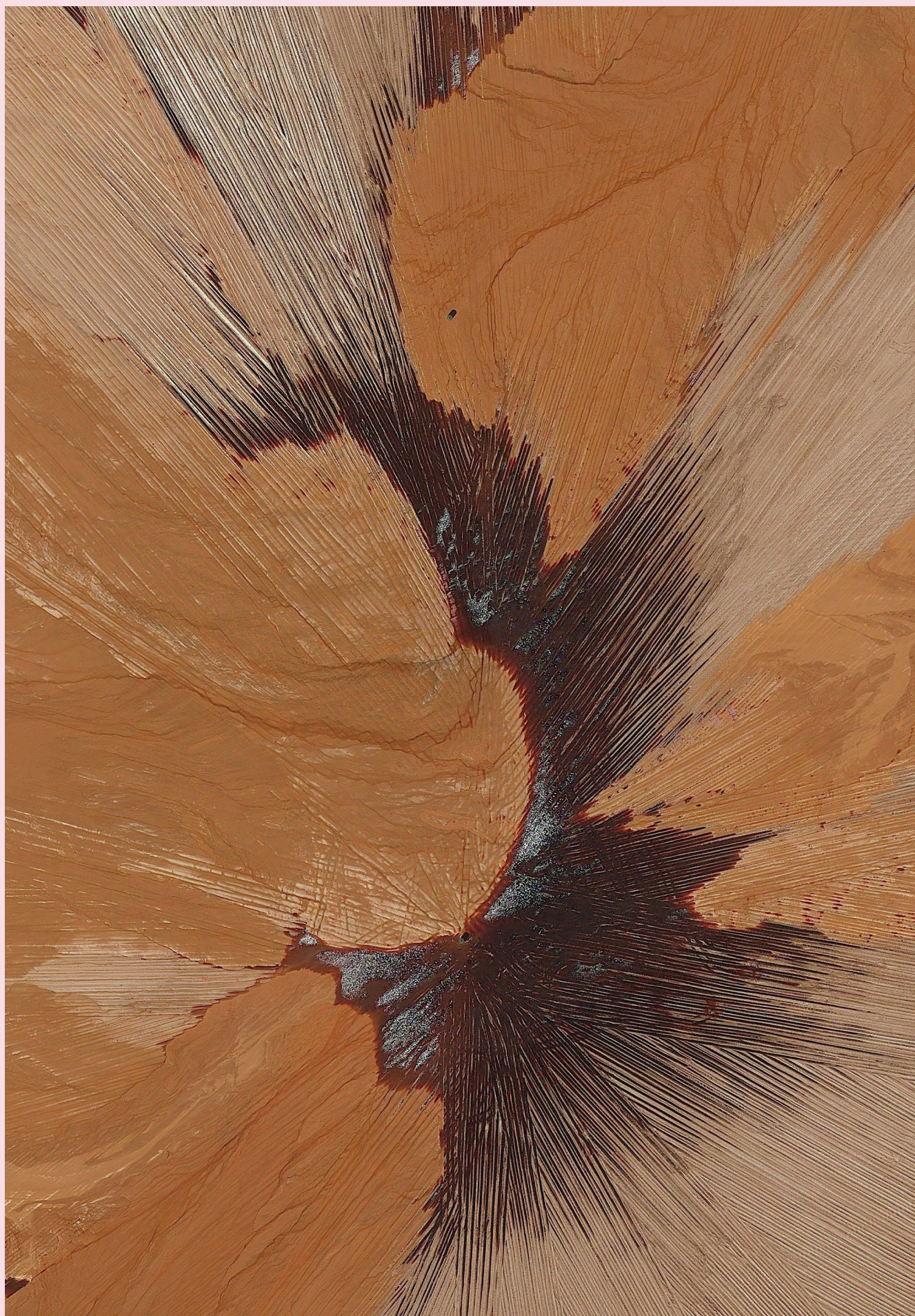
In *Red*, Studio ThusThat has intriguingly managed to combine scientific research with traditional craft methods to create a range of red mud tableware and tiles. The project was initiated when the team was enrolled on a joint master's programme at the Royal College of Art and Imperial College London. They worked in collaboration with Grymsdyke Farm, a material architecture research and experimentation facility just outside of

Research + Realities

Research + Realities

GREEN IN A BLUE WORLD

THUSTHAT.COM



4.

Research + Realities

RED MUD

Research + Realities

RED MUD



5.

London, fellow student Joris Olde Rikkert, and also reached out to professor Yiannis Pontikes, who heads up the research group of Sustainable Resources for Engineered Materials (SREMat) in the Department of Materials Engineering at the KU Leuven University in Belgium – world experts in many materials. The designers worked out ways of using the waste much like common clay. Making use of the high oxide content, the glazes were also made with the material to showcase its aesthetic values.

“We hoped to show the muddier yet equally beautiful counterpart of aluminium, a material we usually see as immaculate,” notes Rouff. The material acts as a reminder that the sterile and clean shine of this metal originally came from the earth, and that there are always consequences to that process of extraction. “Inevitable consequences, sure, but not dead ends,” Rouff explains. “These wastelands can also be seen as a space of abundant resources.”

The designers explain that the point of the project was not to propose a silver bullet solution that would remove all the red mud from the land – a gargantuan task that has been researched for decades – but rather to create a new narrative for a contentious ‘waste’ whose many proven methods of safe reuse are curbed by negative press and legislative measures. The obscured nature of the industrial process, its brute mechanisms, and its scale all run in opposition to the warmth, fragility, and finesse of ceramics. “Material culture takes time to shift,” says Böckelmann. “We wanted to surprise people

with what the material could do, and to show it in an unexpected way.”

The designers continue to explore red mud with a new collection of larger vessels and tiles, as well as collaborations with mining companies and more recently with architects – they’ve just finished an experimental collaboration with Studio Olafur Eliasson. They are also exploring other uncommon material streams in a continued cross-disciplinary approach between science, craft, and industrial practices. Rouff explains: “We want to dig into our everyday material world, to reveal the hidden backstories and propose alternatives – to turn it inside out.”

1. Red Mud, Pipes
2. Red Mud, Plate stack
3. Red Mud, Tea Pot stack
4. Satellite Image of red mud, Google Earth
5. Image capturing a part of the process that is undertaken when using the red Mud to produce new works.

175



1.

THIS IS COPPER

THIS IS COPPER

Research + Realities

There is a problem within sustainable fuel industries whereby the main two factors that tend to effect change within them is either economic incentive or public perception. The difficulty is which one is the most relevant influence? Studio ThusThat believes in the latter. For this second project by the studio, they aim to show that the power of “designers to demonstrate, spark imagination and create a new material narrative”, will ultimately shift public perception and create a market pull for change within industry.

This is Copper showcases Studio ThusThat’s ability to use research and experimentation to develop an outcome that shifts waste into want. The project both exposes and proposes potential uses for the overlooked by-product of copper production. In particular, looking into the use of slag-based geopolymers.

The term geopolymer was coined in 1979 by the French material scientist Josef Davidovitz, and is used to describe a 3D molecular structure formed of inorganic compounds. Or in other words a geopolymer is a cross between a stone and a plastic. Its molecular structure means that it can withstand shock and highly compressive strength, is resistant to acid, has hydraulic stability, but perhaps most positively, it emits no CO2.

The incentive for Studio ThusThat to work with copper’s by-products stems from the fact that copper itself is used widely in the creation of renewable energy; for instance, the average wind turbine requires 5 tonnes of copper and for every 1 km of railway track there is 10 tonnes of copper cabling. It is then no wonder that society is still outpacing the rate at which it can recycle copper resulting in a continued need to mine for it. However, the slag-based geopolymer produced by the processes involved in copper mining and recycling requires little to no additional work to unlock its benefits. The material is then ready to be utilized.

While working on *This is Copper*, the studio recognized and experimented with all of the benefits of the slag-based geopolymer produced during the copper



2.

Research + Realities



THIS IS COPPER

SERAX.COM

Five years ago, Ann Demeulemeester left her fashion house. After 30 years of tireless creating at the fast pace that characterizes fashion, she decided it was time for a different kind of life. In all silence, she started looking for a new way to shape her creativity. Silk and other noble fabrics left the stage and made room for porcelain, brought in a harmonious combination of light and shadow for Belgium company, Serax.

Ann Demeulemeester never saw fashion as her true calling. Fashion was a way to express her creativity and emotion, bringing her collections to a higher dimension. To that extent, her collection of tableware and lighting for Serax is not a new start, but merely a narrative that continues in a new material.

“Back when I chose to start at the Royal Academy of Fine Arts in Antwerp, the ‘Fashion Academy’, I found fashion to be a modern and strong means of communication. I have never designed clothes just for the sake of it; I always wanted to add something that was missing. Visual language has always been important to me. By working primarily in black and white tones, I could always put emphasis on the essence: a shape that was conceived thanks to a combination of light and shadow, as well as fabrics with complex textures. I have always created according to my gut feeling.

“After I left the world of fashion, I did not really plan on releasing any other creations. I just wanted to create nice objects for myself. For me, the primary goal was to create happiness (...) Porcelain has fascinated me for a long time. It is a material with a rich history and a spectacular translucidity. I have been studying it for years, trying to master all the techniques. I have followed masterclasses in England where I learned the classic bone china techniques, I went to Germany and France to understand the entire production process of porcelain and I learned from the best ceramists. Even when I create just for myself, I aspire to reach absolute perfection.”

Research + Realities

Research + Realities

FAMILIAR EMOTION IN A NEW MATERIAL

05

FAMILIAR EMOTION IN A NEW MATERIAL

3. mining process. After Red Mud, this time they did a full on collaboration with professor Yiannis Pontikes and the SREMat research group. At the beginning of the project and for eight weeks at the end of 2019, the studio went to the KU Leuven University and worked with them and Metallo, a recycling and refining copper company in Beerse. The aim of the stay was to collaborate with the company to create an outcome that showed the broader value of copper waste, showcasing the material's backstory and revealing its potential. Studio ThusThat became the alien designers within Metallo's lab of scientists.

The importance of pigments within *This is Copper* derives from the simple observation that “scientists might not care so much about colour but for designers this is important”. It is due to this difference in approach that the studio is able to, through design, provide a shifted perspective on a material that was previously unexplored in this way - working from scientific recipes in research papers to create recipes for colour. It reinvigorated old techniques, adjusted formulas and manipulated methods to turn “a gross greenish brown into a beautiful sparkly black”. Working with various aggregates in the same way a potter works with different glazes.

The resulting objects are the physical outcomes of the team's holistic investigation into the aesthetic qualities of slag-based geopolymers. Studio ThusThat has used design to shift the public's perception on how waste material can be used. It is mindfully displaying outcomes that tell the material's story by linking the various stages of its

creation into one narrative. The value that these objects have in both a scientific and aesthetics sense provoke on-lookers to think about new uses for a material otherwise hidden under a label of ‘waste’.

Studio ThusThat's waste-not-want-not mantra reveals the invisible potentials of copper's shiny black waste. And both of the projects featured were named by the designers as they actually were: Wasteland to Furniture.

Red Mud + This is Copper are featured in KleurEyck. Van Eyck's Colours in Design, Design Museum Gent. 18.05.2020 - 21.02.2021

1. Sparkly Black Chair made using the slag-based geopolymers found in the production of copper.
2. Copper scrap pile
3. Column Chair made using the slag-based geopolymers found in the production of copper.

→ Text by Emma Singleton

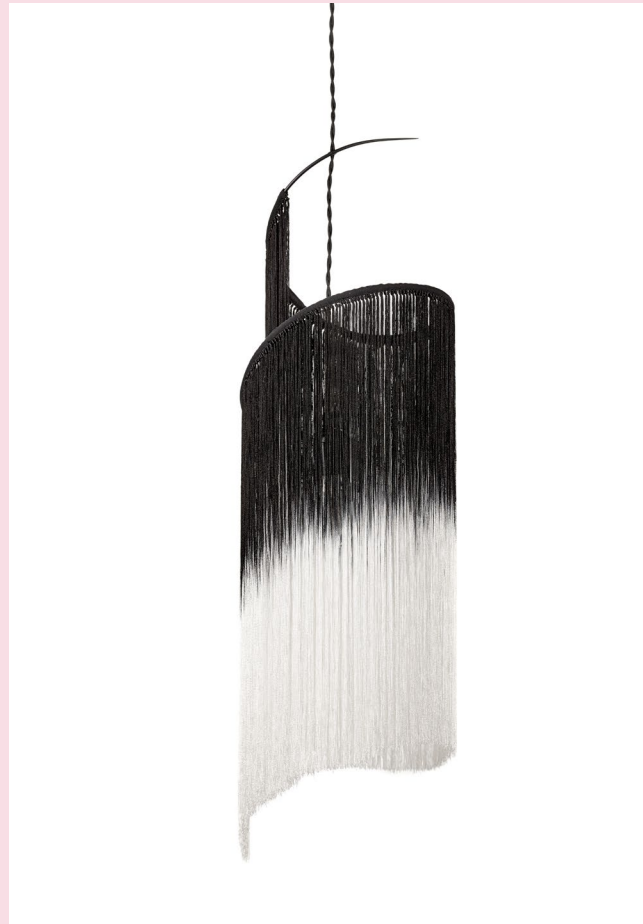


FAMILIAR EMOTION IN A NEW MATERIAL

Research + Realities

FAMILIAR EMOTION IN A NEW MATERIAL

Research + Realities



2.

For the first five years Demeulemeester worked on her tableware collection in silence. That silence can be taken quite literally. Ann's atelier is situated on the lower floor of her elegant country home, surrounded by a 50-acre park with centuries-old trees, which she shares with her husband Patrick Robyn. In her kitchen, formerly a stately reception room, floor-to-ceiling cupboards store the tableware collection that she has been working on for Serax, along with countless plaster moulds of the designs. Ann has meticulous technical descriptions of each prototype, to give the right instructions to the craftsmen in the Chinese workshop who produce her creations.

Serax started in 1986 as a small-scale flowerpot business and has grown into a multinational with a head office in Antwerp. Since 1990, Serax has entered into dozens of partnerships with upcoming and renowned designers, creating ceramics, porcelain, and furniture.

Ann Demeulemeester x Serax is now a brand within the Serax group, with a strong identity that is the product of the creativity and craftsmanship of not only Ann, but also of that her husband Patrick and their son Victor, who designed the packaging and the catalogues. The partnership begun is 2019 and has extended into lighting, cutlery and a wide collection of lead-free crystal glasses, in either a transparent or a light green version.

"Patrick and I are both creators: everything we needed for our house, we designed and created ourselves, in our own creative language. Patrick designs the furniture.

As an art director, he has always been closely involved in my fashion collections and he also designed the flagship store in Antwerp."

One of the windowsills is scattered with bits of porcelain, that appear in various shades of white and black, her iconic colours.

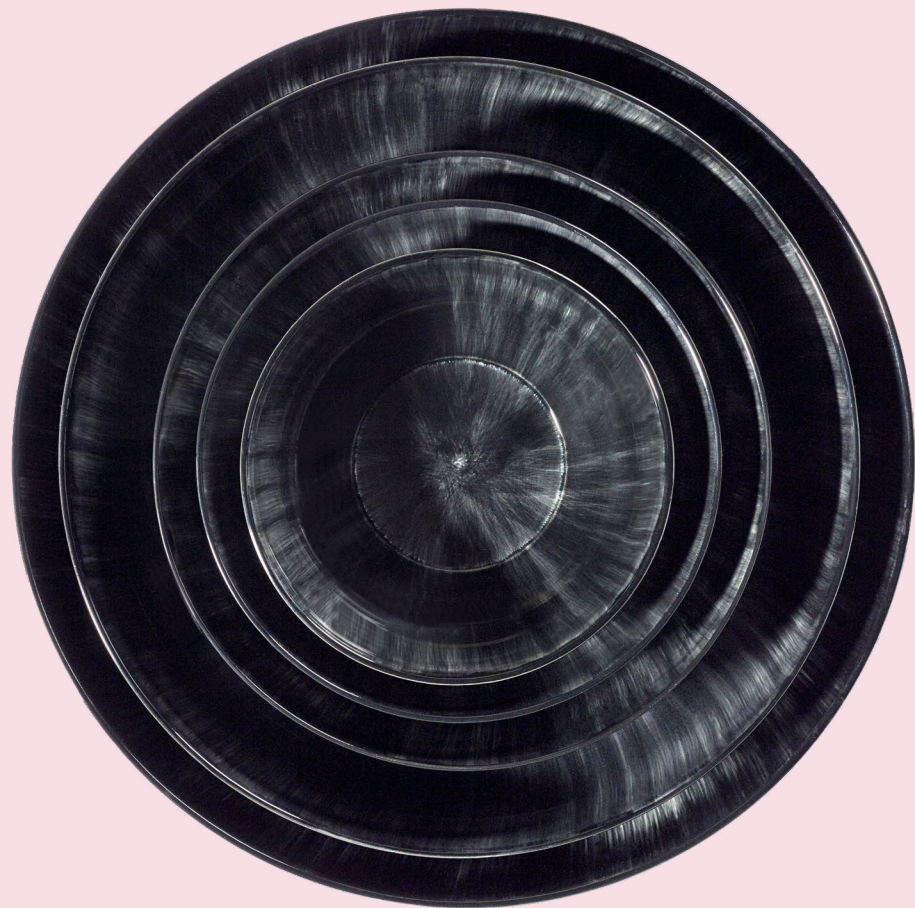
"There is not just one black, there are so many shades of this colour. It has to do with the material as such, with the glazing you apply and with the way in which light is reflected. I particularly like working with black porcelain. It can have so many different hues; no two objects are exactly the same. I have also searched for a long time to find the warm, subtle white that I wanted. It all comes down to playing with light and shadow; that is why I started this collection in the first place.

"In the beginning, there was a shape. I experimented a long time to find the ideal plate and the perfect cup. It is an exercise which humbles you and teaches you how to be patient and never give up. The real challenge lies in creating a simple utensil in a shape, which did not exist before, yet with such perfect proportions that it looks as if it had always existed. The next step is to create new objects. Will I ever make pure objects of art? Perhaps, but I do not want to pressure myself. At this stage, it felt that making utensils, useful objects, was the right thing to do. I will not be happy unless the final result is exactly the one I had imagined. I want that my soul is present in the objects I make; I want to translate my emotions into something tangible. This has always been my obsession.



“The big difference between designing fashion and doing what I do now is the fact that I now have the time I need. As a fashion designer, there are so many things you need to organize in just one season, that you have no other way but to delegate tasks and manage from a distance. With what I do now, I create things from A to Z. There is no need for me to have to explain things to other people. I can discover objects, materials, and techniques. My creative language is still the same. In fact, I only have this one language in which I can express myself. It’s only the material which is different.”

182 → Text by Lut Clincke



1. Ann Demeulemeester in her atelier. Photo: Julien Mignot
2. Luna L1 pendant lighting. Photo: Victor Robyn
3. Porcelain plate collection in black. Photo: Marc Wouter

Research + Realities

FAMILIAR EMOTION IN A NEW MATERIAL

LABORATORIUM.BIO

Research + Realities

PRINTING MICROALGAE

How sustainable is the colour dye in your top? Where did it come from and how long will its hue last in the wash before inevitably fading? We pick out colours for their shades and aesthetics, but it seems rare that we choose colours based on their pigment origins.

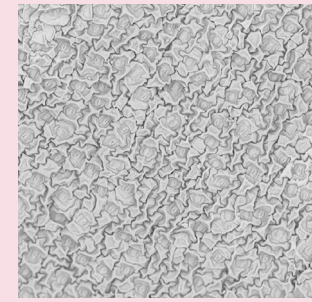
Since 2016, researcher María Boto Ordóñez has focused her practice on the development of new ways of creating colour. Working from her Colour Biolab, situated in the experimental laboratory at KASK/School of Arts Ghent, Ordóñez has been able to develop and discover approximately 4000 new colour pigments. She has created a whole new database of colour possibilities through the cultivation of microorganisms, such as microalgae and bacteria. The knowledge Ordóñez generates is then transferred to others – her students, designers, artists and industries – for their own use.

With a background in nutrition, one of Ordóñez’s main objectives is to be able to apply her scientific knowledge into the arts through research. Her explorations often start from existing science found in pigment research, cosmetics, fashion, and even food industries. The process of research to application begins through the sourcing of a material or organism that is ideally photosensitive or pigment orientated. Ordóñez will then grow and harvest the organisms to be able to extract its pigments and later experiment with application methods. From microalgae to screen-print, bacteria to fabric dye, fungi to paint, ink or 3D modelling. The varied application of the colours obtained allows for a shift in understanding of what is possible in the world of colour.

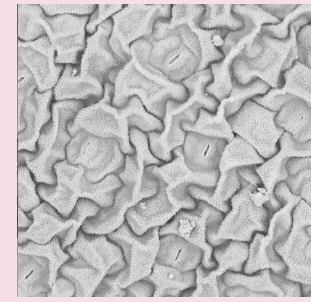
It is the shifting perception of colour through Ordóñez’s work on *Printing Microalgae* that is important to be aware of. Simply because we take for granted the hues, shades and tones we observe every day, yet, we are

PRINTING MICROALGAE

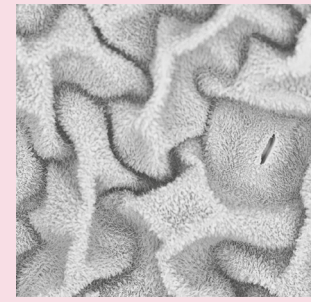
06



1.



2.



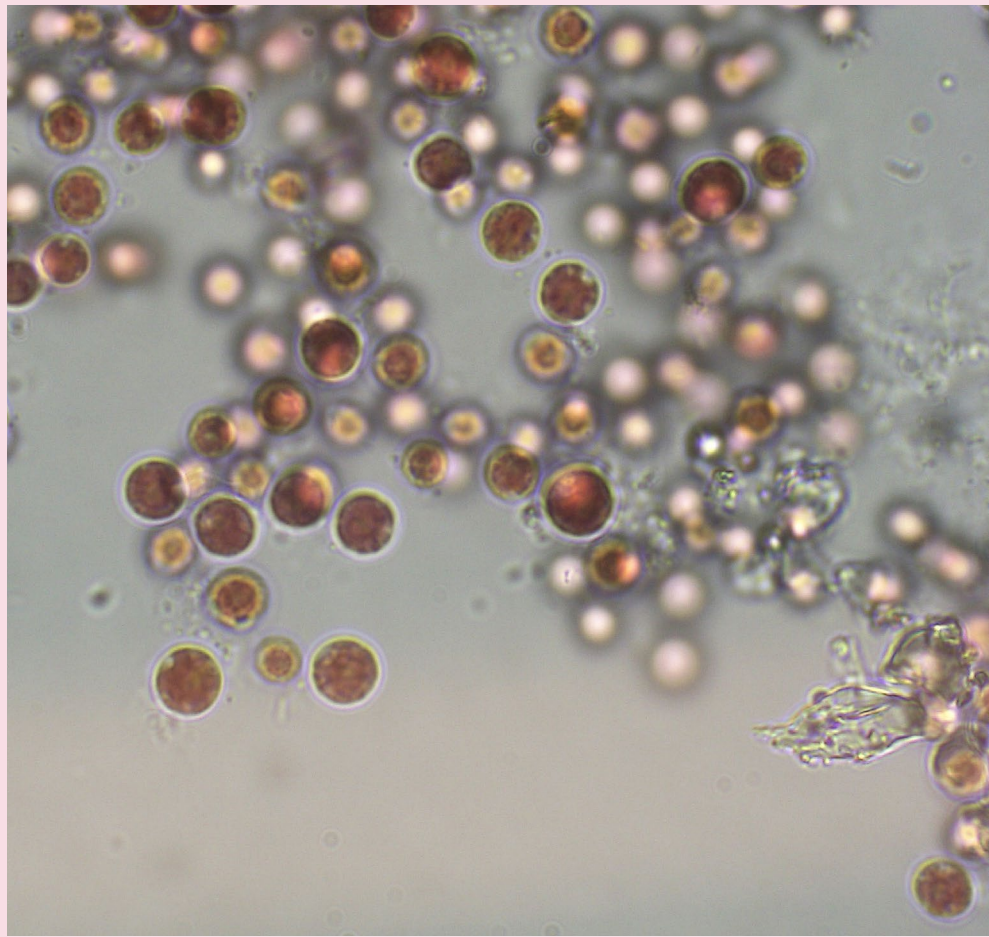
3.

MARÍA BOTO ORDÓÑEZ

183

ANN DEMEULEMEESTER X SERAX

3.



PRINTING MICROALGAE

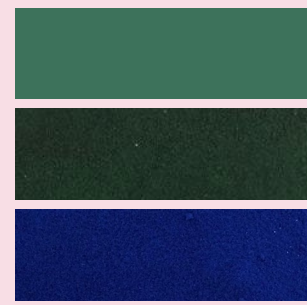
Top: Cruentum
Bottom: Porphyridium purpureum

Porphyridium purpureum is a red marine microalga that contains several pigments including phycocyanin (blue) and phycoerythrin (pink) in their phycobiliproteins. This unicellular round alga, distributed worldwide, is not only interesting for its pigments but also because of the possibilities of being used as biomass for biofuel.

Microalgae colour: Red/ Pink
Pigment production: Phycoerythrin
Growing conditions: Marine medium
Applications tested: Paper, fabric

Research + Realities

PRINTING MICROALGAE

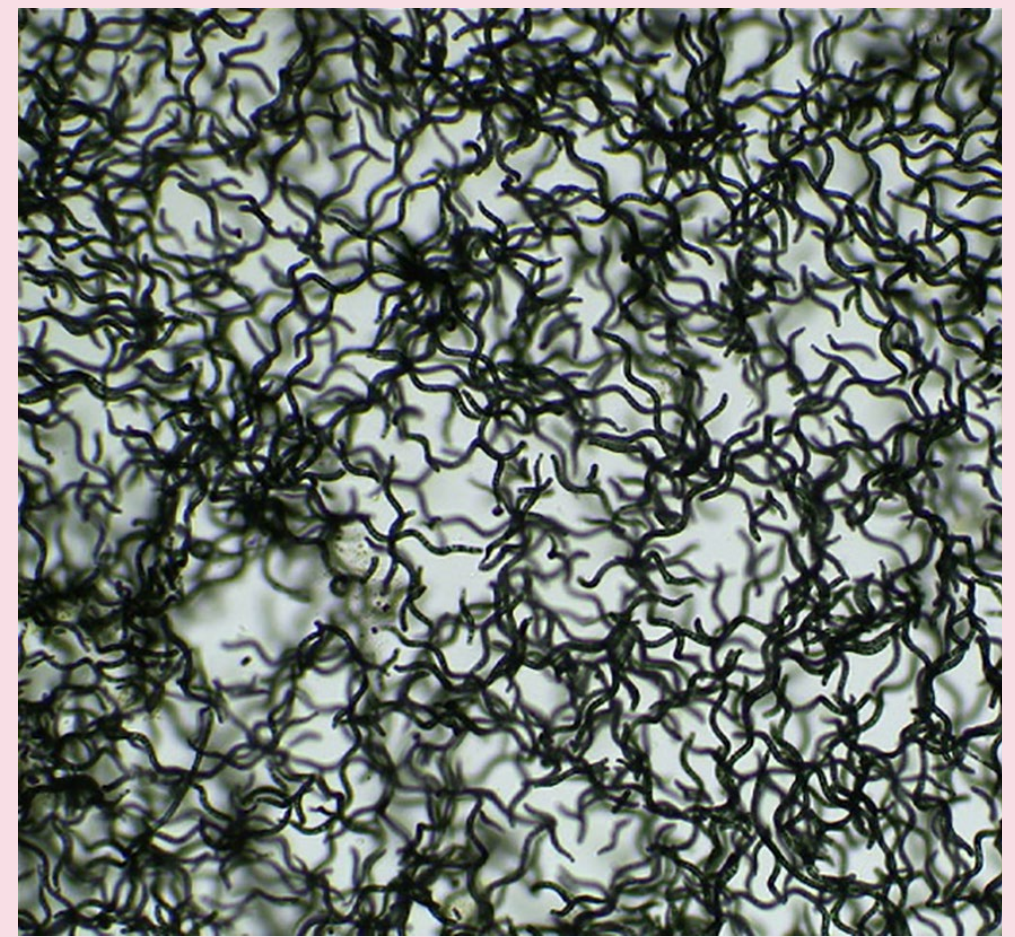


Top: Spirulina
Middle: Spirulina biomass
Bottom: Spirulina pigment

Spirulina is the common name for a food supplement made out of Arthrospira, another genus different to Spirulina with similar morphological structure (the division is from 1989). Spirulina is a cyanobacterium, which means that it can photosynthesize. First considered as a green-blue alga, Spirulina is widely distributed in South America, Africa and Asia in lakes with a high pH and carbonate concentration. The most important pigment extracted from spirulina is phycocyanin, responsible for its blue colour.

Microalgae colour: Blue/Green
Pigment production: phycocyanin, chlorophyll
Growing conditions: Basic medium
Applications tested: Paper, fabric, wood

Research + Realities



5.

often unaware of where they come from. Ordóñez's work invites us to consider the use of nature in colour, asking what colour is: dynamic or static?

One of the main discoveries of *Printing Microalgae* has actually been the loss of colour. Most of the colours obtained from algae are unstable and after hours or days they will begin to fade, leaving a shadow of the pigment that once was there. For instance, when you visit a natural history museum have you ever noticed how many of the previously living mammals, insects and reptiles have a brownish tinge to their complexion? This is because the melanin brownish colour pigment stays for a much longer time than the other pigments that fade away.

The case of the disappearing pigments was disheartening for Ordóñez to begin with, as she watched the outcomes of her research vanish. Whereas, for the designers and artists Ordóñez spoke with, this discovery was exciting and inspired new ideas for the potential uses for this instability within their work – uses that took advantage of a way to understand colour's connection to time.

Printing Microalgae showcases how the dynamics of a pigment characteristic is yet to be fully explored. The project's exploration through research in science to art is opening up the possibilities of the application of living and sustainable colours. It is developing new pigments that are based on origin rather than tone. For Ordóñez's next research project she will be looking into structural colouration, focusing on the reflection not absorption of light. Asking how to transfer the

knowledge of what happens in wings, feathers and shells to another medium.

Colour is not stable, and instead of reacting with dismay at its gradual fading or shifting of hue, Ordóñez's research argues we should embrace its dynamics as much as we do the shifting colours between seasons.

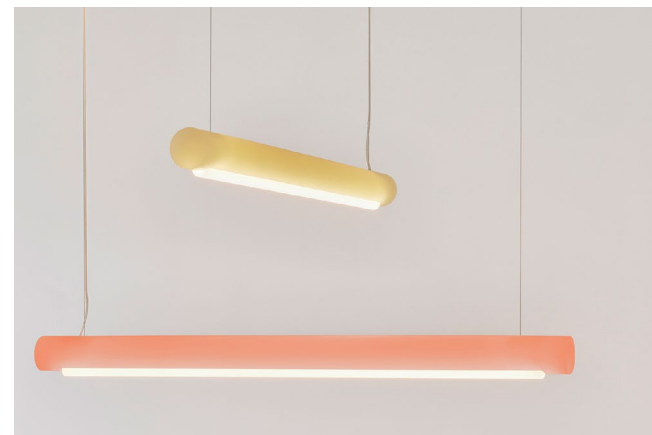
- 01 AURA _____ Established & Sons
- 02 '7' _____ Eric Croes
- 03 68 _____ Onka Allymayer-Beck
- 04 TUBULAR _____ Ingo Maurer
- 05 CAMPI DI COLORE _____ Maria Scarpulla
- 06 THE UNCOLLECTED COLLECTION _____ Living Divani
- 07 LIAISON _____ Axolight
- 08 FIENILE _____ Luceplan
- 07 MYEDITIONS _____ Axor
- 10 ORBITTU _____ Ingo Maurer
- 11 HACKER VASE _____ DWA Studio
- 12 VERTIGO _____ Antonio Spoto
- 13 G COLLECTION _____ Niko Koronis
- 14 WAFFLE _____ Antrax
- 15 ALL TUBES _____ Muller Van Severen
- 16 FARAWAY POOL _____ Zucchetti & Kos
- 17 SUPERSOFT _____ Fogia
- 18 LUCIO _____ Established & Sons
- 19 HELIA _____ Kvadrat/Raf Simons
- 20 BISEL _____ Glas Italia
- 21 SUPERSOLID _____ Fogia
- 22 OVO CHAIR _____ Eric Jørgensen
- 23 IGMAN MINI _____ Zanat
- 24 BEE HOME _____ Space 10
- 25 ROLL CHAIR _____ Sancal



02



03



186

01 AURA _____ Established & Sons

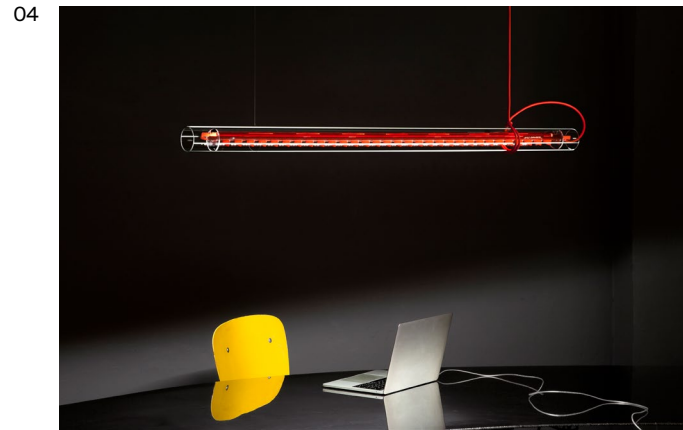
Part of the new LIVE / WORK collection by Established & Sons, Aura Light by Sabine Marcelis is made from a bio-epoxy resin, formulated using by-products from the agricultural industry. A replaceable glass LED tube is housed within the coloured resin in case, with the light travelling through the material to create a warm glow.

02 '7' _____ Eric Croes

Belgian artist Eric Croes presents his vision of the seven cardinal sins: seven unique sculptures, seven fantastical totems, seven unsettling presences. On show at the Sorry We're Closed Gallery, Brussels, 3 September - 17 October.

03 68 _____ Onka Allymayer-Beck

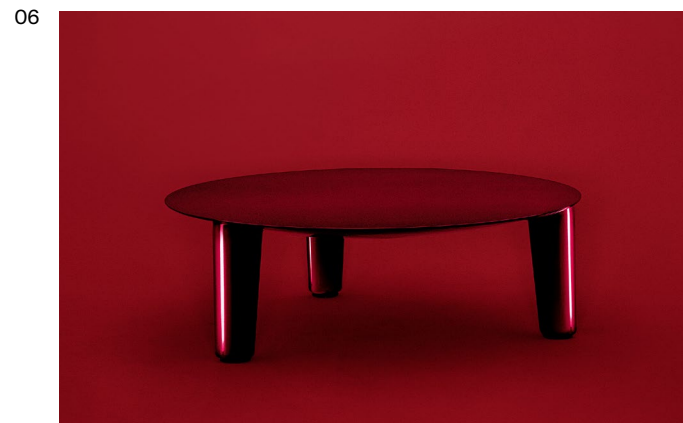
Using a slab building technique, each piece is handmade with white burning clay before being hand glazed and fired twice for 24 hours. Custom-made for SEEDS Gallery by Onka Allymayer-Beck, the ceramics are numbered in the order they are made.



04



05



06

187

04 TUBULAR _____ Ingo Maurer

Free-floating, the glass tube luminaire Tubular by Sebastian Hepting from the Ingo Maurer team has a puristic accent.

06 THE UNCOLLECTED COLLECTION _____ Living Divani

A limited-edition series by Piero Lissoni to celebrate and seal a double anniversary: Living Divani's 50th anniversary and the architect's 30 years as art director. Pictured, Tavolino 03 by Lissoni.



07



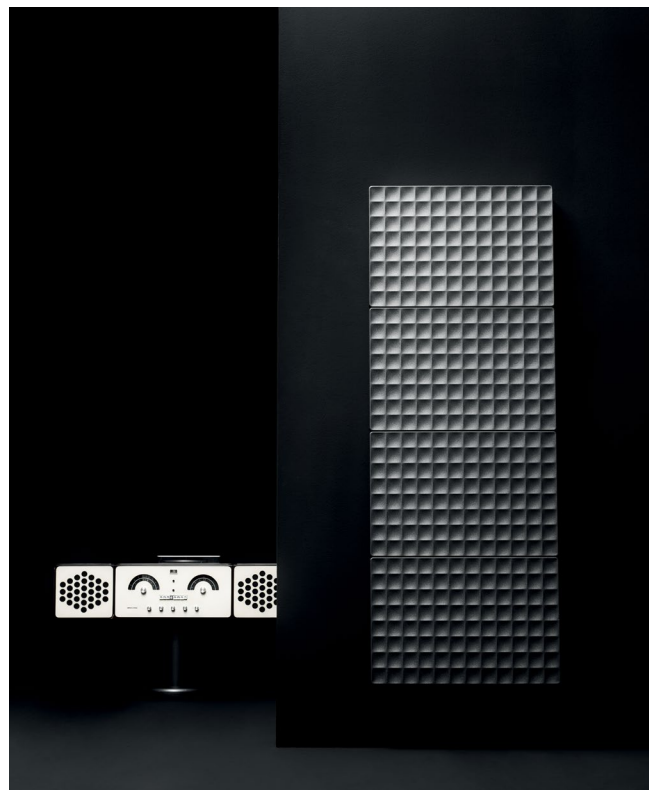
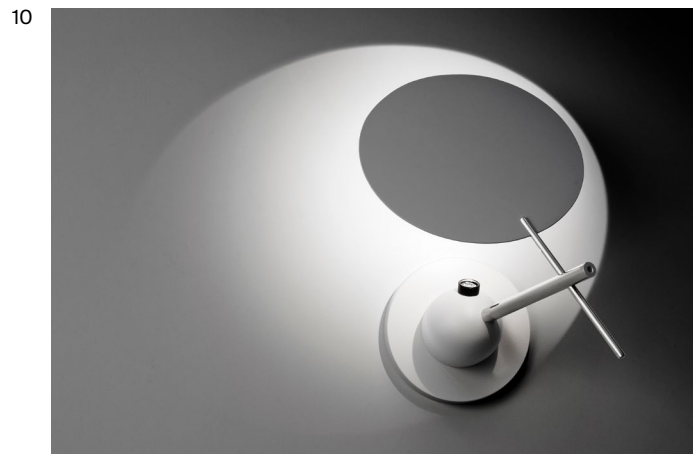
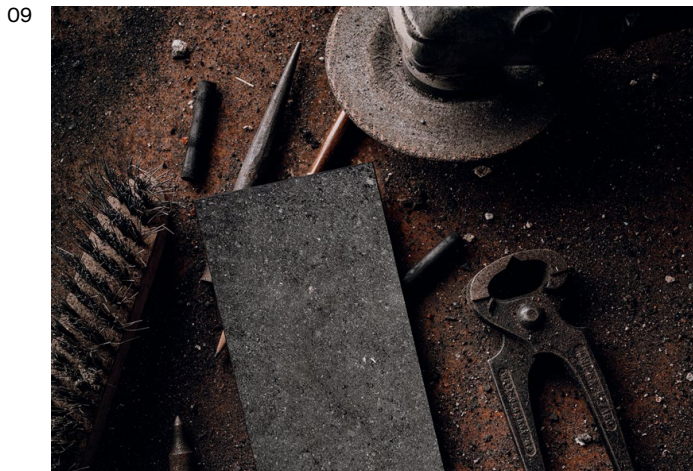
08

07 LIAISON _____ Axolight

Liaison is a metal suspension that plays with three geometric archetypes—sphere, circle and cylinder—which combine themselves in a light and elegant structure. Designed by Sara Moroni, Liaison is made of matt gold and black metal elements, handcrafted, which can create a single pendant or articulated compositions.

08 FIENILE _____ Luceplan

First created as a table lamp, but then interpreted in suspension and floor models for outdoor use: Fienile is the new family of products generated by the long-term collaboration with Daniel Rybakken. The geometric forms are based on those of simple rural buildings.



188

09 MYEDITIONS Axor

The longing for something personal, unique and unmistakable drives us all. At the end of this development, the personalized product inspires. AXOR offers a neutral mounting plate for this purpose, which makes it possible to apply your own, individually selected material to the AXOR MyEdition tap. Copyright: AXOR / Hansgrohe SE. Photo: Tom Hegen axor-design.com

10 ORBITTU Ingo Maurer

Orbittu is a wall or ceiling lamp. Its base can rotate on its own axis thanks to the Plug & Light technology of Insta GmbH. The hemispherical housing with lateral light emission reminds of a miniature observatory, to which a rotating mirror is attached via an asymmetrical mount. ingo-maurer.com

11 HACKER VASE DWA Studio

Hacker is a collection of marble artefacts conceived by DWA Design Studio (Frederik De Wachter and Alberto Artesani) to give a new life to leftover stone slabs. On the occasion of the KleurEyck exhibition in Gent, a special edition vase was made in Carrara marble and lapis lazuli, a precious stone Jan Van Eyck used to obtain the blue colour for his paintings. Manufactured by Manuel Coltri. dw-a.it

12 VERTIGO Antonio Spoto

This clay piece is made by a potter's wheel and baked in an electric oven; the enamels that cover it are copper-based. Its colours vary from blue to mauve. Spoto's forms are exclusively turned with absolute perfection. It is only the frustoconical or hemispherical typology of the bowl that serves as its formal starting point. This piece is on view at the KleurEyck exhibit in the Design Museum Gent.

13 G COLLECTION Niko Koronis

GSD Console and GBC Bench by Niko Koronis, inspired by the work of Italian architect Carlo Scarpa and made in resin. Both Pieces can be made to measure with colours on request. The Niko Koronis Collection is available through studiotwentyseven, New York. studiotwentyseven.com nikokoronis.com

14 WAFFLE Antrax

Antrax IT radiators are made of 100% recyclable steel or aluminium and offer a wide range of choices and flexible uses. A sustainable complement that allows significant energy savings. Waffle is the iconic reinterpretation by Piero Lissoni of the historic cast-iron radiators. antrax.it

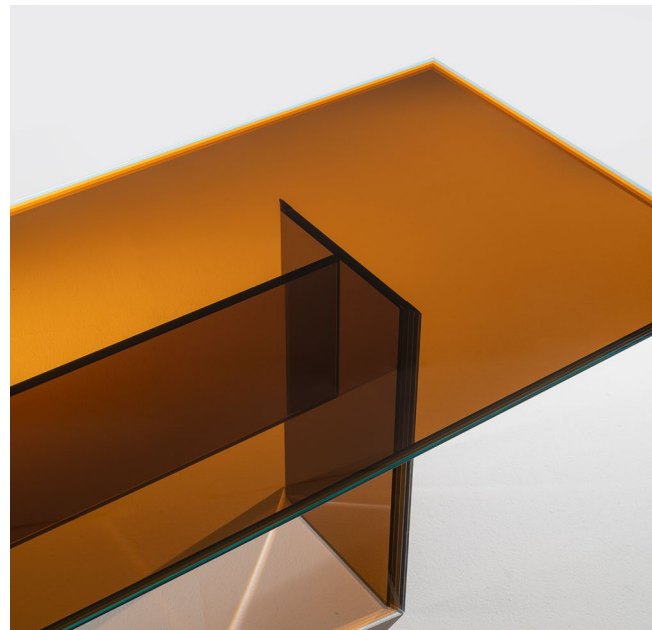
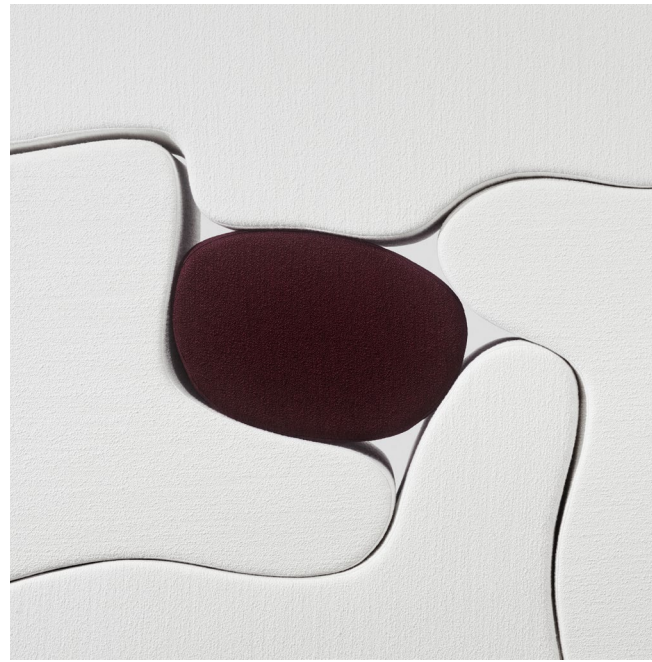
15 ALL TUBES M.V.Severen

The Belgian design duo Muller Van Severen launches ALL-TUBES, a new series of objects consisting of the repetition of round aluminium tubes. The series includes several cabinets, a sofa and a chair, together forming a family with the same genes but different characters. mullervanseveren.be

16 FARAWAY Zucchetti & Kos

Distinguished by a graphical motif on its inner bottom surface, the Faraway Pool, designed by Ludovica+Roberto Palomba, is a floor-level mini pool that completely integrates functionality and aesthetics. Photo: Delfino Sisto Legnani zucchettikos.it

189



190

17 SUPERSOFT Fogia

Supersoft came about as a response to the preconceptions of what sofas in the Nordics are: hard-lined, compact and aimed at the contract sectors. Thus, Note Design Studio took the fuller-bodied sofas of Italy as an inspiration to make a modular sofa designed to be large and welcoming, without disregarding form.

18 LUCIO Established & Sons

Designed by Sebastian Wrong, the new Lucio Chair combines maximum comfort with minimum weight to create a super-supportive professional lounge chair that's easy to move and offers a distinctive, graphic profile.

19 HELIA Kvadrat/Raf Simons

Kvadrat/Raf Simons continue their exploration of the limits of upholstery. For inspiration Simons returns to his love of haute couture. Looking at fur and luxurious knits, he interprets the textures and techniques used in this craft and translates them into fabrics: the new Helia and Silas, and the colour updated Sunniva 3.

20 BISEL Glas Italia

Collection of high tables, low tables and console by Patricia Urquiola. Made in multilayered and multichromatic glass, created by laminating five slabs of 5mm extralight glass each with a different coloured film, the designs aim to create "furniture jewels."

21 SUPERSOLID Fogia

Designed by Note Design Studio at the same time as the Supersoft sofa, Supersolid was developed as a point of contrast to the softness of Supersoft. A range of design objects that enhance Supersoft's function as a central part of a space.

22 OVO CHAIR Eric Jøergensen

Designed by British designer Damian Williamson, Ovo is a refined easy chair with curves resting on a rigid squared steel frame. The same steel is also used to connect the back and the front of the chair, thus achieving a playful integration between the leather and the steel, while hiding the stitched seam at the same time.

23 IGMAN MINI Zanat

Bosnian brand ZANAT, specialized in wooden furnishing components and carving art, presents Igman Mini by Harri Koskinen.

25 ROLL CHAIR

Designed by MUT for Sancal, Roll chair was inspired by the leg presses that can be found in gyms. The Valencia studio reduced the conventional shape of a chair to two pure elements: steel tubes and two cylindrical pads for back and seat.

24 BEE HOME Space 10

Ikea's SPACE10 lab have teamed up with Bakken & Bæck and designer Tanita Klein to launch an open-source Bee Home.

Sancal

R

REALITIES