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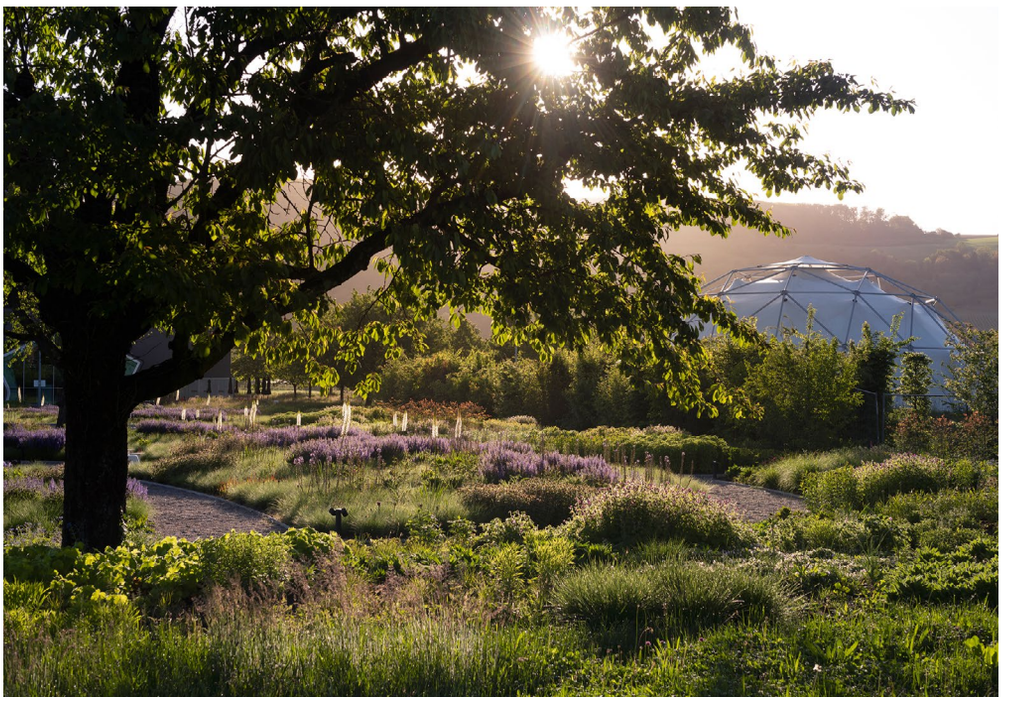

THE VITRA CAMPUS GARDEN, LANDSCAPED BY PIET OUDOLF, USES MORE THAN 30,000 PLANTS WITH MANY SPECIES, SEE PAGE 074

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CURATOR ANTWAUN SARGENT'S NEW SHOW FOR GAGOSIAN NEW YORK EXPLORES BLACK SOCIAL PRACTICE, SEE PAGE 102

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NARI WARD ^
Artist

The Jamaican-American artist is famed for large-scale installations that confront social and political issues head-on, such as *Peace Keeper* (1995), a rusted, burnt-out hearse decorated with feathers that recently featured in the 'Grief and Grievance' show at New York's New Museum. For our Artist's Palate series, he chose ackee and saltfish patties (page 130). 'The tasty combination is quite rare, and makes this humble meal even more special,' he says.

VIVEK VADOLIYA ^
Photographer

The British-Indian, London-based director and photographer uses documentary techniques to create fashion stories and portraiture. For us this month, he shot the designer Asif Khan in his east London workshop (page 030). 'It was great to connect with Asif, as our families shared a similar migration story from East Africa to the UK, plus I loved talking to him about his interest in traditional tools,' says Vadoliya, who is now working on his first book, which focuses on the Indian sport of mallakhamb.

PIET OUDOLF v
Landscape designer

Oudolf has designed some of the most captivating green spaces of our time, for the likes of the High Line in New York and Noma in Copenhagen. He created our limited-edition cover this month to coincide with the unveiling of his new garden for Vitra in Weil am Rhein (page 074), amid buildings by Herzog & de Meuron and R Buckminster Fuller. Upcoming projects include gardens for Belle Isle, Detroit, and the new Hauser & Wirth arts centre in Menorca.

AMANDA CACHIA v
Writer

Originally from Sydney, curator and critic Cachia teaches art history at some of California's leading institutions. For this issue, she interviewed blind designer Simon Dogger (page 118): 'It was very exciting to learn how he plans to elevate the museum experience for blind users. I have wasted no time sharing his work with others,' says Cachia, who is currently editing her first book, a collection of essays on curatorial access and disability art activism.

D'ARA NAZARYAN ^
Illustrator

Known for her colourful, geometric and female-centric illustrations, the LA-based Nazaryan has produced a series of inspiring visuals to accompany our Diversity in Design story on page 124. 'I wanted to create something with an uplifting narrative that alluded to the future being bright and opportunity waiting in abundance,' says Nazaryan, who has worked as a motion designer and art director, and recently completed a series of murals.

EINAR ASLAKSEN ^
Photographer

Based in Oslo, Aslaksen is used to chasing the best light, which, in the summer in Scandinavia, means 4am starts and 11pm finishes. He kept to these long working hours while shooting the Vestre furniture factory, designed by BIG (page 046): 'I am photographing it every month, and will continue to do so until it is complete, to create a photo book about this amazing project.' He also shot our mobile blade sharpener (page 032): 'I love how it has a clear connection to a Swiss Army knife.'

WRITER: LÉA TEUSCHER

CONVERSATION PIECE

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RIKKE FROST | 2020

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EDITOR'S LETTER

Open the way

Newsstand cover by Tom Hingston

Art director and graphic designer Hingston created this typographic artwork for our newsstand cover, refining a modular typeface that he began to develop last year to suggest the idea of an open framework. He rendered the letterforms in three dimensions 'to suggest something more architectural, more physical – like an emerging structure'

Welcome to our August issue, a continuation of our ongoing dialogue in how to design for a better world. What is often considered good design doesn't always follow Dieter Rams' commandments. But wouldn't the world be better if it always just did?

Following the launch of Wallpaper* Re-Made in August 2020, we provide an update on the first generation of Re-Made projects currently in development. The inspiration for Re-Made is to bring together forward-thinking designers, makers, architects and engineers, as a catalyst for innovative and environmentally conscious work of the highest calibre. Our first five featured projects are Asif Khan's biocement shelving unit, Jenkins & Uhnger's travelling blade sharpener, PriestmanGoode's zero-waste takeaway food packaging, Vollebak's e-waste watch and Konstantin Grcic's electric trailer and trike – all absolutely groundbreaking.

Elsewhere in the issue, we visit landscape designer extraordinaire Piet Oudolf's latest creation for Vitra, an immersive garden for all seasons in Weil am Rhein. We also feature the latest developments in sustainable architecture across Brussels, Ho Chi Minh City and Medellin, and journey to the Norwegian forest with BIG and Vestre to witness the construction of what they promise will be the world's most sustainable furniture factory. In Paris, we discover LVMH's pioneering digital platform to give a new life to deadstock fabrics, which improves efficiency, reduces waste and provides a resource for major and independent brands alike; while in Amsterdam, we find out how textile manufacturer Byborre is transforming its supply chain to create a new sourcing ecosystem. We also review the latest mushroom-derived leather alternatives and a collection of tiles made from eggshell, both excellent examples of a desirable, more sustainable material economy.

For our 'Thinkers' section, we celebrate ten creative leaders whose work addresses some of the biggest challenges and concerns of our time. From the Turner Prize-nominated Cooking Sections, whose research on salmon farming has sparked broader discussion of more sustainable food supply chains, to architect Fernanda Canales, whose social housing designs encourage us to reconsider the meaning of luxury; from artist Jakob Kudsk Steensen, who creates epic VR experiences to foster engagement with nature, to the newly minted Diversity in Design collaborative, which is working to level the playing field for aspiring and emerging Black designers in the US. Individually and collectively, these visionaries demonstrate the importance of art, design and architecture in leading the conversation and proposing solutions to issues of ecology and equity.

And finally, a special thank you to Tom Hingston, who, fresh from designing new visual identities for Serpentine Galleries and the 'Alice: Curiouser and Curiouser' exhibition at the V&A, has created our newsstand cover. Embracing the themes of the issue, Tom has created a typeface that is more of an ongoing idea than a finished font. 'Each letter consists of modular elements which move around a fixed grid, to which we then add or subtract. So, in that sense, it remains open and incomplete.' We discussed this idea – an open framework – interventions – something that is incomplete but resonates and brings optimism.

This issue highlights the groundswell of ideas and creativity that is going on around the world, and I hope you feel inspired to join in the conversation.

Sarah Douglas, Editor-in-Chief

Limited-edition cover by Piet Oudolf

This month's limited-edition cover features a sketch by Dutch landscape designer Piet Oudolf showing his planting plan for the Vitra Campus in Weil am Rhein. Explore the lush 4,000 sq m perennial garden, which opened in June, on page 074

Limited-edition covers are available to subscribers, see wallpaper.com/sub21

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This picture, Asif Khan in his east London workshop, with the 'Coral Reef' shelving unit, which comprises bioLITH tiles and wooden slats

Far right, the eco-friendly tiles are made with sand from Sharjah, UAE

When London-based designer Asif Khan and American cement industry innovator Biomason joined forces to collaborate on a Re-Made project for 2020, their explorations led them to 'Coral Reef', a shelving unit built from ingots of biocement. The design was partially inspired by one of Khan's ongoing architecture projects in the UAE, the new Museum of Manuscripts in Sharjah, which is due to be completed in 2022.

It also addressed issues around locality, sustainability and functionality, drawing on Biomason's bioLITH tile format and the company's technique of 'growing' eco-friendly cement using microorganisms – just as coral reefs are formed in marine environments (hence the product's name). The tiles developed for 'Coral Reef' would be made using sand from Sharjah, leading to a design that is conceptual but also pragmatic, and intrinsically connected to nature. The goal? To open up new paths in material use for the architecture and design industry.

North Carolina-based Biomason, co-founded by CEO Ginger Krieg Dosier and her partner Michael Dosier, has developed an aggregate mixed with microorganisms that is pressed into shape, fed an aqueous solution, and hardened to specification in order to form innovative, biologically-controlled structural cement. 'Our biocement is revolutionary, with low carbon emissions, and has the ability to be used throughout the built environment, not just in tile,' explains Krieg Dosier. 'Annually, the production of Portland cement accounts for eight per cent of global emissions. Portland cement is ubiquitous, and the production is demanding incredible sacrifice from our planet. It is time for society as a whole to be aware of Portland cement's carbon emissions. Biomason has a proven solution that taps into nature's closed-loop system and that does not depend upon emitting carbon to create concrete components that are beautiful and strong.'

Biomason first developed its technology in 2009 in Sharjah, so the project neatly brought the company full circle. Expanding its abilities was enticing, and although not entirely straightforward, it has been a welcome challenge for the team, which has

Re-Made
2020-21

Shifting sands

Asif Khan sifts through the options offered by Biomason's biocement tiles to create the 'Coral Reef' shelving unit

PHOTOGRAPHY: VIVEK VADOLIYA WRITER: ELLIE STATHAKI

a keen eye for opportunity. 'An early concept specified bioLITH tile vertical structural elements connected with an alternate material as horizontal elements,' recalls Biomason product designer Thomas Hill. 'Unconventional fabrication and joinery pushed the limits of the bioLITH tile. While relying on the tile alone to provide structure was not successful, it presented avenues for further exploration into form and function for future products.'

Now, its design finalised and the prototype built in Khan's east London workshop with the help of the studio's Isabella Stone-Wilson and Alex Borrell, 'Coral Reef' is an elegant, tactile structure that alternates bioLITH tiles made using Sharjah sand and wooden slats. The latter help provide structural support, but there's a strong conceptual base to this material blend, too. The Sharjah sand tile 'represents the future', says Khan. He likens the sample to something that offers a glimpse of what industry innovation looks like, a 'relic from the future', which balances dramatic change with a familiar, organic character and feel. 'It is an amazing material. The design's formal language may be based on the Sharjah museum and closely matches the current Biomason product, but we worked more conceptually with it, and treated it as a fragment of a coral reef or a precious material or geological matter. We also wanted to expand the product's qualities and personality. We chose to match it with wood, so you have a juxtaposition of a natural material with a kind of "man-made" nature. It is a composition of two forms of nature.'

This poetic balance, together with its modular design and fluid function (it could be anything, from a bookshelf to a display case or screen), make 'Coral Reef' an exciting piece; and, the team agrees, it could be just the beginning. Further explorations could include 'looking at more complex forms and modular biocement components that could lend self-supporting structure,' says Hill. Also, going bigger and experimenting with larger scales – a pavilion, for example – feels like an apt next step to Khan, who says: 'We'd love to create a whole Biomason building one day.'✱

asif-khan.com; biomason.com

Sharp focus

Designers Jenkins & Uhnger, Victorinox, and Butchers & Bicycles cut a new path for an ancient street-based tradition

PHOTOGRAPHY: EINAR ASLAKSEN WRITER: SOPHIA ACQUISTAPACE

The *arrotino*, or knife grinder, has been travelling around Italy for centuries, sharpening blades in the streets, and it was this tradition that sparked an idea for Wallpaper* Re-Made. Last year, we tasked Norway-based designers Jenkins & Uhnger and Swiss knife expert Victorinox with modernising the concept.

Since the onset of the pandemic, the flexibility of this direct-to-customer service has become even more pertinent. But at the time of the project's inception, our main aim was to encourage repair over buying new, with the portable element offering added convenience. Repair is still at the forefront of our minds today, due to recent legislation in the EU and the UK requiring manufacturers of household electrical products to make spare parts available. The aim is to tackle premature obsolescence – when a product's short lifespan leads to wasteful and costly replacements for customers – and marks an encouraging advance in attitudes towards a 'right to repair'.

Over the past year, the collaborators have been busy refining the project's design into a functioning prototype, composed of a compact water-cooled blade sharpener securely housed in a specially adapted cargo box that sits on an electric bike. The sharpening machine is mounted on a sheet of recycled plastic that conceals a rechargeable battery pack. Features such as a knife holder (storing up to six knives) and dedicated storage for accessories (including a compound block and a leather cloth for polishing) have all been integrated seamlessly into the design. Along with the iconic Victorinox red of the cargo box, these elements speak to the compact multifunctionality of the original Swiss Army knife. The designers have also considered packaging, including cardboard sleeves and a tape dispenser to safely secure the newly sharpened knives.

A large part of the project's recent development looked at whether the sharpening machine could be powered by the same battery as the e-bike, or even by solar panel. A rechargeable battery pack, allowing five to six hours of continuous sharpening, was chosen for this first prototype stage, to ensure a whole day's worth of usage. The collaborators also had to consider how the sharpener could operate in remote public places with no access to a charging point.

Even with its expertise around steel, knives and knife care, the team at Victorinox also had to think outside of the box. The biggest challenge was finding a sharpening machine of the right size and weight to fit in the e-bike's cargo box. Neither the industrial-sized grinders used in the Victorinox factory, nor the smaller products made for basic use at home would suffice. It needed a light and portable machine that still delivered the high quality that the company prides itself on. 'Product aftercare needs to be considered with the same focus on quality as production,' says the brand's chief production officer Erwin Müller. The selected machine is countertop-sized and can sharpen all blades with a straight cut: household knives, pocket knives, and even the edges of a lawn mower. But using it requires adequate training, as inexpert sharpening ››

The design features a water-cooled blade sharpener and accessories, this picture, sitting on top of the e-bike's large cargo box, opposite, which conceals a rechargeable battery pack

The prototype cargo bike comes with Butchers & Bicycles' patented 'built to tilt' technology, making it easy for the driver to turn corners and cycle over cobblestones

can cause lasting damage to the blade edge. Technical aspects to be considered include the angle at which the blade must be placed on the machine, and the necessary cooling time to ensure it does not get too hot, which could weaken and potentially deform the steel.

'We know that long-lasting, sustainable outcomes come from smaller incremental changes,' explains Veronika Elsener, Victorinox's chief marketing officer. 'It is our responsibility to produce in an effective and efficient manner, and we know that product care lies just as much in our hands as it does in the end consumer's.' Victorinox repairs around 1,000 knives a month, which includes oiling and cleaning its iconic pocket knives.

From the start, the Victorinox team felt it would be important to choose an e-bike to fulfil the mobility side of the project, to increase productivity without leaving a large carbon footprint. The solution came with the introduction of a third collaborator, the aptly named Butchers & Bicycles (W*187), a Copenhagen-based cargo e-bike manufacturer founded by two cycle enthusiasts disappointed by the cargo bikes then on the market. The company, its name referencing the iconic Meatpacking District in Copenhagen where it is headquartered, offers a clean alternative to polluting delivery vans. Its patented 'built to tilt' technology removes the clumsy, awkward manoeuvres apparent in other cargo bikes, making it easy to turn corners, cycle over cobblestones, and go up onto kerbs in narrow and congested urban environments. 'With this technology, we can create a "two-wheel feel" with three-wheeled stability, taking the hassle out of riding the bike with precious cargo on-board,' says CEO Martin Piil Hansen.

Butchers & Bicycles' cargo box happened to be a perfect fit for the sharpener, necessitating only a few minor modifications to the existing design. The company's ethos also aligns well with the project. Easing people's daily lives, while bringing joy and family adventure through good-quality design, goes hand-in-hand with the travelling blade sharpener's celebration of craftsmanship and quality-made objects that can be passed down to future generations.

The pandemic may well have forced many people to reconsider their relationships with objects, and encouraged some to make do with what they have when things were not as readily available. However, 'it is still too easy to buy new, especially when all the shops were closed and online was the only option,' reflects designer Thomas Jenkins. 'It's very hard for repair services to compete against the retail giants.'

The prototype will allow the collaborators to get a real gauge of customer demand. While Victorinox plans to integrate the travelling blade sharpener in its flagship stores in Zurich and London once restrictions are fully lifted, Jenkins & Uhnger have plans of their own. A long-awaited trip to Butchers & Bicycles' HQ in Copenhagen will be 'a kind of homecoming for the project,' explains designer Sverre Uhnger.

Moving forward, further features such as a custom hood and a digital booking system are being considered. But the collaborators also share a belief in the bigger picture of the service as a whole. 'As a family-owned company for over 135 years, it is very important for us to keep innovating,' says Elsener. 'With everything we do, we always use our expertise to innovate, and this concept is definitely a first of its kind.'✱

jenkinsuhnger.com; victorinox.com; butchersandbicycles.com

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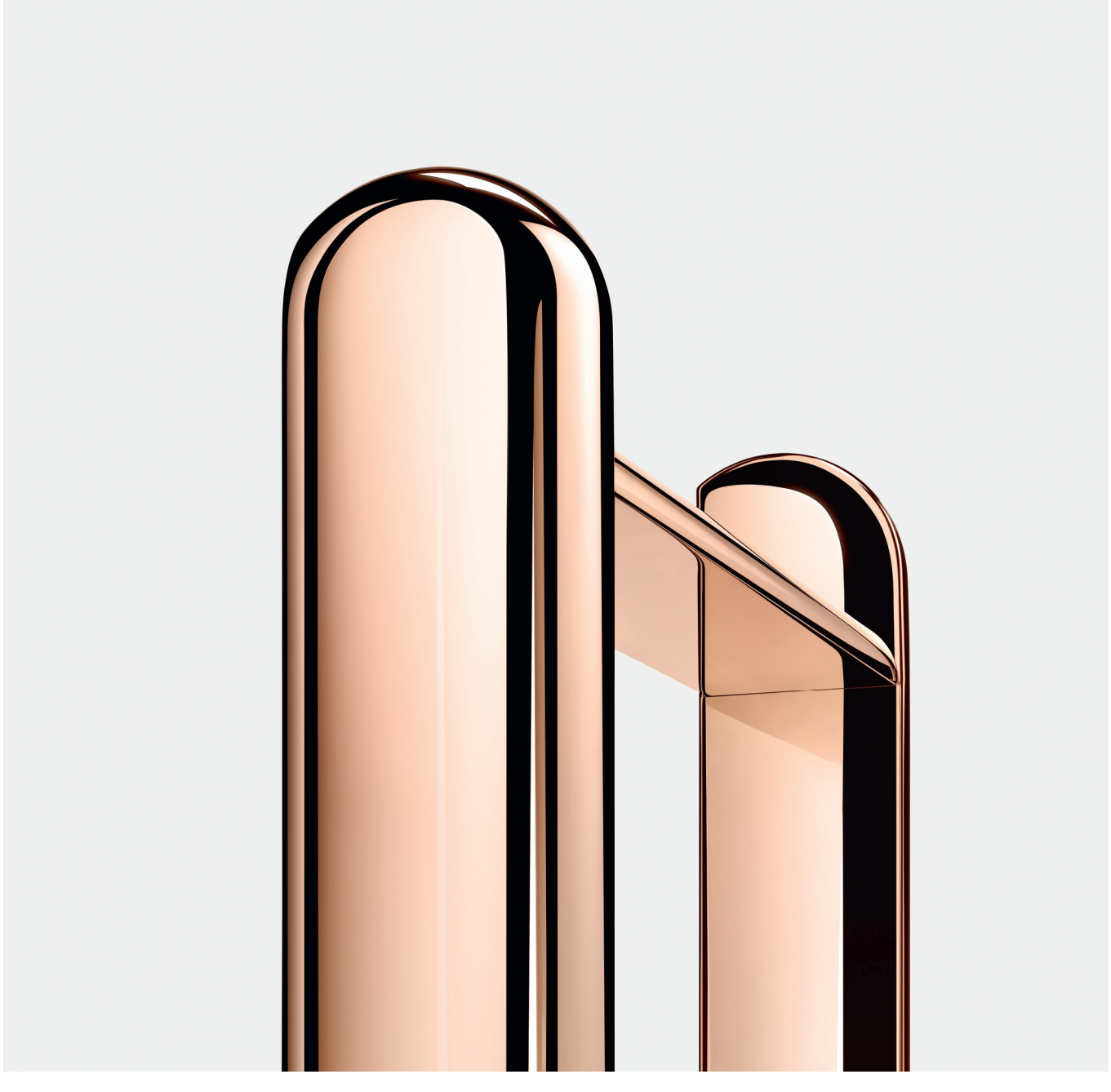

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Zero to hero

PriestmanGoode's planet-friendly food containers offer convenience with a conscience to takeaway cravers

PHOTOGRAPHY: CAROLYN BROWN WRITER: HARRIET LLOYD-SMITH

3D-printed models of PriestmanGoode's 'Zero' takeaway containers, designed using environmentally conscious materials

For last year's Re-Made issue, Wallpaper* issued London-based industrial design agency PriestmanGoode a challenge: to tackle the mass of excess waste produced by food packaging. Its solution was 'Zero', a holistic reimagining of the takeaway food delivery system – convenience with a conscience.

'Zero' comprised a range of reusable, planet-friendly food containers and a delivery rider bag. It also involved a rewards system, such as discounts on future orders, devised to encourage a circular economy mindset. The concept proved an instant hit, with start-ups, restaurant chains, food producers and global brands identifying its potential as a game-changer. 'The project seems to resonate with people across all markets. It's shown there are other ways you can approach food delivery and presentation that address sustainability, aesthetics, customer experience and business needs,' says Jo Rowan, associate director of strategy at PriestmanGoode.

So where can 'Zero' go from here? PriestmanGoode has taken the last year to think outside the takeaway box. 'I think there are endless possibilities, from packaging and furniture to interiors and transport,' says Maria Kafel-Bentkowska, head of colour, material and finish. 'We're seeing this in beauty, for instance, where some brands are focusing on natural products in environmentally conscious packaging that's either compostable or reusable. Even larger supermarkets are starting to trial package-free bulk buying as a means to reduce waste.'

The pandemic has placed a new emphasis on food hygiene, and the team are continuing to explore the potential of antimicrobial additives, reactive materials, and a communications strategy for safe delivery processes with minimal human contact. Covid-19 also brought with it some regressive views on disposability, but though plastic consumption may have increased, so too have the initiatives, legislation and research doubling down on waste.

'We've seen a lot of new plastics entering the market as a result of the pandemic, in PPE and testing kits, for instance. But what this seems to have done is to accelerate awareness of the issue of plastic waste across all industries,' says Kafel-Bentkowska. 'It's encouraging to see there is now momentum from all sides towards tackling this issue. For systemic change to happen, we need change in consumer behaviour, in supply chains and in legislation.' ✱ *priestmangoode.com*

Second act

A watch made from digital landfill offers a timely response to the electronic scrapheap

WRITER: NICK COMPTON

Re-Made 2020-21

E-waste is a big problem. More than 50 million tonnes of it is produced every year, much of it headed for huge, noxious landfills in China and Africa. It only represents two per cent of solid waste in landfills, but 70 per cent of it is hazardous material. It's nasty stuff, but it might also be a big opportunity.

E-waste is rich in rare minerals and precious metals, and the sophisticated and systematic 'mining' of it could be a profitable win-win, a vital contribution to circular manufacturing in the tech industry and an alternative to the environmental scarring of extraction. The key 'unlock' would be finding viable value chains for e-waste materials; new processes that might tip the balance of recovery cost versus potential profit in the right direction, and designs that not only make good use of e-waste but create demand. This was a problem that twins Nick and Steve Tidball, founders of future clothing brand Vollebak, took on last year. We asked them to design a watch for Wallpaper* Re-Made and left it at that, though we did mention circularity as an area they might explore. Nick did some research and decided e-waste was a problem worth investigating.

Inspired by the Centre Pompidou, he designed a watch with visible parts, an open metal box exposing gears, springs and spindles attached to a strap of red and orange plastic cables. He created a physical model of the design for our August 2020 issue and when the brothers later posted an image of the design on the Vollebak website, it generated 20,000 enquiries. Clearly there was no problem with demand. Now they just had to make the 'Garbage Watch'. Luckily, many of the brand's customers are as interested in innovative materials and technological challenges as the Tidballs, and the brothers reached out to see who might be able to help. 'We got a huge response,' says Nick, 'including a very senior designer at one of the tech giants and a guy who owns an e-waste site in Australia.'

Nick spent nearly five months working with a senior materials specialist from the unnamed tech titan, time volunteered for free (professional discretion requires anonymity). 'He knew about materials, electronics and supplies and putting bits of machinery and stuff together,' says Nick. 'And he had a brilliant brain in terms of creativity-meets-problem solving, as good as anyone I've ever met.' The pair broke down the problem, the mechanics of the watchmaking, and set parameters of success. 'We said that even if we only got to use 80 per cent e-waste in this first iteration, that would still be success. Because we would keep iterating.'

Nick's secret collaborator then connected him with Acorn, a product development specialist whose clients include Apple, Google and Microsoft, and they started to discuss materials and where to get them. 'The fascinating thing about e-waste is that you can get hold of pretty much anything you like,' says Nick. 'I'm particularly interested in brass and tungsten right now.

Opposite, built from the tech the world threw in the trash, Vollebak's 'Garbage Watch' uses as many used components as possible, and should be on sale at the end of next year. Visit the Vollebak website to put your name on the waiting list

I'm also thinking of doing a special edition in e-waste gold, as well as ways to use old iPhone torches.'

Nick and Acorn have looked into sourcing waste from Shenzhen in China. 'We're trying to use as many components as is, rather than having to recast materials and make new parts,' says Nick, who also wants to ensure that the 'Garbage Watch' is relatively easy to maintain and repair.

A key decision was whether to use quartz power or devise a new mechanical movement (no small undertaking). It looks like the collaborators may take a revolutionary new course. Over the last few months, Nick has been working with Acorn on three options for the 'Garbage Watch', all with varying levels of risk. 'With the low-risk option I just said, park that – no one will buy it because it's boring,' he says. 'The medium risk version is that everything is made from e-waste, but it is powered by a quartz mechanism that has been discarded for some reason and we'll rebuild it. And we'll create a watch that looks like the one I designed with gears and hands and dials created from e-waste.'

Then there's the high-risk option. Jacob Webb, a robotics engineer at Acorn, has come up with a concept for an entirely new kind of watch movement, driven by parts of a motor usually used in drone quadcopters. The design would not only give 'Garbage Watch' an even more compelling story – entirely new watch movements are rare marvels of micro-engineering – it could offer a multi-functionality impossible with a mechanical watch. And more pleasing buttons to press. But it would also cost more to develop. And there's no guarantee that Webb's idea would work.

Just before going to press, we sat in on a virtual meeting where Acorn gave Nick a final run-through of the options, including costs, development time and risks involved. At the end of the meeting, votes were cast, including ours. High-risk won, and by a landslide. Vollebak is now looking to produce a run of 2,000 or so watches to be available by Christmas 2022. Other versions of the 'Garbage Watch' will follow.

The 'Garbage Watch' project has also inspired a range of Garbage clothing, including a recently launched jumper. 'We found this amazing fabric from France, made out of recycled meta-aramid and para-aramid fibres from old bulletproof vests and firefighters' jackets,' says Nick. 'It's quite a complicated fabric to work with, but the jumper is fantastic.'

The conviction that ingenuity and reimagination can incite passion and unlock demand continues to drive the 'Garbage Watch' project. 'We make really great clothes so I'm pretty sure I can make an e-waste watch and sell that, too,' says Nick. 'It's going to cost proper money, but when I think about what we should be pushing out into the world, this is what we should be doing. So we're going for it, all guns blazing.' ✱

vollebak.com; acornpd.com


+ Panasonic CG-320A -
Made in Japan
+ Panasonic CG-320A -
Made in Japan
Custom Stepper Motor & Single Circuit Board Design
Custom Functional Gears
Ranking Legend
Wave Drive or Single-coil Excitation

This picture, the finished 'urban sled' is fitted with a Cake power train and built using Hydro's recycled and low-carbon aluminium

Opposite, Polestar's Chris Staunton takes the wheel off the Re:Move prototype at the Mira Technology Park, UK. Other key members of the Re:Move team include Polestar's Jeremy Blakey, left, Hydro's Barnaby Struthers, hidden, and Corum's Iban Bruna, right

Re-Made
2020-21

Load star

Engineered by Hydro, Polestar and Corum, and powered by Cake, Konstantin Grcic's electric three-wheeler is ready to deliver

PHOTOGRAPHY: MILO LETHORN WRITER: NICK COMPTON

At the beginning of last year, we teamed the German designer Konstantin Grcic with the Norwegian aluminium giant Hydro. Grcic promptly went away and drew up plans for a utilitarian, electric-powered aluminium trailer and trike – a calmer, kinder solution for 'last mile' deliveries and more. As the year progressed (if progressed is the right word), his proposition seemed to gather momentum.

The pandemic was making less impactful delivery an ever more pressing problem and opportunity. With much of the population working at home, and all but essential retail closed, doorbells were constantly chiming to announce fresh deliveries. At the same time, city governments across the world were determined that streets suddenly almost devoid of traffic would remain free of fossil-fuelled vehicles once the pandemic was over. Side roads were closed to four-wheeled traffic and new cycle lanes were laid out.

As an idea, Grcic's trailer trike had legs. It was clear though that putting the design in motion would require experts in electric mobility. We identified Polestar, the high-end sustainable electric vehicle brand spun off from Volvo, and Cake, the Swedish electric motorcycle maker, as perfect partners. Calls were made to Polestar CEO Thomas Ingenlath and Cake founder Stefan Ytterborn, and they were quick to sign on; the Zooming and Teaming could begin.

A simple observation from Ytterborn quickly prompted a radical redesign. 'Stefan just asked why we needed pedals,' says Grcic. 'The Cake bike battery would be more than enough to pull the loads we were imagining. And that was a key moment. Suddenly I was free of the bicycle typology and could try and create an entirely new typology.'

Grcic reimagined the trike and trailer as a single unit, a dynamic, three-wheeled electric sled. The job now was to create a mock-up or 'mule' in steel, and then a fully working prototype in extruded aluminium. Ingenlath brought on board Polestar director of design engineering Chris Staunton, who pulled together his team and then enlisted specialist engineers Corum Technology to join forces with Hydro's Barnaby Struthers. With Europe now firmly locked down, twice weekly video conferences were set up. As Staunton says, this virtual model of collaboration was its own kind of sustainability win, but it also added a clarity and focus to proceedings. 'I'm sure we would normally have all been on a plane to meet each other, but I think we are more efficient this way. One of the reasons I love this project is because I get to shut out lots of the noise and get down to the real work of collaborative product development.'

For Grcic, the considered efficiency of the collaboration was a revelation. 'Everything ››

‘It was organised like a Swiss watch. Nobody brought any preconceptions. It was just a really beautiful way of developing solutions’

was taken step-by-step, and in quite tiny steps, which really seemed to be part of their thinking,’ he says. ‘It was organised like a Swiss watch. Nobody brought any preconceptions, everyone shared ideas and it was really transparent. It was just a really beautiful way of developing solutions.’

And Grcic suggests his part of the design industry might learn a lot from their automotive counterparts. ‘It was a unique experience for me. Everyone has their responsibilities, and everyone delivers their part. It seems quite common in their industry, but unheard of in mine. I wish we could transfer some of this way of working into the furniture industry.’

Nor, says Grcic, was there any suspicion that the hastily enlisted engineering team weren’t giving his ‘prototype three-wheel thing’ their total focus and the full measure of their considerable ingenuity. Indeed, says Grcic, the time limitations (the original plan, scuppered by Covid, was to show the prototype during Salone in Milan this spring) and restricted budget seemed to fire them up. ‘Some of the engineering problems were quite complex, but the solutions had to be really simple. They are used to developing cars over five years with a lot of investment and time and all the manpower you need. This is a different challenge.’ Staunton says simply, ‘inspirational products inspire people’.

It was important to Grcic that his design stay simple, legible and largely naked. No hiding behind aerodynamic covers. ‘There is beauty in the simplicity, in the way that it is very pared down and essential.’ And it left a lot of room for functional manoeuvring. ‘It’s an open system, an open platform. This is a bare structure and you can adapt that to your needs.’ As Staunton says, this nakedness was its own kind of engineering challenge. ‘There are fewer places to hide stuff than in a car.’

The mule had a number of things to prove, but how Re:Move – as it was now tagged – actually moved was the key test. To turn corners in a usefully tight way, Grcic’s design combines tilting and steering. This meant designing an entirely new steering system, and the Polestar and Corum team had no real way of effectively modelling how this would perform without building it. Even the most complex computer modelling will only get you so far, says Staunton. ‘To learn the stuff you feel or the complex interactions,’ you have to get real.

Lessons learned, a working prototype of Re:Move – essentially the same design as the mule but built out of sections of extruded aluminium and fitted with a power train supplied by Cake – is now up and running. And up and running at some speed. Where it ends up is still to be decided.

As Grcic says, the point of the project was never to create a production vehicle but to simply prove that this kind of vehicle could do a job, do it well and that you could make it in numbers. And it means that the prototype is nearer to a production vehicle than usual.

For now, Polestar and Hydro are planning to use the Re:Move as a platform for discussing new urban mobility solutions, as a challenge to cities to rethink how people and things are moved around and what new or redesigned infrastructure, regulations, tax incentives or other devices are needed to start and finish that revolution.

There are, though, the first signs that Grcic’s design may go beyond the prototype stage. The industrial production of any vehicle, even one as seemingly simple and largely analogue as this one, is a huge commitment. But tentative discussions are happening. One significant order for multiple units could compel the project to the next stage. And, says Staunton, serious thought is already being given to what would happen if orders did come in, and what improvements could be made. Corum is already thinking about refining the dynamics and handling. And there are other practicalities, such as adding a reverse gear and indicators. And, of course, there would need to be all kinds of safety testing and then the long, tortuous path to some kind of legal status.

‘There is a lot of stuff going on in the engineers’ brains about how this could be developed,’ says Staunton. ‘And I think a production model, if there was suddenly a demand for one, would still be 18 months off, maybe 12 at a push. It could be an amazing production vehicle, but even if that doesn’t happen, it’s still one of those projects that will stay with us forever.’

And while Polestar has made sure that certain aspects of Re:Move’s design and engineering are patented, everyone accepts that lookalikes may quickly appear. For Grcic, that would be something to celebrate, a mark of the project’s success. He wanted to create a new typology, a new altogether quieter, cleaner, more appealing way of moving things around. So the more, the better.

The Re:Move project points towards the range of possible futures for the automotive industry, the need to think about mobility in all kinds of new ways, says Grcic. ‘The move from combustion engines to electric really changes the way cars are being built. Cars will now have to be lighter, simpler, cheaper. There will be all kinds of vehicles that are really closer to rickshaws,’ he says. ‘And with our little vehicle, we are trying that out.’

He adds that the switch to battery power has removed a lot of barriers to entry and invited all kinds of smaller players to move into electric mobility in all kinds of interesting and sometimes strange ways. ‘In Berlin, you now see the weirdest things on the road, three-wheelers, two-wheelers. It’s all part of this redefinition of what mobility is.’

Ingenlath emphasised that point in a video, produced by Hydro to talk about the Re:Move project, shown at this year’s SXSW online conference. ‘That’s the beauty of electrification, it’s a very simple technology in a way. It enables transportation that was not possible before,’ he said. ‘The combustion engine always needed quite a lot of vehicle around it. And now suddenly, you can strip it down to the bare necessities.’

The Re:Move project puts Polestar and Hydro at the centre of the conversation around this new era of simpler, cleaner vehicles. Ingenlath was also keen to point out that this is just part of the ongoing push to reduce emissions at every stage of vehicle production. Cars and trucks are huge consumers of resources and energy, before they ever hit the road.

Re:Move then has a way to travel, as an inspirational concept or more. ‘I really think it’s not finished,’ says Staunton. ‘There’s a long way to go.’✱

konstantin-grcic.com; hydro.com; polestar.com; corumtechnology.com; ridecake.com

Grcic keeps track of the Re:Move test day via a video link to his Berlin studio

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Prototype of a 'Victoria' travel bag in sylvania, canvas and calfskin by Hermès, hermes.com
Photography: Coppi Barbieri

Spore patrol

The fashion and sportwear brands on a mission to create a greener future with fungi

WRITER: LAURA HAWKINS

Mushrooms are currently enjoying a cultural renaissance beyond the kitchen. Psilocybin, the active ingredient in psychedelic 'shrooms', is being touted for use in the treatment of anxiety and depression, while Japanese snow fungus and fungi-derived kojic acid are believed to encourage a dewy, blemish-free complexion. Meanwhile, in science labs across the globe, start-ups are cultivating fungal innovations not only for the wellness and beauty industries, but for the fashion and sportswear sectors, too.

Mycelium, the thread-like root structures of fungi, has the ability to be transformed into sheets of biomaterial, remarkably similar in composition to durable, strong and softly patinated leather, piquing the interest of the fashion world. A kilogram of leather requires 17,000 litres of water to produce, farming livestock makes up approximately 14 per cent of global greenhouse gas emissions, and around 70 per cent of the Amazon's deforested area is now used for cattle pastures, so the quest for more eco-friendly fabrics has fostered an increasing number of collaborations between luxury groups, labels and scientific start-ups. In October last year, Adidas, Stella McCartney, Lululemon and Kering (which owns the likes of Saint Laurent, Gucci and Balenciaga) announced they had teamed up to form the Mylo consortium, a partnership with Silicon Valley material solutions firm Bolt Threads, aimed at commercialising Mylo, a supple, mycelium-derived alternative to leather. Meanwhile, in March this year, Hermès unveiled its partnership with MycoWorks, reimagining the fashion house's classic 'Victoria' travel bag in sylvania, a mushroom leather created using the Californian biotechnology company's patented Fine Mycelium technology.

One benefit of mycelium is its ability to be cultivated with less of an environmental impact than petroleum- or animal-derived products. Bolt Threads' Mylo is cultivated in indoor vertical farming facilities, ››

Prototypes of Stan Smith Mylo trainers (above), by Adidas, adidas.com, and Mylo utility trousers (above right), by Stella McCartney, stellamccartney.com, and Bolt Threads

where mycelial cells are fed sawdust and organic matter in climatic conditions similar to the forest floor. Mycelium is grown into a foamy mushroom-like layer, which is harvested, processed and dyed into sheets. At MycoWorks' California facilities, the Fine Mycelium is grown in proprietary trays, designed to induce optimal conditions. 'We capture data at every stage of growth, which is then used to refine each sheet's strength, flexibility and thickness, according to our partners' specifications,' says Matt Scullin, MycoWorks' CEO.

It's prescient that Hermès, famed for its leather making, is making moves towards mycelium. 'Since its earliest days, the maison has created new materials that respond to the needs and uses of our time,' says Hermès' artistic director Pierre-Alexis Dumas of the three-year development of sylvania, which has been crafted to 'complement, not replace' its current offering. Dumas praises the material for being 'surprisingly plump, springy and incredibly soft'.

To create Mylo, rigorous R&D and testing processes are carried out by Bolt Threads' team of scientists. 'We try many different avenues at once of any material,' says the company's VP of product development, Jamie Bainbridge, who is thrilled by the breadth of the brands that Bolt Threads is collaborating with. 'They all have different market constraints and product creation cycles,' she says. 'But they're all invested long term in our journey.'

Stella McCartney, who has never used leather, feathers, fur or skin in her designs, first began working with Bolt Threads back in 2016, later unveiling a Mylo prototype of the brand's signature 'Falabella' handbag. In March this year, McCartney debuted the second design in her Mylo mission, a black bustier top and trousers in recycled neoprene with mycelium leather panels. 'I chose to create ready-to-wear pieces to show the true breadth of what this material can do, which, in turn, is a world first,' she explains. A month later, Adidas debuted its first Mylo design, a version of its signature Stan Smith trainers, with a mycelium leather upper, marking the first time Mylo has been used in footwear. 'It has become the brand's franchise shoe for innovation,' says Bainbridge about the Stan Smith. In November 2019, the German sportswear behemoth teamed up with McCartney on a vegan iteration while, in March this year, it unveiled a version crafted from Primegreen, a performance fabric that contains no virgin plastic.

In July, Lululemon also showcased its debut Mylo designs, two yoga bags that will go on sale in early 2022, alongside a conceptual mat made entirely from mycelium leather. 'Leveraging a material like Mylo demonstrates our commitment to creating a healthier environment through lower-impact products,' explains Lululemon's chief product officer Sun Choe. 'The feel and performance of our fabrics and materials is key to product experience.'

There has been a clear shift in the fashion industry's mindset towards learning from the natural world rather than plundering it. 'We're harnessing whatever nature has designed to make materials for our use,' says Bainbridge. McCartney adds, 'It's so encouraging to see this shift. We need more designers helping to implement this, taking responsibility, making changes and not being afraid.' ✱

mylo-unleather.com; boltthreads.com; mycoworks.com

Photography: Neil Godwin and Phil Barker at Future Studios for Wallpaper*

AXOR

AXOR ONE – THE ESSENCE OF SIMPLICITY

DESIGNED BY BARBER OSGERBY

Into the woods

Redefining eco-friendly architecture root and branch, BIG and Vestre aspire to create the world's most sustainable furniture factory

PHOTOGRAPHY: EINAR ASLAKSEN WRITER: ELLIE STATHAKI

Photographed in May 2021, Vestre's new cross-shaped factory is located near the village of Magnor, eastern Norway, halfway between Vestre's HQ in Oslo and its steel factory in Sweden

It will be a bit like an installation within nature, a folly of an urban square inserted into the forest

Jan Christian Vestre is on a quest. He wants to create the world's most sustainable furniture factory – and he is taking his goal suitably seriously. The young CEO of Vestre, a Norwegian outdoor furniture specialist, has been leading this relatively small, family-owned business since 2012, after his father's passing (Jan Christian is the third generation at the helm), and he has clear plans for it. They include being recognised as the greenest furniture maker on the planet, starting with an exemplary flagship production facility in the middle of a Norwegian forest, designed by Bjarke Ingels Group (BIG).

'It's a tool to change the world,' says Jan Christian. 'We don't want to be another company just pushing products to the market.' The factory is critical in that respect; it's the first step in promoting a wider shift towards greener practices. 'People can share life ideas there, have a sense of belonging. It's about bringing people together. We can create new enjoyable, profitable jobs and stop climate change; we can do both. We want to prove we can build a factory that can not only meet, but surpass the Paris Agreement measures.'

It's a tall order, but Jan Christian's enthusiasm is palpable and his architects share his passion and concerns. 'Interestingly, the two most sustainable projects we've ever done are factories: the CopenHill power plant in Copenhagen, and this,' says David Zahle, a Copenhagen-based partner and architect at BIG. 'Coincidence? Not necessarily. Factories are where many environmental problems start and where people can change things directly through their daily job.'

Vestre has form when it comes to architecture: its first factory, designed by David Sandved in 1959, was once described as 'one of the most beautiful industrial buildings imaginable'; a second factory in Torsby and its Oslo HQ are by none other than Snøhetta. Jan Christian approached BIG directly for this latest commission, having seen its past work and admired its playful approach. He first met Ingels at the opening of another BIG project in Norway, the Kistefos Museum (W*242). 'We wanted bold ideas and a sense of humour,' he says. BIG famously does both, from CopenHill's power-plant-cum-ski-slope, to its Lego House in Billund, which looks like a stack of the beloved bricks, and the Danish National Maritime Museum, whose sunken courtyard resembles the hull of a ship.

Making a building that would be sustainable in every aspect, from its materials to its building methods and future life, is just as hard as it sounds. Many processes are still fairly uncharted territory and the reality of challenging everything in design and construction is certainly not easy – not least because it's all happening during a pandemic. 'We had to develop new methods to make things work. There is a lot of glass, for example. We have more than 2,000 sq m of windows [which could have resulted in poorer heat control], but we dealt with thermal bridges, insulation and a façade that has never been done before. We tried to make no compromises,' explains Vestre. Following the project's completion, the team intends to share publicly all the technologies they developed and used, for all to see and make use of freely in order to accelerate the transition to green technologies.

The factory, called The Plus, is a low-lying structure that takes its name from its cross-

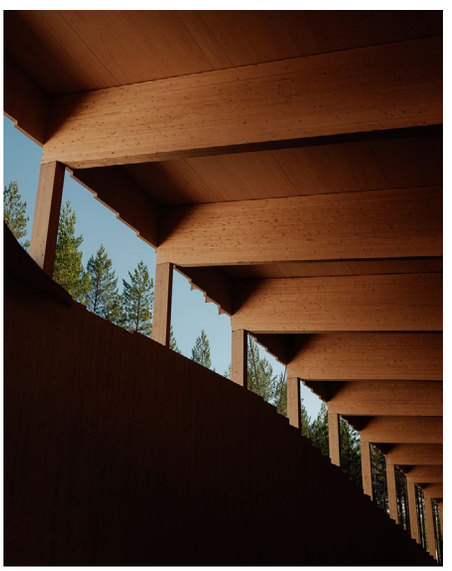
shaped plan. Spanning 130m on each side and with 7,000 sq m of floor space, the building is relatively modest, but uses its space with extreme efficiency, making the most of its outdoor spaces, too. Goods go in at one end, then are split through to the wood factory and the colour factory. Product gets assembled together in the fourth wing and then shipped out on the other side. 'It's essentially a big conveyor belt,' explains Zahle. At the heart of the building, set inside an internal roundabout, is a sunken open courtyard wrapped in glass. The parts of the building that are not glazed will be clad in charred wood. Materials were chosen to be environmentally friendly and hard-wearing, so that the building will need as little maintenance as possible in the future.

The outdoor areas were of critical importance, as the space will be open to all. The public is welcome to visit, walk and rest around the building, or on its planted, accessible roof. There is no fence and it will be available 24/7. 'It was very important that the people inside could look out into the forest, and people from the outside could look in – so there's total transparency,' says Zahle. 'There are even windows on the roof so visitors can look into the offices.' The surrounding nature will be part-outdoor showroom and part-playground, filled with playfully stretched, twisted or oversized furniture from Vestre's catalogue. It will be a bit like an installation within nature, a folly of an urban square inserted into the forest. Meanwhile, the ramp up to the roof and the central staircase inside the courtyard will be painted in various colours representing the 300 colourways that Vestre produces its furniture in, creating a cascading rainbow.

The Plus is due to be completed and operational by the end of 2021; it will then open its doors to visitors in 2022. At the same time, Vestre is improving more parts of its business to reach its sustainability goal. This drive will hopefully be complemented by business growth too. 'There is a wide range of things that we are doing, and even more that we can do in the future. We are growing fast,' says Jan Christian. 'Not that growth in itself is the goal, but this way we can do more.'✱

big.dk; vestre.com; theplus.no

Clockwise from far left, the production facility will double up as a 300 acre public park, with a winding path connecting the forest with the building's roof; building work in progress on one branch of the cross-shaped building; detail of the cross-laminated timber frame and long-span beams



Roll call

Nona Source gives a new lease of life to LVMH's high-end deadstock fabrics

PHOTOGRAPHY: FLORENT TANET WRITER: LAURA HAWKINS

An ecological cave of wonder sits in Tours, the capital of France's Loire Valley, south-west of Paris. Its shelves are stacked with roll upon roll of exquisite fabrics: cloudy cloque in a delectable peach, a gauzy seersucker with vivid jacquard flowers, an undulating floral lace, a wool and silk Prince of Wales check in bold blues and reds. These bolts and bundles are all deadstock materials supplied by a single haute couture maison. They aren't destined to gather dust or mildew, as often happens with forgotten fabrics from a single clothing season. Instead, they are available as second-life materials to major and emerging clothing brands who are keen to use a circular economy model.

Welcome to the warehouse of Nona Source, a new sustainability-focused digital platform that resells second-life fabrics at competitive prices. Launched in April 2021, it was incubated by LVMH's entrepreneurial innovation programme DARE.

'My idea was to create a platform that could connect designers with surplus fabrics or what I call "sleeping beauties",' says Romain Brabo, one of the three founders of the company, who is also its ready-to-wear industrial and operations manager. Brabo first began musing on how fashion houses' excess fabrics could be reincorporated into supply chains when working as a fabric buyer at the LVMH-owned Givenchy. In 2019, when working as ready-to-wear manager at Kenzo (also owned by the luxury conglomerate), he met Marie Falguera, the brand's CSR and material development expert, who shared ››

Nona Source's warehouse in Tours is packed with high-quality surplus fabrics, including, this page, poplin cotton in bold colours and, opposite, a roll of bright yellow virgin wool

a passion for 'circularity and environmentally friendly materials'. The pair met the final co-founder of Nona Source, Anne Prieur du Perray, a digital transformation manager at LVMH, as part of the DARE pitching process.

The trio's reuse and resell buying model reflects LVMH's LIFE 360 programme, an environmental roadmap that states 'creative circularity' as a priority. McKinsey's 2020 'Fashion on Climate' report estimates that today, 'less than one per cent of used products are recycled back into the fashion industry's value chain', and that 'by 2030, we need to live in a world in which one in five garments are traded through circular business models'.

'We're encouraging the creative use of existing resources,' says Falguera. 'We're also providing a clearance resource to fashion houses.' By July 2021, Nona Source had received 1,000 fabrics sourced from a LVMH-owned brand, ranging from crêpe de chine to cotton silk poplin and light Shetland wool. Branded patterns or exclusive prints were excluded from the donation. By 2022, it plans to have doubled this number.

Nona Source's main challenge was how to sell fabric – a process which often relies on in-person touch and feel and a certain level of subjectivity – through a digital platform. Through its website, designers can browse according to different categories, including fibre, weight and type; they can also search according to wear and pattern. Subcategories include viscose, shirting and textured. Nona Source has also invested in high-quality photography and film, and collaborated with material experts to represent colour fidelity and material composition correctly, so the browsing experience resembles 'feeling fabrics with your hands'. Each fabric in every available colourway has been shot on a wooden mannequin, to highlight tone, transparency and drape. A close-up video sees these materials manipulated by hand, folded, stretched and scrunched together. Fabrics are also labelled according to the maximum amount of individual material available, ensuring brands are conscious of quantities before making purchases. A calfskin leather in rich teak is available as a single roll, while a grey diamond check jersey has a maximum quantity of seven rolls.

Nona Source doesn't just allow eco-minded brands to work using a second-life materiality model, it also gives them access to the highest quality fabrics at a reduced cost. 'This isn't about profit, it's about supporting creative communities,' Brabo says. 'We're selling materials at approximately a third of the usual price.' It's a mindset also echoed by Burberry, which announced its ReBurberry Fabric Initiative in December 2020, a project in collaboration with the British Fashion Council, donating deadstock fabrics to UK-based fashion students.

Nona Source was named after the Roman goddess of destiny who spins the thread of life. For the platform, the notion of creation today is twofold: 'We work with a paradox: you create new things, but you have to protect the planet, too,' Falguera says. Inspiring new creativity and encouraging a second-life circular manufacturing model, Nona's threads also ensure that fashion brands and designers alike are thinking of the long term.' ✱
nona-source.com

'My idea was to create a platform that could connect designers with surplus fabrics, or what I call "sleeping beauties"'

There are over 1,000 different fabrics to choose from, including silk satin, above, and poplin cotton, opposite

The commercial heart of the new Tour & Taxis district in Brussels is the Gare Maritime, the region's former central station, which has now been redeveloped to house shops, hospitality and offices

SUSTAINABLE CITIES: CASE STUDY 1

Post master

A former mail facility in Brussels is redirected as an eco-led, mixed-use quarter

PHOTOGRAPHY: ROMAIN LAPRADE WRITER: EWA EFFIOM

In the early 16th century, the aristocratic family of Thurn und Taxis bought a 45-hectare parcel of marshy land on the then-outskirts of Brussels. They had been appointed postmasters by Philip the Fair, the Duke of Burgundy, and held a similar position for the Holy Roman Emperor Maximilian I. Their acquisition would become the centre of Europe's first international postal service, a Thurn und Taxis enterprise connecting the Spanish Netherlands, Burgundy and Spain with the rest of Europe. The road that crossed the site's collection of industrial buildings and horse-feeding pastures took the family name, translated into French as Tour et Taxis, giving birth to the district of Tour & Taxis.

By the beginning of the 20th century, it had evolved into a busy logistical ecosystem; goods arrived via train and canal and from there, they were dispatched. Everything passed customs and registration at the Gare Maritime, the complex's central station. Unfortunately, with the arrival of the EU»

SANTA & COLE

INTERIORS
FROM SPAIN

Zeleste
Àngel Jové, Santiago Roqueta. 1969

Tour & Taxis has been undergoing something of a reimagining, swapping logistical revolution for sustainability

Customs Union, and later the Schengen Area, customs gradually became irrelevant and the operation obsolete. Tour & Taxis remained disused for 20 years until it was bought by local private developer Extensa in 2001.

Since then, Tour & Taxis has been undergoing something of a reimagining, swapping logistical revolution for sustainability as it seeks to reinvent itself as an eco-friendly district. The area, situated by the Brussels canal and just to the northwest of the Belgian capital's centre, currently mostly consists of large converted warehouses and offices of brick, iron and glass next to the magnificent historic cast-iron-frame freight station. Extensa's vision is anchored in the refurbishment of the existing historic buildings to 'return Brussels' heritage' to its inhabitants, as well as a few new-builds. The first renovations and completions started opening in 2005. The aim is to create an eco-led, mixed-use district by restoring as many existing buildings as possible and introducing renewable-energy and energy-saving technologies.

The district's industrial heritage means that most of the existing buildings are characterised by large volumes, so are well suited to become event spaces and offices. One of the first buildings to open in 2005, the Sheds – a sawtooth storage warehouse designed in 1903 by Ernest Van Humbeeck and reimagined for Extensa by local studio Archi 2000 – has four event spaces, accommodating 10,000 guests each, while Maison de la Poste – a 1904 Frédéric Bruneel building renovated by architects Altiplan in 2019 – is now a conference centre consisting of 15 event spaces that showcase its carefully restored industrial architecture. There are galleries in the refreshed Hôtel des Douanes (a 1907 building also by Van Humbeeck) and more are to come, repurposing the remaining historic buildings in the area. Meanwhile, the few new-builds on site include offices by Neutelings Riedijk (a project that is currently the largest Passivhaus scheme in Belgium), Cepezed, and Samyn and Partners.

The district's flagship building is the Gare Maritime, whose architectural works were completed in autumn 2020. The retail and food hall within are scheduled to launch in September 2021, marking an important landmark in the area's redevelopment.»

Top and above, within the cast-iron frame of the Gare Maritime, 12 cross-laminated timber pavilions have been inserted, creating internal retail and office space

At around 45,000 sq m, it was Europe's largest freight train station at the beginning of the 20th century. The building has now been refreshed, and 12 new cross-laminated timber (CLT) pavilions have been added within.

Gare Maritime is the area's commercial heart, housing hospitality, shops and offices. It has been carefully restored and redesigned by a team consisting of architects Neutelings Riedijk, Bureau Bouwtechniek and JDMA, and engineers Ney & Partners and Boydens. One of the key design drivers was adherence to the circular economy, salvaging existing materials but also making sure that all interventions are both light-touch and demountable. It boasts the largest CLT structure in Europe and the building is energy neutral. Gardens, designed by landscape architects Omgeving, help regulate the internal temperature and are watered using the rainwater harvesting system. Additionally, the site uses geothermal heat and 17,200 sq m of photovoltaics on the roof, marking the biggest move to solar energy in the capital. The developers are even bringing a tram line to the area by creating a new bridge over the canal (the water created a barrier that had so far been an obstacle in bringing public transport to this part of town). This, and the fact that many of the streets in Tour & Taxis are pedestrianised, means car use will be discouraged, although there will be underground parking space.

A number of apartment buildings are currently in construction. They are the start to what Kris Verhellen, Extensa's CEO, hopes is a whole new residential neighbourhood, called Park Lane. Verhellen is acutely aware of the inevitable gentrification of the neighbouring area of Molenbeek, which has a sizable Maghrebi immigrant population. He talks about the scheme's tax contribution and the state's responsibility to create an economic system where immigrants aren't priced out. While the scheme's sustainability credentials are undeniable, one wonders whether more could be done to ensure links are created to existing communities.

It is true that some of the residential offerings will be rent-capped so that they remain affordable, while future plans include a school and a retirement home. A nine-hectare publicly accessible park, currently in construction, will include a community farm and a garden in an expanse of green that connects the site to the canal, making it one of the biggest parks in Brussels.

Do these interventions go deep enough into the fabric of the existing local community to engage them with the scheme in a meaningful way? Could more be done? One thing is for certain; if Tour & Taxis does deliver, it will provide a precedent of reuse and eco-friendly redevelopment that can be used in other historic settings. Which is exactly why it is important to ensure that social balance takes the same priority as environmental, as it has become increasingly clear that they are inseparable in the quest for sustainability.✱ *tour-taxis.com*

Top, apartment buildings under construction in Park Lane, the district's residential quarter

Above, a bike/pedestrian access ramp, designed by Belgian-Swiss architecture practice Baukunst, links Rue Charles Demeer to the Tour & Taxis neighbourhood

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SUSTAINABLE CITIES: CASE STUDY 2

Green list

A trio of projects in Ho Chi Minh City showcase the best of bioclimatic architecture in spades

PHOTOGRAPHY: HIROYUKI OKI WRITER: JOSHUA ZUKAS

On a sizzling April afternoon, a rainstorm pummels Ho Chi Minh City. Despite the deafening downpour, temperatures stay miserably high in the megacity's concrete and glass-laden central districts. Urbanites remain sheltered in offices and cafés, which are sealed and air-conditioned. After the outburst, which lasts for an hour or so, the clouds crack and the sun resumes its offensive, turning the city's soggy centre into a steam bath.

About 15km north-west of the vaporous centre, one building experienced the same

Above, an aerial view of G8A Architects' Concrete Waves, FPT Software's new HQ

Left, the building's rings of white perforated sunshades contrast with the tropical courtyard garden and its red Corten steel bridges

storm differently. From above, Concrete Waves appears as a singular stack of giant white rings that encircle a lush jungle courtyard. While the breeze that accompanied the cloudburst was blocked from entering the airtight buildings in the city centre, here it swept through and cooled the space. Water lashed the building, but much of it was funnelled to – and absorbed by – the green oasis within. After the rain subsided, air-conditioning units worked hard to keep the naked glass buildings in the city centre cool. But at Concrete Waves, sensibly positioned exterior sunshades protect the glass from the sun's direct rays, while still inviting plenty of natural light, minimising the need for mechanical cooling.

Ho Chi Minh City's tropical savannah climate is characterised by abundant rain, plenty of sunshine and a persistent breeze for much of the year. Harnessing the local climate's benefits while mitigating its disadvantages is at the heart of bioclimatic design, as seen at Concrete Waves. 'When it comes to building bioclimatic architecture in the tropics, porous is the word,' explains Swiss architect Grégoire Du Pasquier, a partner at G8A Architects, the firm that designed the building for FPT Software, Vietnam's largest IT company. 'You want to encourage natural ventilation.'

While billions are invested in technology to build sustainably, 'bioclimatic solutions don't cost a lot,' says French architect Charles Gallavardin, co-founder of T3, ››

‘Sustainable architecture doesn’t need to be high-tech. It just takes some thought’

a Ho Chi Minh City-based practice that has applied these solutions to residential, commercial and recreational projects across the city for almost a decade. The approach’s affordability is particularly important in middle-income countries such as Vietnam.

Each of Concrete Waves’ six floors holds four or five workshops enclosed by glass, but 40 per cent of the structure, including the breakout spaces and corridors, doesn’t need air-conditioning. Bioclimatic design aims to utilise the local climate for optimum human comfort, but it can also make a building more energy-efficient. According to Du Pasquier, the client is already reporting lower-than-expected electricity bills, and is keen to expand the office.

Concrete Waves was designed like a ‘cell that can reproduce; an organism that can grow, mutate and multiply,’ says Du Pasquier. The current 31,000 sq m structure, completed in 2019, is only phase one of a three-phase plan. The second and third phases will include two additional jungle courtyards enveloped by interlocking, asymmetrical, similarly porous structures. G8A Architects fit the corridors that overlook the jungle with precast perforated sunshade elements, one of the building’s defining features, to invite the breeze, illuminate the walkways, protect from the rain and allow for unencumbered views of the biophilic nuclei.

Biophilic and bioclimatic principles can combine to create gratifying residences, too. On the outskirts of Ho Chi Minh City, G8A Architects had the space to play. But when MIA Design Studio was commissioned to build a house in the city centre, the firm had less room to manoeuvre. Villa Tan Dinh, completed late last year, is situated in one of Ho Chi Minh City’s densest districts, and yet Nguyen Hoang Manh, the firm’s co-founder, still found ways to harness the elements.

‘We opened up both sides of the house to encourage as much natural ventilation as possible. But we also used a canopy for sunshade,’ he says. The ground floor, which houses a raised pond for additional cooling, is left entirely open, while large windows on the enclosed upper floor are shielded from direct sunlight by cascading vines. The biophilic canopy doubles as a roof terrace, rewarding the residents with a private garden in a district lacking greenery.

Tropical Space, another local firm, is building bioclimatic houses that don’t need to be air-conditioned at all. ‘Our philosophy is to live with nature, not to fight against it,’ says Tran Thi Ngu Ngon, the firm’s co-founder. ‘We want the elements to help create built environments, but not overwhelm them,’ she explains.

Around 10km south of the city centre, Tropical Space built Nha Be House, completed in May, for a family of four. One of the family members has respiratory issues and air-conditioning impacts on her health, so the firm built a perforated brick house with a buffer zone and a central void to encourage natural ventilation and resist heat. This echoes both Tropical Space’s award-winning Terra Cotta Studio in central Vietnam, a simple atelier that enables the ceramicist owner to work with natural light, feel refreshed from the breeze, and take inspiration from the sounds of the enveloping countryside; and the firm’s Long An House, a design with a sloping roof and hollow clay brick walls inspired by the local vernacular.

‘Sustainable architecture doesn’t need to be high-tech,’ insists Gallavardin of T3, who is completing a large bioclimatic office in one of Ho Chi Minh City’s most congested districts later this year. ‘It just takes some thought.’✱

g8a-architects.com; t3architects.com; miadesignstudio.com; tropicalspaceil.com

Above and opposite, the two-storey Villa Tan Dinh by MIA Design Studio features a raised pond for additional cooling, and cascading vines to provide extra shade

Tropical Space's Long An House comes with, right, a living area that opens onto a large central courtyard with pool and, below, perforated brick walls that allow the breeze to circulate throughout the building

Garden city

Foliage is fashionable again in Medellin as eco-conscious architecture spreads its roots

WRITER: RAINBOW NELSON

After decades of drift, of architects losing touch with their local traditions, foliage is fashionable once more in Medellin. Colombia's most innovative city is going through a green (r)evolution, a return to its tropical modernism roots with a flurry of high profile hotels, high-end apartment blocks and holistic offices that put plants very much back into the picture.

'It's like my grandfather always used to say,' says Felipe Mesa of architecture firm Plan:B. 'There's no building that's been designed by an architect that can't be improved by planting a tree in front of it.' Mesa has been leading the city's powerful, flowery recovery since he arrived on Medellin's architectural scene with Orquideorama, a towering, beehive-inspired public space built to showcase the Jardin Botánico's orchid collection in 2006. Since then, Mesa and his team have pushed the envelope with an organic spread of eco-conscious architecture, including his collaboration with Giancarlo Mazzanti in 2009 on a series of green, permeable sports venues in the heart of the city.

The city's urban planners have been nurturing an architectural uprising along the same lines, laying down 30 green corridors that involved the planting of 8,300 trees and 350,000 shrubs to criss-cross the city and pump oxygen back into the most polluted neighbourhoods in 2019. The new corridors were connected to 20 'articulated life units' (the city's formal name for parks) by more than 80km of new cycle lanes – all funded by the city's renewable energy company, Empresas Publicas de Medellin.

But while nature-based solutions are integral to city hall's response to Medellin's mounting issues with air pollution and the climate crisis, not all the growth that has engulfed the city over the last 20 years has been healthy. Much of the rampant construction of residential towers to the south has isolated its residents from the exuberant natural riches found in what is, »

The Click Clack hotel, above, and office building Antejardin, opposite, both designed by Plan:B, use cross-ventilation and native plants to reduce internal temperature and energy consumption

Photography: Alejandro Arango


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mile for mile, the most biodiverse country on Earth. The need to push where and how we live back towards nature has heralded a recent rediscovery of the tropical modernist principles that shaped much of the city's architecture in the 1960s, inviting nature back into Colombian homes. 'For the last five years, sustainability has definitely been more fashionable, but actually there is nothing new in this,' says Mesa. 'The people of Medellin have always loved the countryside and nature, even if they are in the city.'

Forward-thinking clients have embraced Plan:B's approach. The groundbreaking Colombian design hotel brand Click Clack commissioned the practice to create its second location, which opened in Medellin in 2019. The project uses native plants throughout to reduce thermal heating of the building, and the asymmetric organisation of the rooms and balconies, stacked on top of each other like containers, permits the flow of air into the rooms and balconies when guests choose to open the doors and windows. At ground level, the L-shaped building is lifted up by pilotis to permit the flow of air and people in equal parts. Landscape architects Greenfield + Epifita introduced more than 20 species to the property, inviting guests to cohabit the space.

For the office building Antejardin, Plan:B used a similar approach, introducing cross-ventilation and tropical plants on the balconies, rooftop terrace and interior patio to reduce internal temperature and energy consumption. Pointing the way to office buildings of the future, Antejardin was finished just six months before the pandemic raised serious questions about the long-term viability of the hermetically sealed, air-conditioned offices and hotels that have ruled the roost in Medellin since the 1990s.

The city has some impressive green credentials, which include being named the most innovative city in 2013 by the Urban Land Institute, partly for environmental criteria, and being lauded by the World Economic Forum and C40 in 2019 for its green corridors. But if there's one building that can take credit for these credentials firmly taking root in more private commissions, it's Matorral by ALH Taller. The five-storey residential block won the Lápiz de Acero award, the most notable accolade granted to Colombian designers, and the financial success of its five luxury apartments ignited demand for a string of similar projects. In the last four years, ALH Taller's curvaceous, verdant designs, coupled with seductive, minimalist interiors by local studio 5 Solidos, have struck a chord with both the celebrity set and hoteliers alike, with new projects by the team, as well as other practices following in their footsteps, springing up across the city.

'We wanted to create the experience of living in a house in the countryside in a highrise,' says Santiago Arango, one of ››

'There's no building that's been designed by an architect that can't be improved by planting a tree in front of it'

Above, the vertical gardens of the Provenza Arriba residential apartment block, designed by ALH Taller

Photography: Mateo Soto

‘When finished, the buildings generate oxygen for the city, and attract birds, butterflies and bees’

the founders of ALH Taller. ‘We have always been interested in the integration of external and internal space to create architecture that’s permeable.’

The post-pandemic popularity of ALH Taller’s mood-defining mix of iconic midcentury modern cobogós from Brasilia, Manhattan loft-style floorplans, and Arquitectonica-esque cheese holes has opened the way for more of the same. Much more. To the delight of many long-suffering office workers, it has even prompted the retrofit of many older offices that had previously shunned vertical gardens.

ALH Taller incorporates loft-style, floor-to-ceiling windows in all of its buildings to reduce energy consumption by increasing natural light and cross-ventilation. Foliage is embedded into the buildings’ design and nurtured with collected rainwater. ‘These are real gardens with 3m-high trees that give fruits, such as oranges and lemons,’ says Arango. ‘When finished, the buildings generate oxygen for the city, and attract birds, butterflies and bees.’

Another local architecture studio that is honouring the city’s tropical modernist traditions is A5 Arquitectura, whose recent projects include a 15-storey tower that will integrate trees of up to 11m in height on the balconies and terraces. The studio also designed The Somos hotel, where it positioned the staircase on the building’s façade to maximise the interior space available for rooms. Foliage draped from the staircase provides continuity between the leafy, public spaces in the basement and the rooftop bar, and helps reduce noise pollution in the guest rooms. In another project, Noi, A5 transformed a former industrial warehouse into a co-working space, featuring cross-ventilation, rainwater recycling and internal gardens, and also added solar panels to provide 50 per cent of the building’s energy needs.

‘Pioneering buildings like Matorral have created a tendency to include plants, terraces and gardens to bring the tropical riches that we have in Medellin closer to where we live, which is great,’ says A5’s Camilo Ramírez. ‘This has enriched the creative process, in particular for smaller residential projects in Medellin, but the theme of sustainability and the environment needs to go much further than just having some plants in a building.’✱

planbarq.com; alhtaller.com; cincosolidos.com; a5arquitectura.com

Above, The Somos hotel in Medellin’s fashionable El Poblado district, where rooms are linked by an external black steel staircase, punctuated by greenery

Photography: Mateo Soto

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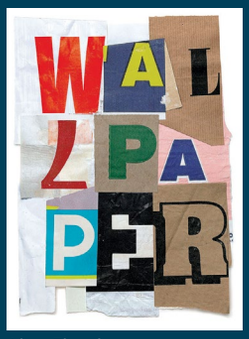

Alan Fletcher
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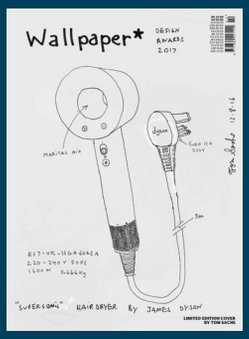

Tom Sachs
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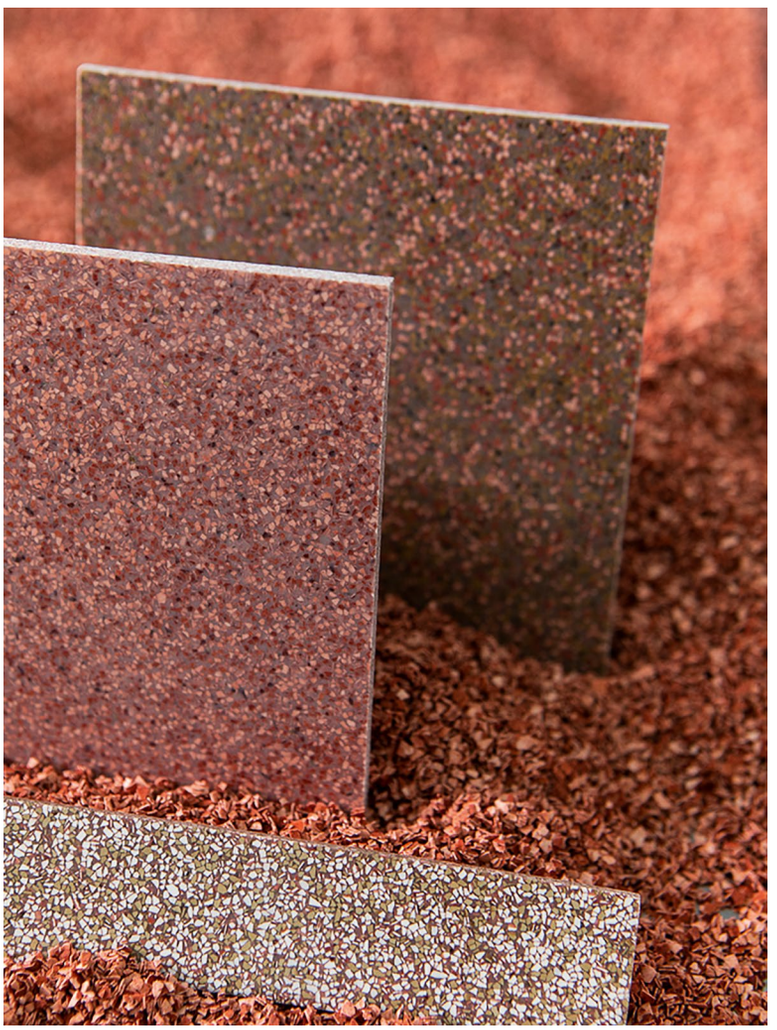


Right, Elaine Yan Ling Ng photographed in Hong Kong in November 2020 with tiles from her 'Carrelé' collection for Nature Squared, dyed with madder

Opposite, top row, eggshell fragments fresh from the madder dye vat; examining dyed, dried eggshell for quality

Bottom row, hand moulding eggshell paste; three 'Carrelé' tile samples, in Harlequin, Coloré and Polished Harlequin

Shell raiser

Ethical design brand Nature Squared elevates the egg with its ecologically sustainable collection of wall tiles

PORTRAIT: TRACY WONG PHOTOGRAPHY: MIGUEL NACIANCENO WRITER: DAVEN WU

Vegans, look away. Each year, around 250,000 tonnes of chicken eggshell waste is produced around the world and, to no one's surprise, much of this ends up in landfill. All the more reason then to applaud the debut of 'Carrelé', an ecologically sustainable collection of wall tiles, handmade from recycled eggshells.

Inspired by the use of eggshell waste in medical and dental therapies, 'Carrelé' was created by Elaine Yan Ling Ng, newly appointed chief material innovator for Nature Squared. It is one of her first projects for the UK-based studio that turns natural materials such as abalone shells, abandoned termite nests, grass and seeds, and even stones, into sustainable construction material.

If this solid biowaste is good enough for the medical industry, reasoned the British-Chinese designer, 'that's proof enough that it has great strength and stability and, with a change of formula, these properties may be used in other industries such as architecture'.

Two years in the making, 'Carrelé' – the name is a mash-up of the French word for tile and the periodic symbol for calcium – is produced in Nature Squared's factory, in Cebu in the Philippines, where 3,000 organic white eggshells from local bakeries, kitchens and Nature Squared's own eggshell-inlay studio are crushed, combined with a binding agent, then cured at room temperature to create a square metre of tile. 'We tend to associate eggshells with fragility, but they're actually very strong and naturally UV-resistant,' says Ng, a Central Saint Martins alumnus in textiles. 'They also absorb natural colours sustainably in fascinating ways, making them a wonderful building material. We use natural dyes, such as indigo, madder and chlorophyllin.'

The easy-to-clean tiles can be applied to walls, including wet areas in bathrooms and kitchens, and there are plans to extend the product to flooring. 'I love their unexpected visual versatility,' says Lay Koon Tan, who co-founded Nature Squared with Paul Hoeve in 2000. 'They're reminiscent of terrazzo, but they're obviously not terrazzo.'

The 'Carrelé' collection isn't just pretty to look at or touch. It also represents a broader approach to sustainable design, specifically an agenda which Ng says 'strives to achieve and improve social sustainability, local work opportunities and inclusive and circular design, and reduce local methylation'.

It's an ethos that especially resonates with Tan. The appointment of Ng – whom she met at Rossana Orlandi's gallery during Salone del Mobile in 2019 – finally closes a gap in Nature Squared's production loop. In the past, the studio only worked on bespoke designs, including a wellness cabinet with Singaporean designer Olivia Lee for Wallpaper* Handmade 2018 (W*233). Says Ng, 'Bespoke work doesn't usually involve repeat processes, nor does it maximise an existing supply chain or natural materials' potential, which limits the amount of natural waste that can be used. With eggshells, for example, most people see them as waste, but I see an endless playground and limitless resource.'

Tan agrees. 'We want to divert larger volumes of waste away from landfill and into new methods to create unique and innovative products at more accessible prices.'

These are ambitious goals, to be sure, but Ng is pushing ahead. She's currently experimenting with seashells which, like eggs, are bioceramic and CO_2-absorbent; and, every year, seven million tonnes of the stuff are generated by the seafood industry.

'Elaine's brief is to apply her creative energies to each of our materials in turn,' says Tan. 'All designers are creative, but she applies her creativity within a wider social and environmental awareness. She designs for a greater good, rather than simply for beauty or function.'✱

'Carrelé' wall tiles, from €595 per sq m, by Nature Squared, naturesquared.com

Dream weaver

Textile innovator Byborre launches a new platform to empower creators and reduce industry waste

WRITER: YOKO CHOY

Borre Akkersdijk, co-founder of Dutch textile innovation studio and clothing label Byborre, was drawn to the textile industry because it was one of the few sectors that had yet to be truly modernised. Textiles, of course, were a key driver of the Industrial Revolution. And, much later, the boom of fast fashion in the 1990s accelerated the growth of the industry. But, Akkersdijk says, 'this was all in an old-school way. It was not driven by technology but by big, labour-intensive factories. Byborre was inspired by the tactility of textiles in a world that had not been revolutionised.'

Founded in 2010, Byborre is committed to curbing wasteful practice in the industry. Within the textile supply chain, fibre makers often influence the direction of yarn makers, who influence the direction of textile manufacturers. At the receiving end are the creators, who generally have little say in what and how textiles are made. When they need textiles for their products, they mostly choose from what is on the market, or visit industry fairs in search of something that comes closest to what they have in mind. So paradoxically, while brand designers best understand their end users, it is textile manufacturers who are driving the product. It is this misalignment which, over the last decade, Byborre has addressed in its mission to build a new ecosystem. 'We flipped the supply chain the other way around,' says Akkersdijk. 'We start from the creators.'

The company recently launched Byborre Create, a scalable platform, operated through an online app, that provides creators with direct access to sustainable design choices, innovations and creative tools. The goal is to democratise innovation, support responsible textile production, and encourage fitter-for-purpose, longer-lasting products. 'We developed a new process that allows creators to innovate,' Akkersdijk says.

Byborre Create breaks down the supply chain into four simple design steps, and guides brands through an intuitive workflow: firstly, determining the function of the fabric – be it for clothing, interiors or automotive – and choosing suitable yarns from the platform's curated and vetted library; secondly, exploring knit types to find the perfect weight and structure to match their creative vision; thirdly, composing the colour; and finally, adding aesthetic elements to infuse their brand's DNA into the textile.

'When creators and brands start using the platform, we start a new dialogue. So we all learn and improve when everybody uses it. We want to change the industry with this honest open-source mentality. We want brands to make better products and fewer mistakes, so that there is less harm to the environment.'

Akkersdijk points out that the textile industry's R&D process can be staggeringly wasteful. 'As a creator, if you don't have influence in that process, how can you control your impact?' he says. So Byborre set up a hub in Amsterdam for R&D and sampling. When creative needs have been defined, a thorough production brief is sent to the respective factories. 'The machines here mirror exactly those in the factories that we have licences with. Now, because Byborre brings in clients, ensures material supply and provides them with the best programme and design, the factories can lower their minimum order quantity (it was usually between 2,000m and 5,000m, but they can now work with as little as 250m) and it allows quicker delivery. The brands don't have to worry about overproducing or sharing the same textile design with competitors.'

Akkersdijk believes there also needs to be a transparent overview of the product. 'At the moment, we are making our own life cycle assessment [an analysis of the potential environmental impact of products during their entire life cycle] for all textiles created by or through us, and a product passport that shows where the fibre came from, where the yarn was born, where the textile was created, and how it was shipped; in short, the textile's full journey.'

Happily, Byborre isn't short of like-minded stakeholders in the industry. Collaborators, many of whom already use Byborre Create, include AZ Factory, BMW, Kering, Porter, and Natuzzi, with which it most recently launched the 'Water' textile collection (W*258). Byborre is also working with Sabine Marcelis and Formafantasma for upcoming textile developments. In the future, it hopes to set up hubs in Asia and the US to achieve another important marker of sustainable development – proximity to its markets. ✱ *byborre.com*

Byborre Create is a new digital platform that puts creators in full control of the textiles manufactured specifically for their products; it enables the sharing of innovation, a reduction in R&D waste, and small minimum orders. Pictured is a selection of Byborre Create textiles, including inspiration and artist collaborations. From top, Byborre 'On-Pattern' scarf blanket; interior colour inspiration blanket; Yué Wu art blanket (bottom left); Jeroen Erosie art blanket (bottom right)

Photography: Neil Godwin at Future Studios for Wallpaper*

Earthly delights

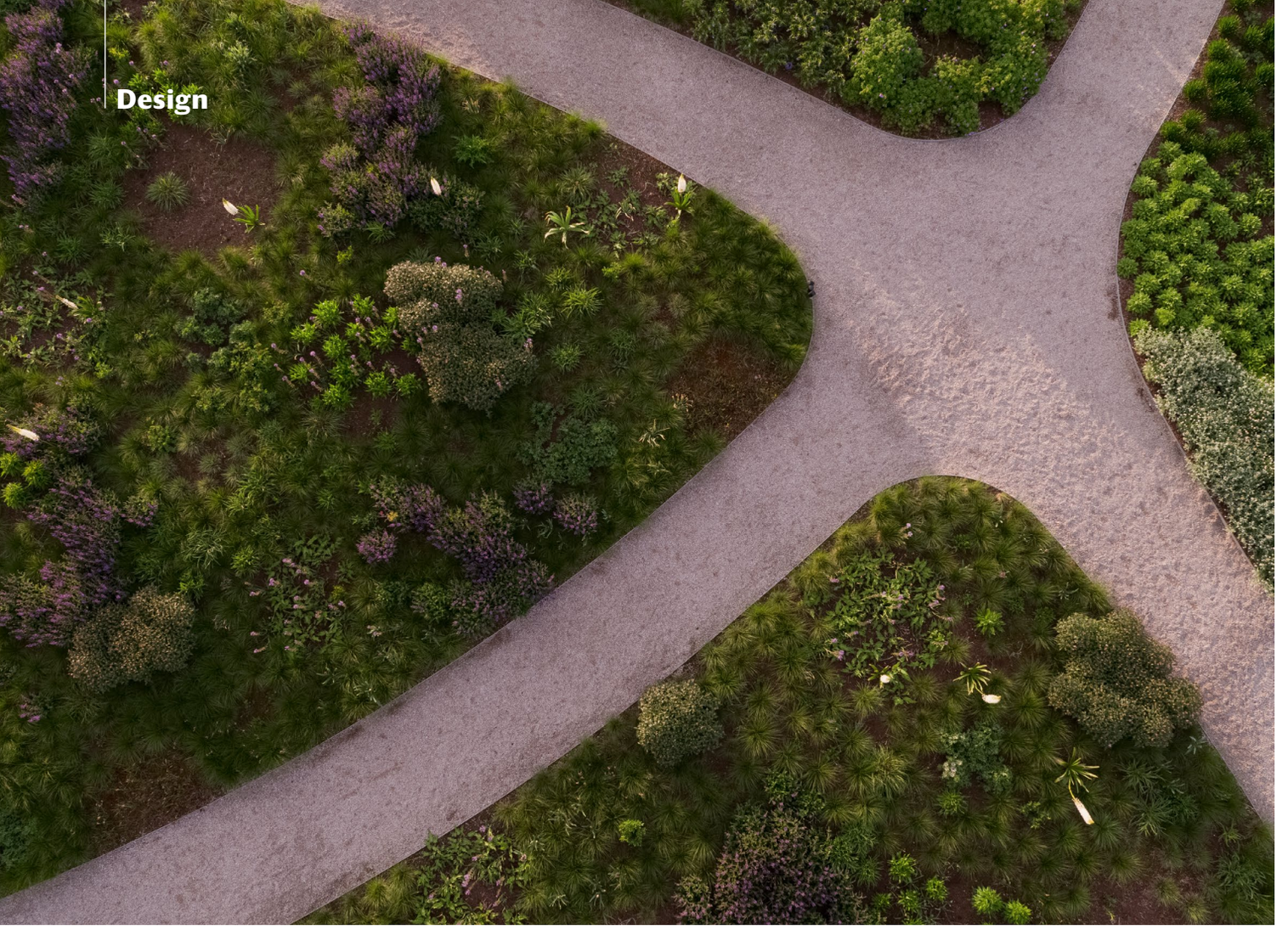
Piet Oudolf's garden for Vitra HQ is a natural wonder

PHOTOGRAPHY: JULIEN LANOO
WRITER: TILLY MACALISTER-SMITH

For many of us, the last year has involved long stretches of domestic confinement. We now crave gardens, fresh air, horizons afforded by wide open spaces. As if predicting this collective ache, a new Vitra commission has flowered this June: a lush 4,000 sq m perennial garden, designed by renowned Dutch plantsman Piet Oudolf for the company's headquarters in the southern German town of Weil am Rhein.

The Vitra Campus is a stone's throw from the Dreiländereck, where the borders of Germany, France and Switzerland meet. It's a corner of Europe rich with art and design institutional muscle, with Fondation Beyeler, Museum Tinguely and Art Basel (when in session) all less than a 15-minute drive away. Buildings on the campus include a fire station by Zaha Hadid, a Jasper Morrison bus stop, ››

The Vitra Campus' new perennial garden, photographed in May 2021, sits adjacent to a modified geodesic dome by Richard Buckminster Fuller



‘Gardens should be interesting all year long. The plants that I choose in my designs often have another life after flowering’

a viewing tower with a slide by Carsten Höller, a petrol station by Jean Prouvé, a geodesic dome by Richard Buckminster Fuller, and a small cabin by Renzo Piano. VitraHaus – the flagship store that Oudolf’s garden surrounds – was designed and built by Herzog & de Meuron in 2010 (W*133). The clean, exacting lines and modern fabrications of the architecture both contrast with and complement Oudolf’s landscaping – his complex planting techniques favour texture and structure over frothy blooms, creating year-round ambience so natural as to appear free of human intervention.

‘As we do not intend to construct new buildings in the foreseeable future, it seemed that a garden would be an interesting expansion of the campus’ concept,’ says Rolf Fehlbaum, Vitra’s chairman emeritus. Fehlbaum had been impressed by Oudolf’s work for the 2010 Venice Architecture Biennale and the High Line in New York. ‘I found his approach fabulous, so when the theme of a garden on the Vitra Campus came up, I immediately thought of him.’

Fehlbaum is no gardener and has no plans to become one, but he still extols the powerful ‘potential of integrating nature in the campus, helping Vitra to go further and develop the whole campus as a cohesive landscape’. He points out that landscaping has incrementally become part of Vitra’s HQ; first when Álvaro Siza designed a factory building in 1994, and, more importantly, with his promenade in 2014.

Initially, the new garden was to be planted around the Frank Gehry-designed Vitra Design Museum, but Oudolf persuaded Fehlbaum, and his brother Raymond, a director at Vitra, that it would be more captivating if it was set in front of the VitraHaus. ‘They had this place with fruit trees in the front of the café, and I thought it would be great if people coming in and out could see something dynamic with plants and flowers,’ says Oudolf.

Captivating the audience is always Oudolf’s starting point. A composer of sorts, he artfully crafts pathways through bushes of allium and echinacea, fluidly guiding visitors to experience and enjoy every inch of flora. ‘The idea is that people can wander there, sit and spend some time, and experience the plants from all sides,’ he says. ‘I think that’s important, especially in public spaces. You can walk around and lose yourself a little bit. When I was in New York for the High Line, I always liked to step into the little public neighbourhood gardens on each block, which are a sort of messy potpourri of plants.

Of course, what I do is much more structured and comes from a design point of view, but I like the way that some people garden without any thought of design.'

Oudolf's planting feels characteristically accidental, but is incredibly precise and intentional. The Vitra Campus garden uses more than 30,000 plants with many species, and this takes expert organisation. Among the plantings are feathery *Asclepias tuberosa*; reddish *Sporobolus heterolepis*; giant daisy-like *Echinacea pallida*; raspberry-coloured brush heads of *Sanguisorba menziesii*; violet fuzzy baubles of *Echinops ritro*; and candy floss clouds of *Filipendula rubra*.

'I use many different design narratives and concepts in one garden,' says Oudolf. 'Part of this garden is wilder with more grasses that are dominant, and there's also an area where the plants are taller and more robust. Around the building we have a different concept, a "matrix" planting. There are many considered things that you might not notice individually, but you can feel the ambience when you are in the garden.'

When planning, Oudolf considers the calendar of the garden, creating points of interest that will flourish year round. 'Gardens should be interesting all year long,' he insists. 'The plants that I choose in my designs often have another life after flowering. The colour is only there for a month or two.' Part of Oudolf's genius lies in his appreciation of the architecture and structure of plants beyond petals, the framework they provide to an outdoor space.

He works by first sketching his designs on drafting paper, much like an architect, and will colour code the plants according to their flowering schedule or physical properties. Next, he draws a grid over the design, which will later be marked out on the ground using string, to create a guide that allows him to transfer the designs on paper to the soil, one square at a time.

The planting of a garden as intricate as this during the pandemic proved to be challenging. Although planning began in October 2019 (in preparation for the full bloom grand opening originally scheduled for summer 2020), Oudolf was constrained to his home, in Hummelo in the Netherlands, for most of the duration of the preparation. While he has no employees, he works with a network of trusted individuals and organisations, so the plants, in their thousands, were positioned in situ under Oudolf's guidance, via video calls, by a local planting team, led by landscape architect Bettina Jaugstetter and supported by Jelle Bennema of Deltavormgroep.

In July 2020, while the regional lockdown was temporarily lifted, Oudolf was able to drive the seven hours south from his home to the Vitra site. He met Jaugstetter on site and they reviewed the planting, noting any ››

Above, this month's limited-edition cover (available to subscribers, see Wallpaper.com) features a sketch by Piet Oudolf for the planting plan of the Vitra Campus garden

Below and opposite, the lush 4,000 sq m garden, set in front of the VitraHaus, features pathways that fluidly guide visitors to experience every inch of flora

The garden's design played out across the four seasons: last spring (top left), the design was mapped out using Piet Oudolf's grid system, and some early planting was carried out; in summer (top right), the first season of flowers were in bloom; in autumn (bottom left), the planting was more established and the autumn foliage was starting to emerge; in winter (bottom right), the planting was in decay, ready to rejuvenate in spring 2021

inconsistencies. 'Often there are varieties that get delivered incorrectly, misnamed by accident. If you buy or order from a grower, you have to account for the fact that they also buy from other growers,' Oudolf explains, observing that every industry has its supply chain issues. 'We made some adjustments and moved some plants around.

'Last autumn, we had to prepare a bulb plan for crocuses, snowdrops and narcissi so that, in February 2021, there would be something in flower. Perennials that grow in full sun start to bloom in May and June, and the main flowering period is August and September. Last November, pruning and more planting prepared the garden for a snowy winter so that it could emerge in spring 2021 in good shape.'

The past year has sparked an exodus from many of the world's major cities as residents pursue a newly discovered desire for more outside space. 'You hear, in general, that people want more greenery, and cities are spending more money on gardens and so on, and that happens more and more,' says Oudolf. 'You see that people that stay at home are starting to garden more, and you realise that we need more of this in our lives. I hope what I do inspires people to see the power of plants. You can only do that by creating a design that has a layer over it that you cannot define, something that makes the garden so good that you want to stay. That is what I try to emphasise, to create something that is more than just plants.' ✱

vitra.com; oudolf.com

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Melina Keays at her London home, which is furnished with collected treasures. Recent additions purchased using her Membership Rewards points – accrued as she spends with her Platinum Card and saved up for future treats – include a 'Winterthur' printed cotton satin cushion, by Missoni Home, from Selfridges, selfridges.com, as well as two scented candles (right) – 'Key Noir', by L'Objet, also from Selfridges, and 'Spiritus Sancti', by Cire Trudon, from Liberty, libertylondon.com. Keays has also treated herself to coffee table tomes, *Francis Bacon: Man & Beast*, by Anna Testar, Catherine Howe, Isabella Boorman, Michael Peppiatt and Stephen F Eisenman, and *Gucci: The Making Of*, by Frida Giannini, both from Waterstones, waterstones.com

Inside story

PHOTOGRAPHY: MARIELL LIND HANSEN INTERIORS: BENJAMIN KEMPTON

Brought to you by **The Platinum Card® from American Express**. A well-edited home is a happy one for Wallpaper* entertaining director Melina Keays. Here, she shares a glimpse of her London base, reflects on thoughtful acquisition, summer pleasures to come, and using her Platinum Card wisely

For Melina Keays, Wallpaper* entertaining director, home is velvet cushions, antique Chinese porcelain pieces inherited from her collector mother, vintage coffee table books, parrot tulips and white orchids. Items are sourced from work trips, local stores and holidays in Singapore. She owns a classic Mies van der Rohe 'Barcelona' chair, a 1970s brass and marble coffee table, and an Albert Kahn photograph of a Mongolian horseman. Floors are wood or marble, walls painted in rich, warm shades, and the walnut kitchen cabinets rendered in clean, 1960s Danish style. A smoky 'Tam Dao' candle by Diptyque fragrances the space.

It's a 'London Indochine' aesthetic that references Keays' Asian heritage and keen eye for detail. Just like her, the apartment is glamorous and gently decadent. 'I am a West End girl through and through,' says Keays, who prefers to get around town on foot or by taxi. 'I do my shopping in Selfridges, Marylebone and on Bond Street.'

The last year, she says, has been spent 'editing my things, deciding what I want and what I want to get rid of'. She believes that our period of enforced isolation during various lockdowns has encouraged people to reflect, to 'buy better quality things that give genuine pleasure and lasting satisfaction'.

Keays has been more physically focused too, heading to Kensington Gardens for a Pilates class or a run, and long walks. She has bought exercise apparel – by Alo Yoga, Varley and Nike – online from Selfridges.

'I would advise anyone visiting London to head for its big, famous stores first,' says Keays. 'We are much more of a department store city than a mall town.'

Keays shops in Selfridges' Foodhall using her Platinum Card and collects Membership Rewards® points – one for every £1 spent, redeemable with a range of partners – saving them up for a treat, an investment purchase. 'I like to redeem my points for something special that will last.' She's currently in the market for a new bed.

For fashion, she recommends Bond Street. 'It's then a short walk to the boutiques, restaurants and alleys of Marylebone High Street.' She might eat at La Fromagerie or Fischer's, her go-to Chinese eatery Royal China Baker Street, or head to nearby Soho for Italian restaurant Bocca di Lupo.

Her West End evenings out over the next few months have been arranged with the help of the Platinum Concierge service, on hand to Cardmembers for reservations and much more. 'They help me find a good table by a window when I go for dinner, at Hélène Darroze at The Connaught, for example.'

The Platinum Concierge has also booked Keays' upcoming summer stay at Gleneagles hotel in Scotland, part of Fine Hotels + Resorts, a curated collection of properties complete with benefits for Cardmembers. On arrival, Keays will be offered a room upgrade if available, and is looking forward to a long walk, maybe a cocktail, and enjoying the hotel's spectacular views and cosy luxury.


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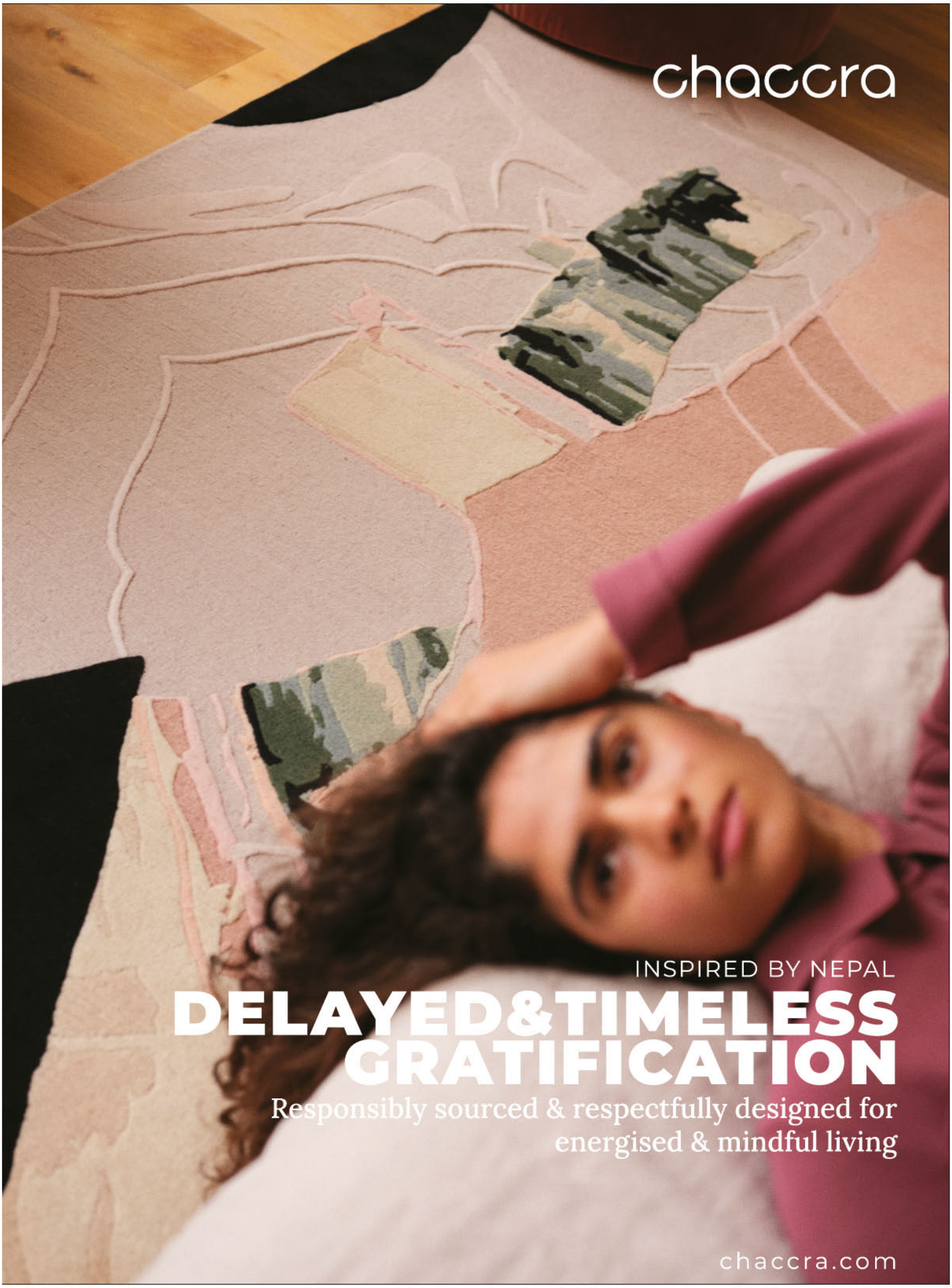
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Thinkers

Beyond elevating our lives and nourishing our minds, design, architecture and art can empower us to take on some of the most pressing challenges of our time, from the ecological crisis and racial inequity to housing access and the biotechnological divide. We called on ten creative leaders and collectives to tell us how they're answering the big questions:

Site-specific installation ‘Salmon: A Red Herring’ by Cooking Sections (Daniel Fernández Pascual and Alon Schwabe, opposite), currently showing at Tate Britain, questions what colours we expect in our ‘natural’ environment

How do we design a more responsible food industry?

Cooking Sections

The Turner Prize-nominated duo seek to critique what we eat and explore how we can do so more sustainably. Priya Khanchandani, head of curatorial at London's Design Museum, talks to founders Daniel Fernández Pascual and Alon Schwabe about the politics of food, and fixing broken structures of consumption

Writer Priya Khanchandani

On a bright white stage in a black room at Tate Britain, the frail, white silhouettes of creatures – a penguin, a flamingo, a dog, a shrimp and a fish – fade eerily into the backdrop, accompanied by the quiet, expectant gargle of water. It's a haunting sight, devoid of colour, movement or life, frozen in a desolate seascape.

As we reflect on how it came to this, a voice begins to speak. Its script reveals that this scene is a metaphorical representation of the exploitation of salmon through industrial farming in Scotland. Farmed salmon – which are denied a natural diet of krill and shrimp – are deprived of astaxanthin, which gives their flesh its pink or reddish colour and protects them from solar radiation and stress. They are genetically modified, subjected to year-round summer-like atmospheres so they grow faster, and often suffer from physical deformities and parasites. We are told that 'salmon is the colour of a wild fish which is neither wild, nor fish, nor even salmon'. ››

Photography: Lucy Dawkins, Oliver Cowling, © Tate

Left and above, 'Climavore: Seasons Made to Drift', showing at Salt Beyoglu in Istanbul, features five commissioned works, and explores the impact of environmental and climatic changes on our diet

Opposite, 'Climavore: On Tidal Zones' highlights the effects of intensive salmon aquaculture on the Isle of Skye with an installation that works as an underwater oyster table at high tide and a dining table for humans at low tide

Fusing design, art, activism and community work, the founders of Cooking Sections, Daniel Fernández Pascual and Alon Schwabe, explore how and what we eat, as well as ways in which we can do so more sustainably in the interests of wildlife, our own health and the ecosystems we inhabit. Their solo exhibition at Tate Britain, titled 'Salmon: A Red Herring', 'is a continuation of the project we've been doing in Skye in Scotland for the past five years', says Pascual. 'We started looking at the impact of salmon farms across the island, and creating a structure to rethink agricultures across the island, but also to start transitioning from salmon farming to other ways of eating.'

In 2017, Schwabe and Pascual launched a public installation on an intertidal zone just outside Portree, on the Isle of Skye, consisting of an underwater oyster table that turns into a community dining space at low tide. Here, they invited politicians, residents, activists and environmentalists to come together and rethink the way salmon is farmed. They also persuaded a network of local restaurants to remove farmed salmon from the menu, and introduce more sustainable alternatives from a diet they term Climavore, which is rich in ingredients such as oysters, mussels and seaweeds (selected for their environmental properties – the ability to purify polluted or acidified waters, or resistance to drought). For their project with Tate Britain, they persuaded the gallery to remove farmed salmon from menus at all of its venues and substitute it for Climavore dishes, such as pasta salad with seaweed pesto and nettle soup with buckwheat.

The installation takes us to what Schwabe describes as 'a colour sphere that we are passing through, or that is passing through us'. The white seascape fills with coloured lights, described potently as 'the 15 Pantones of salmon', indicating that the juicy pinks of Britain's farmed fish are about as natural as synthetic paint. To replicate the colouring effects of astaxanthin, they are fed engineered fish food that contains similar pigments. The flashing lights, in shades of salmon ranging from oranges to reds, alert us to the state of a food industry in which animals are commoditised and injected with chemicals, which we then consume.

Schwabe and Pascual started working together in 2013, having met while studying architecture at Goldsmiths. As Cooking Sections, they are preoccupied with the politics of food and the environment. They began to focus on salmon farming in 2016, initially as community activists and researchers in Scotland. Since then, they have experimented with sustainable agriculture through numerous interventions, including a drought-resistant garden shown at the Sharjah Architecture Triennial in 2019.

They are aware that in order to change the way we consume and produce food, their work will need to straddle different spheres. Some of their most effective work is in communities, such as an apprenticeship programme they set up in Skye to train the next generation of cooks. 'We are very concerned with education and growing food, as much as we are concerned with engaging with cultural institutions,' explains Pascual. 'But one is no more important than the other. That is something we spend a lot of time thinking about: how do you bring all of these different spaces together that could be seen as very discrete or separate from each other?'

Cooking Sections has recently been nominated for the Turner Prize, which this

At Tate Britain, the white seascape fills with coloured lights, ‘the 15 Pantones of salmon’, indicating the juicy pinks of Britain’s farmed fish are about as natural as synthetic paint

year honours five art collectives that have worked with communities to inspire social change through art. In doing so, the prize has taken under its wing practices that may not self-identify as ‘artists’. Architects by training, Cooking Sections has exhibited in design and architecture forums, visual art institutions and also in public spaces.

The pair are currently showing at Salt Beyoğlu in Istanbul, an organisation that bridges contemporary art and design with research, exploring how the climate emergency is shifting productive regions for food and agriculture in Turkey and tackling the role of food in the fertility crisis (globally, men’s fertility rates are falling 1.4 per cent on average every year), an issue that they explain is closely connected with our culture of food. ‘The more the soil has been made fertile through agrochemicals, insecticides, herbicides, pesticides, you name it, over the 20th century, the more infertile humans have become because of the absorption of these substances that flow into rivers and seas,’ Schwabe explains.

It is impossible not to wonder what the role of governments is in a food industry centred around mass production, minimising costs at the expense of the wellbeing of animals and the safety of the food we consume. Is a Climavore diet a realistic way to tackle what is a systemic problem? ‘Yes. But for us, it’s not so much about the kind of decisions people are making as individuals,’ says Schwabe. ‘I think it’s one of the biggest problems of the food industry – that the responsibility and ethics of consumption has been flipped onto the consumer, whereas it should be the responsibility of governments, producers and market distributors.’

Cooking Sections aspires to ask questions, change existing food systems, and respond to the local context in which it works through collaboration. The Turner Prize, which will be presented at the Herbert Art Gallery in Coventry this September, is bound to amplify the duo’s ideas, but hopefully will not subsume their work into the art world machine. To my mind, their interdisciplinary approach, drawing on their design background as a lens through which to explore structural issues, is what will enable their work to hold its own. If, as a post-industrial modern society, we’ve been obsessed with how to harness foods, objects and materials as consumable goods, then today it is increasingly up to designers to undo those structures of consumption and find an ethical and safe way out.✱

cooking-sections.com. ‘Salmon: A Red Herring’ is showing until 31 August at Tate Britain, London, tate.org.uk. ‘Climavore: Seasons Made to Drift’ is showing until 22 August at Salt Beyoğlu, Istanbul, saltonline.org. Turner Prize 2021 is showing 1 October–10 January at Herbert Art Gallery & Museum, Coventry, theherbert.org

Photography: Ekin Özbiçer, Ruth Clark, courtesy of Atlas Arts

How can technology be explained through poetry and play?

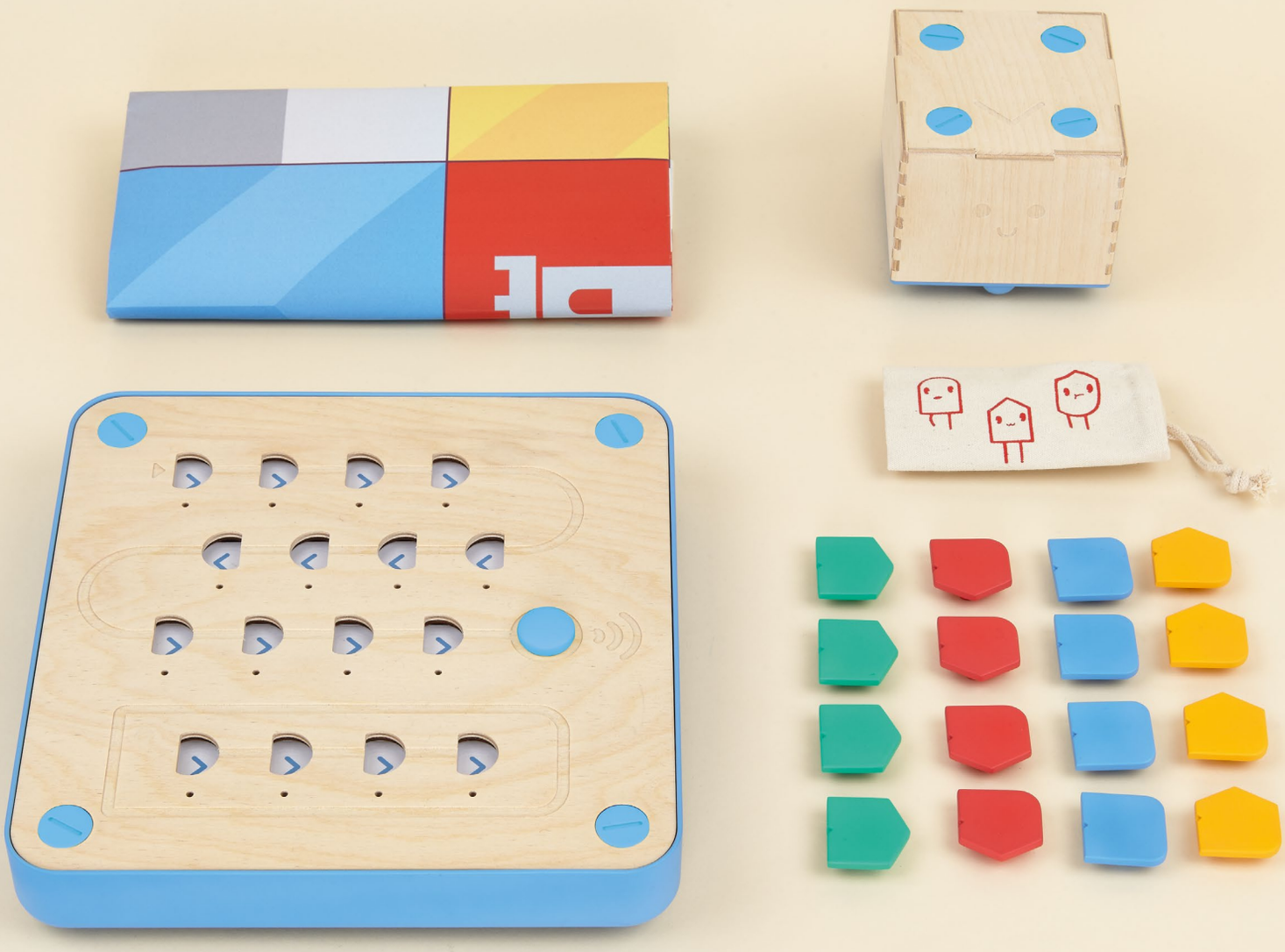
Matteo Loglio

The Italian designer toys with the future of products, interactions and tools

Writer Rosa Bertoli

Designer Matteo Loglio's career has been punctuated by a series of lucky encounters. During his master's degree in user experience design at SUPSI, Switzerland, one of his tutors was Massimo Banzi, co-founder of legendary open-source hardware and software company Arduino, who became a mentor for Loglio and hired him to work for the company in 2011. A few years later, Loglio bumped into creative entrepreneur Fillipo Yacob, an old acquaintance from his native Bergano. They joined forces to launch Primo Toys, and its first product, Cubetto, was a simple wooden robot designed to teach children the basics of computer programming using a set of colourful coding blocks. Its Kickstarter campaign in 2016 attracted almost $1.6m in funding, a record crowd-funder investment in an educational invention at the time.

Perhaps the most significant encounter for Loglio was with Bill Verplank, a pioneer of interaction design, who came by the Primo Toys stand at the Bay Area Maker Faire in 2015. Verplank stopped by to play with Cubetto, then started chatting to Loglio about the project, at the same time sketching on a piece of paper (Verplank's sketches are famous for simplifying complex concepts). Through his sketch, Verplank demonstrated the evolution of Cubetto's interface – something Loglio had been designing intuitively but, it turned out, was firmly rooted in interaction design»



Cubetto is designed to teach children computer programming logic and coding using a simple board, a friendly wooden robot and a set of colourful blocks

practices. The sketch is still one of Loglio's most treasured possessions, and has been on his bedroom wall through every move.

Design has always been part of Loglio's world. As a teenager, his obsession with video games led him to explore technology, coding and web design. 'At one point, I had a skateboard label with my friends. I was immersed in the world of design before I knew what it was. It was just creative exploration at first,' he explains. When he discovered that design was 'a thing', he enrolled in a classic industrial design course at Milan's Politecnico, before approaching (and being sucked into) interaction design. 'In particular, I was attracted to physical computing, that world that sits somewhere in between technology and design,' he recalls. From there, his interest veered towards creating interactive products, and elevating code to become creative matter.

Cubetto marked the official start of Loglio's adventure in technology. For its design, Loglio was inspired by Seymour Papert's Logo, an educational programming language developed in the 1960s at MIT and featuring an on-screen turtle that would carry out user-generated functions. Based on a similar principle, Cubetto is a wooden wheeled cube that can be controlled through a series of colourful tiles arranged on a separate wooden panel. 'I wanted to create a physical version of Logo,' explains Loglio. 'So I made this prototype with a toy car and put it in my portfolio – that was the end of it for me.' Then Yacob proposed launching it as a product and brought an entrepreneurial spin to the idea. Cubetto's creators described it as 'tangible, inclusive and accessible to all cultures': friendly and screenless, it sits somewhere between a toy and an educational tool, encouraging tech literacy for the young.

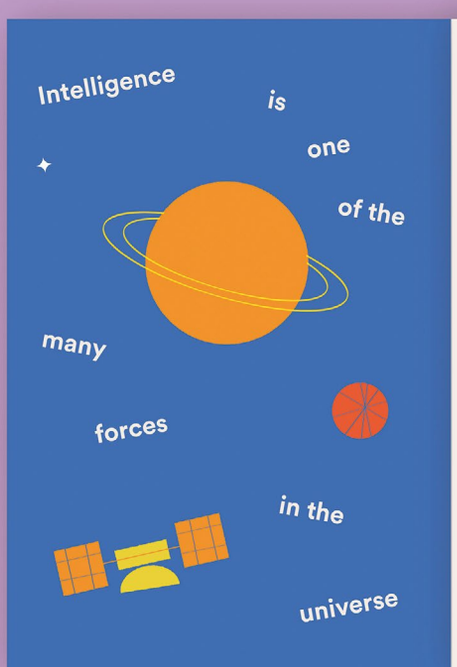
In 2020, after three years at Google's Creative Lab, Loglio launched OIO, a creative consultancy 'made of designers, technologists and bots', based in London's innovation and technology campus Here East. Encompassing physical objects with a tech slant, as well as speculative or purely digital creations and collaborations, Loglio's work shines a human light on the future of AI. 'Human-AI collaboration is one of our key themes,' he explains. 'We like the idea of post-human: in the past, humans worked with animals, and we think that in the future we will work with newly created artificial intelligences.'

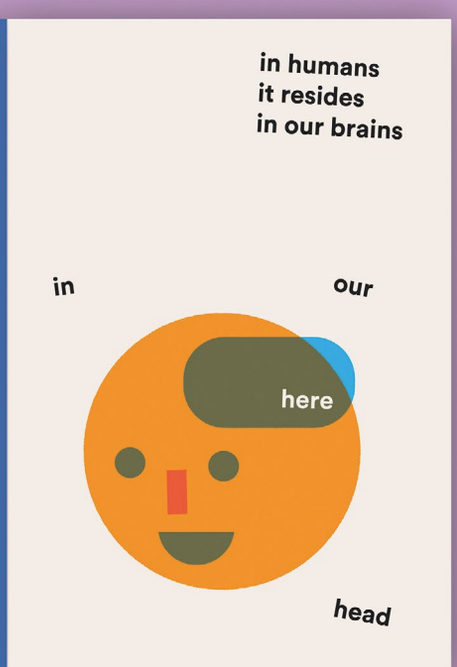
One of OIO's key works in progress includes an AI art director, a tool based on a series of algorithms that allow it to recognise and generate furniture designs. Dubbed 'a non-human member of the team' and named Roby, it's part provocation, part inspirational tool to 'support an ever-evolving creative process'.

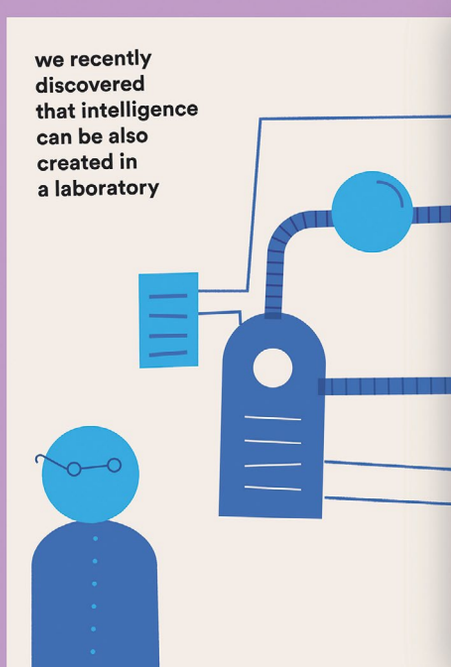
Most recently, Loglio launched *Many Intelligences*, published by Corraini Edizioni, with the aim of explaining artificial intelligence to children through simple concepts. It's the result of another fortunate encounter, with publisher Pietro Corraini, who had been a fan of Cubetto from early on and who had asked Loglio to write a book that summed up his work. 'Through teaching [at Central Saint Martins and HEAD Genève], I have had to develop simple ways to explain AI and technology to designers and artists, people who often don't know much about technology,' he explains. 'I often have to come up with metaphors to explain the basics. Over the years, I developed a narrative about AI that I thought I could translate into a book, to explain these concepts to kids.' Thus, the idea of *Many Intelligences* was born. The book features a series of stylised illustrations and brief poetic text (entirely created by

Below, pages from Loglio's *Many Intelligences*, which explains different kinds of intelligence to a younger audience through simple concepts

Opposite, Roby, OIO's AI creative director





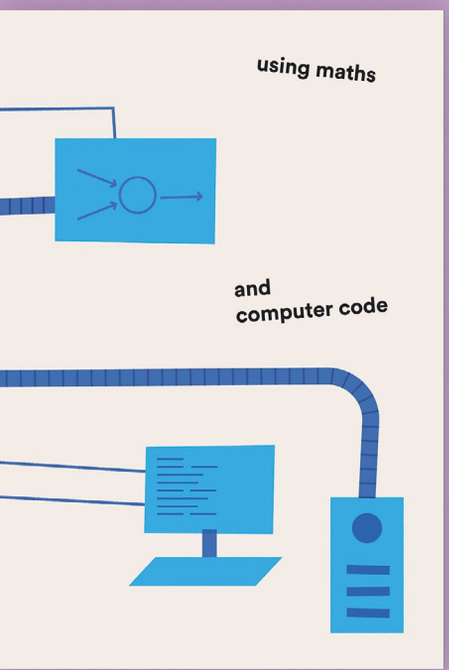


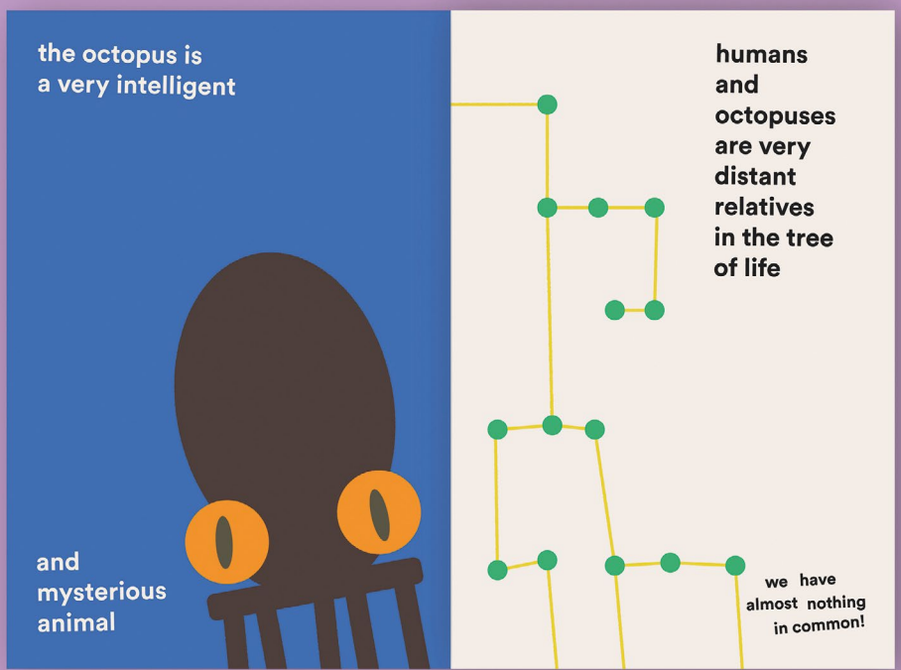
Loglio), touching upon the many facets of intelligence: human, animal or otherwise. Through these essential concepts, it weaves a narrative that moves between worlds, from a starfish to a toaster.

Among its vast catalogue, Corraini is a publisher known for its design titles by the likes of Bruno Munari and Enzo Mari – two designers who are fitting forefathers for the work Loglio has been doing for the past decade. 'What Munari, as well as many great designers from the 20th century, have done is try to domesticate industrial production, a concept that was alien to most at the time. The same thing is happening now with technology and designers of the 21st century,' says Loglio. He believes the essential role of a designer is to understand human nature and its emotions, and at the same time to speak the language of technology and be able to shift between these worlds. 'I feel part of this movement. My job is to take something as alien as technology and translate it into a domestic environment, make it familiar, playful.' ✱

Many Intelligences, €18, by Matteo Loglio, published by Corraini Edizioni, corraini.com; matlo.me; oio.studio

'My job is to take something as alien as technology and translate it into a domestic environment, to make it familiar, playful'





Can good housing be accessible to all?

Fernanda Canales

According to the Mexican architect, low-income social housing should follow the same design principles as private residences, with only budget setting the two apart. She takes up the challenge and reaps the reward of creating homes with light, air and space for everyone

Portrait Jillian Freyer *Writer* Ellie Stathaki

Fernanda Canales points excitedly to a drawing in one of her more recent books, showing a spread full of architectural axonometrics. 'This is a project from the 1960s,' she says. 'It was a mini-unit that can grow in a modular way. It was designed by Christopher Alexander and it's so inspiring. I draw on projects like this.'

It was through working on books like this one that the Mexican architect became fascinated by residential design in her home country, and in particular low-income housing. Her latest book, *Shared Structures, Private Spaces: Housing in Mexico* (published by Actar) is the result of years of research into larger-scale housing. It's just one of her deep dives into the subject, though this is the deepest, taking in a whopping 70 case studies of housing projects from 1917 to 2017. Some are better known, some less so, and they range from the very first example of a low-income housing project in Mexico to the classic regional modernists' works and contemporary projects.

'While doing this book I realised that there were some Luis Barragán low-income housing projects that had never even been published,' she says. 'Most people only know of his privileged, private homes.'

But Canales does more than just theory. Putting her money where her mouth is, the architect has become entrenched in housing work across Mexico – commissions often awarded through the relevant ministry, or local charities and government agencies. Some of these are contracts, others are pro bono work; all of them are as challenging as they are rewarding, she explains. For pro bono work, 'there's often not even the budget to pay a structural engineer', she says. 'Sometimes you have to design blind, but you still have to create a secure shell that becomes somebody's home.'

Two of her latest works fall in this category. Casa Eva is a single-family house created as part of a larger scheme initiated by architect Carlos Zedillo and a non-profit organisation he founded called Pienza Sostenible, along with Fundación Origen (a non-profit organisation combatting violence against women in Mexico), as a response to the 2017 earthquake in Mexico. Casa Eva was designed for a single mother and her children, who lost their home to the earthquake. Due to changing family circumstances and complications relating to security in the community, the design needed to be very specific, but also easily adaptable. 'The number of people living in the house changed as the client merged families with her sister in the course of the process, and they all had different needs,' says Canales. 'It was also very important that the young children were on the upper level for safety reasons, and the client could control who went into and out of the house.'

The brick shell is very robust (the bricks, made from concrete and local soil, were created on site by the local community, who received valuable training in the manufacturing process). However, internally, everything can move. There are no load-bearing walls and the social area is generous and open plan. The project needed to go up quickly due to the post-earthquake housing emergency, and the idea was for the design to be replicated in other places (although this hasn't quite materialised yet).

The second project, Casa Productiva, formed part of a larger project by government agency Infonavit (the National Workers' ››

Mexican architect Fernanda Canales photographed in May 2021 at Franklin D Roosevelt Four Freedoms Park on Roosevelt Island in New York City

Left, the floorplan of the two-level Casa Eva, built in Ocuilan, in Estado de México, for a family who lost their home during the 2017 Mexico earthquake

Below and opposite, Casa Eva, which is made from just concrete blocks and wood, can be extended from one bedroom to three bedrooms inside a rectangular volume, which features a double-height space for the living room, dining room and kitchen and plenty of natural light and ventilation

‘People can be surprised that I jump between scales, and sometimes I do houses that are so small, they can fit into a single room of another house’

Housing Fund Institute). It was also commissioned by Zedillo, who was, at the time, head of the agency’s research centre for sustainable development. The agency, which is committed to improving living conditions for low-income workers in the country, invited 32 architecture studios to create housing models. Canales, alongside other well-known architects such as Frida Escobedo, Tatiana Bilbao and Alberto Kalach, participated in the creation of a small community now known as the Housing Research and Practical Experimentation Laboratory in Apan, Hidalgo.

The home was conceived as a modular prototype. A standardised shell with double-height interiors and internal divisions that can be set to various configurations, it was not designed for a specific client. It encompasses a large outdoor patio area that embraces the region’s lifestyles and climate. Both Casa Eva and Casa Productiva are entirely off-grid structures, storing rainwater, for example, to meet the residents’ needs. Both examples were designed to use natural ventilation and intended for rural communities, planned to be self-built by their inhabitants.

In essence, social housing, no matter the scale or scope, is guided by the same architectural principles as private residences, stresses Canales. Working with a simple and restrained material palette and taking the local climate into account are key elements throughout her portfolio, as demonstrated in private homes such as Casa Bruma (W*230) in 2017 and Casa Terreno (nominated for Best Private House in our 2020 Wallpaper* Design Awards).

‘People can be surprised that I jump between scales, and sometimes I do houses that are so small, they can fit into a single room of another house I have designed in»

Photography: Rafael Gamo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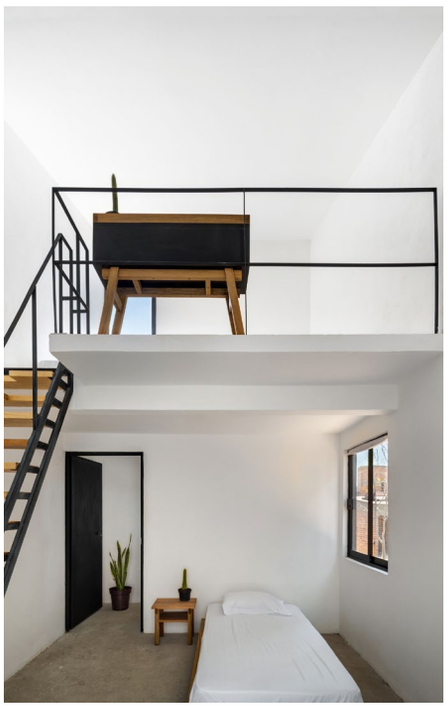
‘Luxury is light, air, space. It is not about the expensive kitchen or imported woods. It is about understanding the quality of shade or a tree. And that can be accessible to all’



Opposite and above, Casa Productiva is a prototype for a single-family dwelling formed of a basic module with an indoor platform, to which extra modules – featuring bedrooms, bathrooms and working areas – can be added, allowing for the dwelling to grow as and when its resident family does

Photography: Rafael Gamo

the past. But for me, the priorities remain the same. It is about simple materials, natural light, cross ventilation and creating a safe space,’ she adds. ‘I always try to give the same things to the owners, such as good views and sunlight.’ Honest materials and a frugal approach that favours tactility permeate all her projects, regardless of the budget.

According to Canales, the low budget is pretty much the only thing that sets social housing apart from its private counterpart. One of the main challenges is navigating the ‘unexpected part of the project’. She says, ‘The designs need to be easily understood, adaptable, as the circumstances can easily change.’ Her pro bono work is often built by non-experts and with community involvement, and sometimes the plot or orientation of the structure, or the family’s circumstances, will change without notice. This was a learning curve for her, as she adapted to designing with more flexibility, allowing projects to be open-ended. ‘They need to be projects that can take that level of the unexpected,’ she says.

Leading a one-person office and getting help as needed from engineers, designers, landscape artists and other collaborators, depending on workload and project, allows Canales time to delve deep into her subject. ‘I work alone, as isolated as I can be, so I can focus. I did that even before the pandemic,’ she says of her studio, which grows and shrinks with the ebbs and flows of ongoing work. ‘Sometimes I do two projects a year, sometimes four. Some years I write or teach more.’ Travelling and visiting the works of other architects, such as Walter Segal and Álvaro Siza, is important to her. Spending time on site with a client is also crucial.

Her research into Mexican housing architecture deeply influences and inspires her and, in places, it can be felt in a tangible way. An echo of an old Christopher Alexander concept can be seen in Casa Eva’s barrel vault ceiling, for instance. At the end of the day, though, Canales believes the question is, ‘how do you define luxury and give the same privileges to all in low-income housing? Luxury is light, air, space. It is not about the expensive kitchen or imported woods. It is about understanding the quality of shade or a tree. And that can be accessible to all.’✱

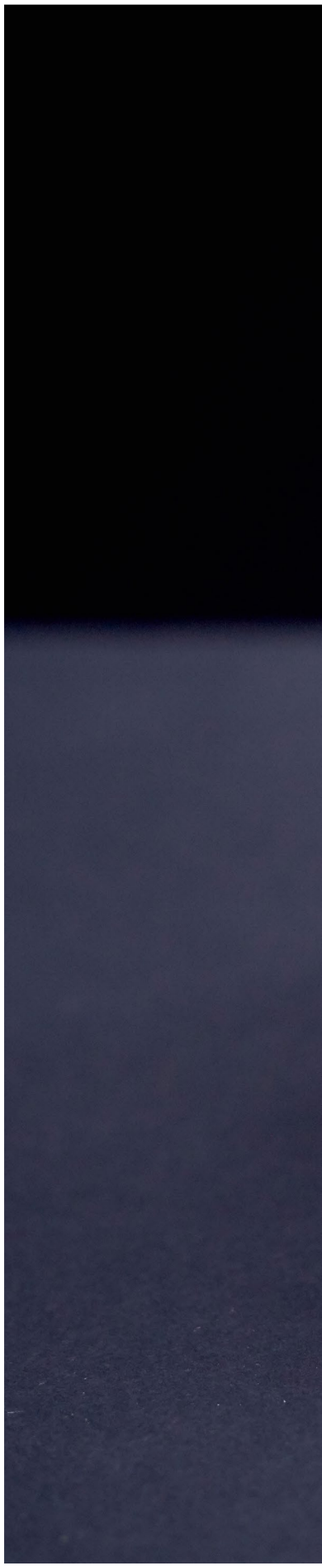
fernandacanales.com

Can synthetic biology solve the world's problems?

Natsai Audrey Chieza

Faber Futures, the pioneering London-based studio founded by Chieza, doesn't just think about new approaches to form and material, but rather how to reshape the world of things from the ground up

Writer Jonathan Bell



We are a society consumed by consumption, driven to preserve the economic status quo at all costs. Natsai Audrey Chieza and her studio Faber Futures are advocates for a different approach. As designers, researchers, strategists and storytellers, Faber Futures believes design has the power to make things better. And not just by making things, but by helping restructure our social and economic systems from the ground up.

Born in Harare in Zimbabwe, Chieza arrived in the UK at the age of 17. After studying architecture at the University of Edinburgh, she took an MA in Material Futures at Central Saint Martins before setting up Faber Futures in London in 2018. The studio, including lead strategist Laura Emily Vent, art director Camille Thiéry, design lead Ioana Man and design researcher Magdalena Obmalko, are uniquely placed to reshape the conversation in a world screaming for change.

'When I started the company, it was just me and I was working with a single client, a synthetic biology start-up,' Chieza recalls. 'I was very much focused on trying to help them think about sustainability. If you can design and programme living cells to have specific functions, then of course that's a really interesting technology. What matters more is what you are going to do with it.'

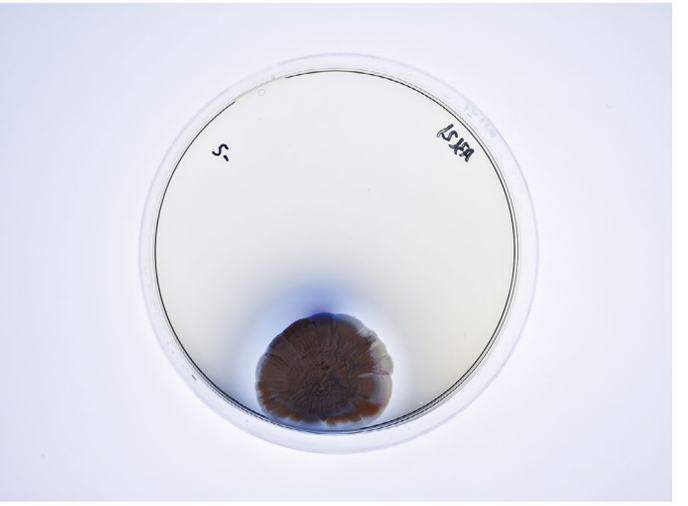
Faber Futures arose out of this desire to shepherd new technologies into the world without inadvertently replicating or reinforcing archaic systems and structures. 'We began in the cultural sector, in institutions like galleries and museums, where we could be provocative about future materials and technologies,' she explains. 'I think where we are now is moving beyond the provocation, because society is shifting its expectations about the future, and how we manage our resources with climate change.'

It's not just a social shift; financial institutions are waking up to the challenges. 'We're entering what we like to call in the studio a "doing space", going beyond the speculation, beyond the strategising. Now is the time to actually implement these ideas in a very tangible way.'

Innovation does not necessarily go hand in hand with a wholesale reappraisal of the systems that govern, guide and stimulate our consumption-driven lives. One of the transparently obvious joys of technology is a constant expectation of novelty and»

Mutupo is an algorithm-generated portrait of microbial dark matter, cast in bronze. Faber Futures drew on a huge open-source dataset of DNA sequences of the gut microbiomes of Tanzanian Hazabe community members to create this physical representation of the immense complexity and potential of biological big data. Mutupo, the word for an ancestral totem in the Shona culture, is on view at the 2021 Venice Architecture Biennale, a symbol of the multi-faceted future of biological surveillance and our changing relationship with the living world

Photography: Toby Coulson



‘If you can design and programme living cells to have specific functions, then that’s an interesting technology, but what matters more is what you are going to do with it’

improvement as things get faster, smaller, sleeker, cheaper, shinier, cleverer. This system works just fine if you’re at the top of the tree and can’t see – or don’t care about – the detritus and waste tumbling down to the ground to rot. To continue the metaphor, this rot is finally and undeniably affecting the roots. Climate change is coming and many current practices, from making and shipping to buying and discarding, are no longer sustainable in their current form.

Faber Futures’ work is twofold. Not only is the studio involved with the business of ‘engineering microbes to do industrially useful things’, says Chieza, but it also wants to ‘build new models and institutions that are ahead of the game and mitigating against inequity’. This approach begins by challenging preconceptions. ‘If we want to shape future markets for products derived from biotechnologies, we need to start that work now, because in ten years’ time, these technologies are going to start coming into their own. We are priming for a time where things can be implemented at scale and have a much broader impact.’

Back in 2017, even as Chieza was urging her TED Talks audience to consider whether biology could really ‘fix’ the fashion industry’s pollution problem, the underlying message was the same: more equitable futures could only come out of new design frameworks. ‘I’m on the Global Future Council on Synthetic Biology at the World Economic Forum, and our remit is to outline the future of synthetic biology,’ she says. ‘We’re asking a fundamental question, which is, what if SynBio was based on principles of humility, solidarity, sustainability and equity? The Council is made up of a whole host of different people from leadership to academia. Faber Futures is coming in and saying that, actually, the cultural sector has a huge role to play in connecting what is on the molecular scale with the real world.’

The conflict and contradiction occur when these innovations simply perpetuate existing power dynamics and economic structures. For example, fast fashion. Faber Futures’ Project Coelicolor is a case in point. Starting with a wild strain of *Streptomyces coelicolor,* a soil-dwelling bacteria used in antibiotic production, the studio worked with Professor John Ward at the University College London’s department of biochemical engineering to explore whether the blue pigment it naturally secreted could be used as a textile dye. Ultimately, a colourfast finish was achieved without using excess water or industrial chemicals. Could such a ‘product’ be brought to the high street? It’s a challenge Faber Futures sets out to address. ‘Project Coelicolor has been in thoughtful development for the last ten years through cultural institutions, which is a really slow process,’ says Chieza. ‘If we shifted up a gear and moved beyond exhibition pieces that communicate the potential – very richly – and try to actually make it exist, what does the work become? What kind of start-up model could emerge from R&D with this legacy?’

Chieza is pragmatic and practical. ‘We need to tone down the rhetoric that this is world-changing or revolutionary, because actually it isn’t.’ Most importantly, the gains made by SynBio and other biotechnologies will be blunted if they are just absorbed into existing systems. ‘You can engineer a yeast cell, for example, to produce a very specific commodity compound,’ she says. ‘We know how to ferment on an industrial scale – just look at beer. There are infrastructures and industries and brands who do just that. But the question we’re asking is, are those brands, companies and infrastructures fit for a world that is being changed by climate change? If the answer to that question is no, then perhaps just changing a single ingredient is not enough for us to see the change that we need.’

She cites another example. ‘It would be nice to clean up fast fashion’s supply chain.

Opposite, Coelicolor bacterial pigment extract (left), a sample of which forms part of Harvard's Forbes Pigment Collection, and the soil-dwelling organism *Streptomyces coelicolor* in a petri dish

Above, textiles being dyed with the bacterial pigment. Left, 'Transversal' silk sculpture featuring bacteria dye, and, right, 'Assemblage 002' bacteria-dyed reversible silk coat, both commissioned by the Cooper Hewitt Smithsonian Design Museum in 2019

But the paradox is that their business model is based on consumption and infinite growth; it is totally unsustainable.' Project Coelicolor could be brought to bear on the chemical- and water-intensive process of dyeing and yet, ultimately, all it would do is 'shift the raw material from petroleum to sugar, if deeper systemic issues are left unaddressed'.

So how can all these things be tackled? One answer is education. 'We need designers who are capable of thinking and designing within very complex systems,' says Chieza. 'So what kind of education system is required for that? There is a pipeline for science PhDs to become start-up founders, but I also want to see these start-up founders coming out of more diverse institutions, such as Central Saint Martins. We need leadership from the creative sector.' Chieza argues that designers have to think in a more entrepreneurial way.

Of course, there are also philosophical and moral issues at play. 'How do you engage with something that culturally, in the most part, you're trying to challenge? We have to engage with the system on some level.' One of Faber Futures' clarion calls is to elevate the arts and humanities to the same level of political importance as STEM subjects. 'Including the design and creative industries within STEM is not a panacea, but it is currently missing in a fundamental way.'

Above all, Chieza and her team believe that designers can and should expand their scope. In the modern era, 'design' has become culturally fixed as a commodity as opposed to a process. 'If I think of my identity as a designer, it's always been really difficult because I don't make "stuff", so I don't often get featured in magazines that like to talk about stuff, she says. 'Instead, I tend to speak to people who are interested in process and systems. Yet design has caused so many of the problems that we now face. The industry is slow to admit it and is waiting for someone else to figure it out.' Chieza gives the example of big manufacturers who talk the talk yet wait for innovation to come their way. Instead, she says, they should be proactive and contribute their supply chain and manufacturing knowledge, helping, for example, the process of creating alternatives to leather, different dyeing processes or better recycling outcomes.

'We have quite "sector agnostic" clients,' she says, with a hint of frustration. 'You would think that the design industry would be clamouring to cross-pollinate and work with scientific researchers and technologists, but they're not. They're just waiting.'

Likewise, as consumers, we are content to exist in a cycle of constant upgrades. We are kept supine by option paralysis, a situation that suits the status quo. 'So far, we've only looked at sustainability through the lens of a society that is primed to be a consumer society and a consumer economy,' says Chieza. 'Our society is about trading commodities. But we have to look deeper. The question of sustainability is also about how we structure our global economies and supply chains, and whether or not resources are distributed equitably. Not just for consumers but for producers. Just providing the molecule that replaces toxic dyes is not going to be enough.'

Faber Futures is talking about change on a molecular level and change on a society-wide level at the same time; fashion is simply a good place to start. Yet although we're on the cusp of a biotechnological revolution, its potential could still be squandered if there aren't radical shifts in the making, shipping, buying and disposing of goods. 'Sustainable means lots of things, including how innovation and infrastructure have to be connected to jobs or marginalised communities,' Chieza stresses. 'These projects are not about product for product's sake, but are a vehicle for different kinds of social and economic organisation. After all, what's the point of having a bottom line for your shareholders if there's no planet?' ✱

natsaiaudrey.co.uk; faberfutures.com

Photography: Immatters Studio, Faber Futures, Oskar Proctor

What will a more inclusive art world look like?

Antwaun Sargent

The critic and curator's first show for Gagosian is a multifaceted exploration of the Black social practice

Portrait Ike Edeani *Writer* Camille Okhio

For centuries, Black Americans have built, maintained and improved coping strategies to overcome countless barriers to their safety and success. Drawing creative inspiration from oral traditions, spiritual practices and learned experience, they have sought and converted spaces to occupy and define. This multigenerational feat has long been the expertise of the New York-based critic and curator Antwaun Sargent. For his first show as a director at Gagosian, Sargent has gathered a range of artists at different stages of their career, working in different media, but who all have the same goal: creating and dissecting space for the betterment of themselves and their communities.

'Social Works', which opened on 24 June at Gagosian's West 24th Street gallery, showcases site-specific works by David Adjaye, Theaster Gates, Linda Goode Bryant, Rick Lowe, Titus Kaphar and many others. The show (and Sargent's role at Gagosian) builds on over ten years of conversations with Black American artists. In this time, he has started fires and put them out, curated shows and authored books, written diatribes and offered anecdotes. Every project Sargent takes on is broached with searing criticality, a staunchly realistic interpretation of what is and what can be, all presented with an unapologetic undertone of self-advancement. With, of course, the caveat that his own advancement swings a pendulum that hits many other notes on its way.

Outside of his published writing – pieces for *The New York Times*, *The New Yorker* and *Interview*, to name a few, plus two books, *The New Black Vanguard* (accompanied by an exhibition at the Aperture Foundation) and *Young, Gifted and Black: A New Generation of Artists* – Sargent has also helped shape the art world in subtler ways. He is known for engaging in conversations over messages and group chats with artists and curators, friends and foes alike, and in Facebook battles, where he rarely has the first word, but often the last. In these channels, he has tackled Black agency, moral responsibility within representation and presentation, and the eternal question of formal artistic merit.

Sargent is forthright, unafraid of failure, and constantly assessing and reassessing his practice and point of view. This pattern of self-regulation and self-education influences the products of his labour in many ways. In the case of his Gagosian show, his work ethic and perspective are evident in a curatorial prompt that is both ephemeral and solid.

'Social Works' balances its star-studded roster with emerging and mid-career talents. Among them are members of NXTHVN, the arts incubator founded by Titus Kaphar, Jason Price and Jonathan Brand, whose works reflect varied practices, backgrounds and concerns: Allana Clarke is currently working through the NXTHVN fellowship, while Alexandria Smith, Zalika Azim, Kenturah Davis and Christie Neptune are all 2019 studio alumni. Bridging the gap between ››

Curator Antwaun Sargent at Gagosian's 555 West 24th Street location in New York

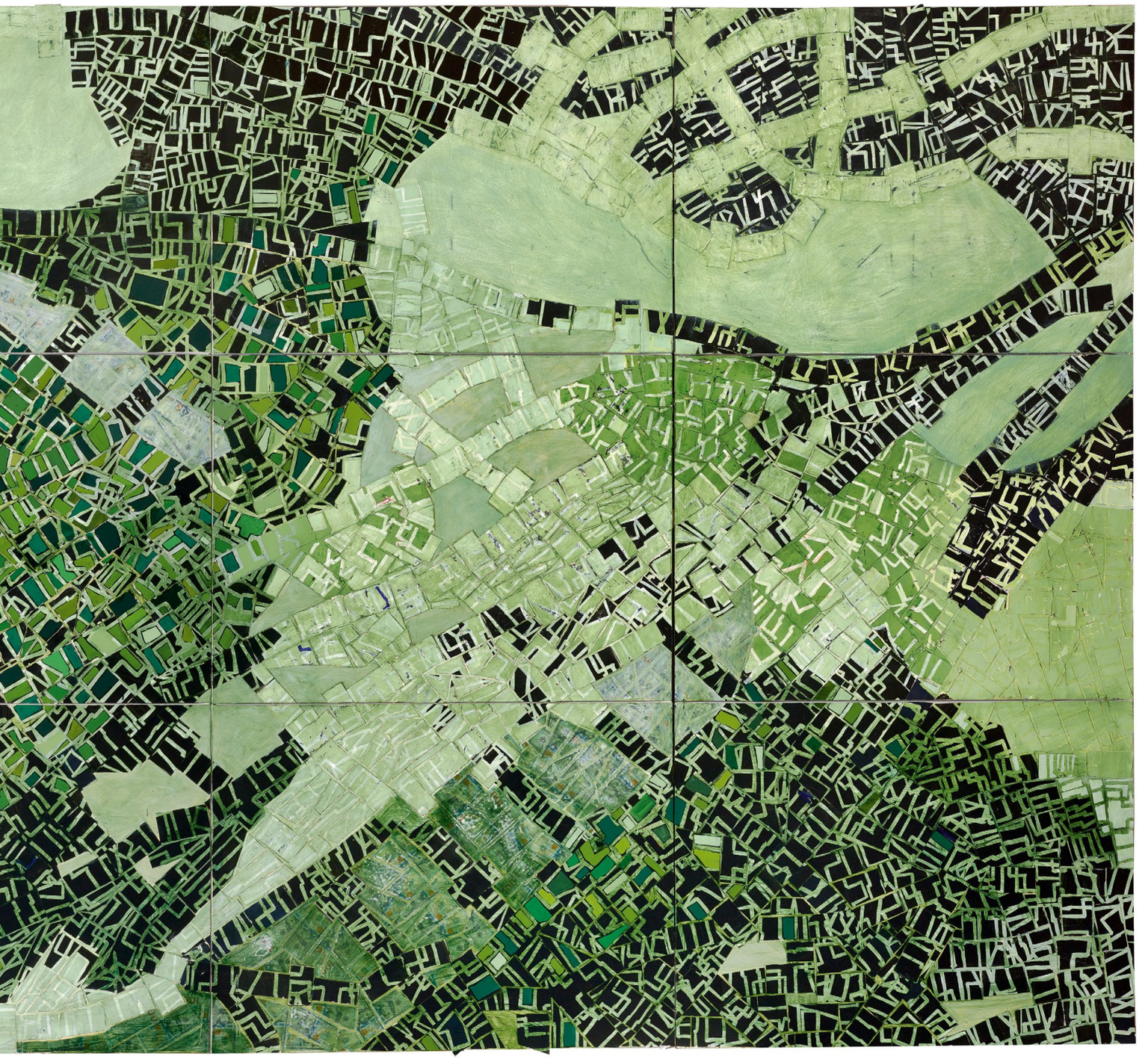
the NXTHVN cohort and household names such as Theaster Gates or Carrie Mae Weems, are artists including Lauren Halsey, a trained architect whose family has resided in South Central Los Angeles for generations. She mines personal memories and local history, reshuffling realities to imagine possible futures. Site-specific sculptures play a central role in her practice: sometimes monochromatic, sometimes bursting with colour, they harness found, reworked or finely fabricated materials, consuming the viewer's every sense. On social media, she names her vision #FUBUarchitecture, after FUBU (For Us, By Us), a Black streetwear brand that shot to fame in the 1990s.

In her 'box' sculptures, Halsey assembles brightly-hued acrylic cuboids on top of each other, embellishing them with graffiti-like messaging and elements from discarded and nostalgic signage – honouring the streets of her storied neighbourhood, as well as the life force held within it. In other works, she uses synthetic hair, gypsum, wood (which she carves by hand), foam, carpet and cement to create Afrofuturist potentialities that zing with the urgency of a Black woman who knows that civic change is the only option.

Another highlight of the exhibition is a contribution from David Adjaye, an architect with deep ties to the art world. Best known in the US for his National Museum of African American History and Culture in Washington DC, he also designed Lorna Simpson's Brooklyn studio (see W*228) and the 2012 exhibition 'Richard Avedon: Murals & Portraits' at Gagosian New York. Varied though his practice is, rarely does Adjaye embark on entirely non-functional projects. 'I interviewed David for *Interview* magazine in 2015, focusing on architecture,' recalls Sargent. 'For "Social Works", Adjaye has created his first piece of large-scale sculpture, which will also be the first piece of fine art that he's shown in the States.' The monumental work is made from compacted earth, which Sargent sees as 'a call to reconsider the value of certain materials'. It dovetails materially with the architect's plans for the Edo Museum of West African Art, in Benin City, Nigeria, home to one of the oldest kingdoms in the world. Intended to house the Benin Bronzes upon their return to Africa, the museum project also entails an excavation of its site to uncover ancient architectural remnants.

Another seasoned artist, Carrie Mae Weems, is represented by photographs from her ongoing series *Roaming* and *Museums* (which began in 2006), in which she stands in, or in front of, museums, well-known streets and 'architectural wonders', directly confronting the inclusivity (or lack thereof) of these supposedly public spaces. She wears an elegant but nondescript black dress, highlighting her regal form, planting her within each image like a Greek caryatid, immovable and required for the support and continuance of a structure.

'The *Black Wall Street* series is an extension of the social work I do. It's an investigation into the economic plight of African Americans' – Rick Lowe



Rick Lowe's *Black Wall Street Journey #5*, (2021) is an acrylic and paper collage on canvas measuring 274.3 x 487.7cm, part of a series inspired by the burning down of a prosperous Black neighbourhood in Oklahoma in 1921

Photography: Thomas Dubrock. © Rick Lowe Studio, courtesy of the artist and Gagosian

Linda Goode Bryant, who is creating an interactive work for the show, has been a fixture in New York's art and activism circles for the last 50 years, founding New York's first Black-run gallery, Just Above Midtown, in 1974. Bryant's non-linear trajectory has included filmmaking, farming and entrepreneurship. For 'Social Works', she drew inspiration from her work with Project Eats, the urban farming venture she started in 2009, to create a living sculpture, *The Cube*, which will grow and provide food for gallery visitors free of charge – a first for Gagosian.

Rick Lowe founded the non-profit Project Row Houses in 1993 to house and inspire the Black community of Houston's Third Ward neighbourhood, providing a case study and format for creative, economically-engaged, collective healing. He will show pieces from his *Black Wall Street* series. 'The series is an extension of the social work I do. It's an investigation into the economic plight of African Americans, manifested in an abstract form,' explains the artist, whose work defies the white mainstream custom (both within historical and contemporary social and economic contexts) to only represent Black people in wholly inaccurate, negative ways that are uninspiring and unhelpful to the Black community. Particularly, Lowe has engaged with the history of Greenwood, a prosperous neighbourhood in Tulsa, ››

This page, Alexandria Smith's *Iterations of a galaxy beyond the pedestal* (2021), a mixed media on three-dimensional wood assemblage featuring the artist's signature cut-out limbs and silhouettes

Opposite, a still from Christie Neptune's *Constructs and Context Relativity – Performance II* (2021), a three-channel HD video and Super 8mm transfer (4:3 ratio), exploring space and social constructs

Oklahoma, which was known as 'Black Wall Street' in the early 20th century, and similar bursts of economic progress in Durham, North Carolina and Richmond, Virginia. 'The Black Wall Street journey was threatening to mainstream society, which is why the burning of Greenwood happened,' says Lowe, referring to the 1921 massacre and destruction of the economically successful and independent African American community in Greenwood by nearby white communities and the KKK, who colluded with the US government.

In the 1990s, Lowe led a group of artists who purchased, gutted and renovated a series of 1930s shotgun houses in Houston's Third Ward, with limited financial resources and calling on helping hands within their community. Now, nearly 30 years on, Project Row Houses serves as an example of what can be built and sustained independently within the Black community with no external aid, subtly echoing Halsey's 'FUBU' sentiment. 'That's one of the vital steps towards economic emancipation, understanding the value that we as Black people have and being able to access it and cash in on it,' says Lowe.

Sargent's choice to show works by such established social excavators alongside those of the younger artists Alexandria Smith and Christie Neptune exemplifies his ability to colour outside the lines, while maintaining a tight curatorial premise.

Smith, who has been head of the painting programme at London's Royal College of Art since 2019, has produced work from the moment she could pick up a pen (or crayon). 'My mother says that I have been calling myself an artist since I was three.' She works in oil and acrylic, slicing and adding layers to create scenes somewhere between reality and a dream. Her figures, erroneously referred to as grotesque by white critics and curators, are embodiments of the queer, Black, female experience the artist inhabits. Limbs and halved gestures appear independent of full-body forms, a collage in themselves, beckoning the viewer's attention.

Neptune, who is presenting a piece from her ongoing series *Constructs and Context Relativity*, is also an educator, albeit of elementary school students. Before, between and after lessons, Neptune pieces together her students' experiences and queries to inform her work. 'Most of the ideas I have for my projects come from my class,' says the artist. 'I make the work and try to live it by teaching it, but also by creating spaces for younger adults to discuss it and actualise it.'

In *Constructs and Context Relativity – Performance II* (2021), Neptune explores relational theories of space, social politics and her own internal experiences. 'When conceptualising a work, I look at the space in which we live – social constructs that don't have the semblance of physicality in them,

‘Most of the ideas I have for my projects come from my elementary school students. I make the work and try to live it by teaching it’ – Christie Neptune

but are still very real.’ The work is a mental voyage, occupying space with the same logic and form as a tesseract. Space is not the artist’s only concern though. Time also takes centre stage, with the work of the Italian futurists providing intellectual fodder.

The bringing together of such a varied group, in terms of age, medium and form, is characteristic of Sargent’s ambition. Neptune, who is 35, speaks of age affording her another level of nuance, her past and present selves melding to create more expansive work. The same could be said for the show in its entirety – Sargent has brought together artists at every stage of their career, with differing but interconnected stories, all ripe for discussion, serving as the perfect catalysts for introspection and its logical follower, change. The works on view come together to create the many-sided structure of the Black American experience, with its endless facets, offering individual and meaningful vantage points. The show belongs to these artists, but it is also a real testament to Sargent’s breadth as a thinker.

Few contemporary figures are as agile in their navigation of a both perilous and still largely stodgy art world. In an early adulthood dedicated to education and discovery, Sargent has cultivated a fearlessly non-traditional approach, which has proven wildly addictive to the art world elite. His jagged ascent, including a stint teaching kindergarten, writing catalogues for Arthur Jafa and Mickalene Thomas, and giving a TEDx Talk on art and the #blacklivesmatter revolution, reveals the success that can come from the right cocktail of determination, analytical rigour, and a willingness to fumble about. And that success is now on view for the benefit of any willing and able visitor. ✱

‘Social Works’ runs until 13 August at Gagosian, 555 West 24th Street, New York, gagosian.com; antwaunsargent.com

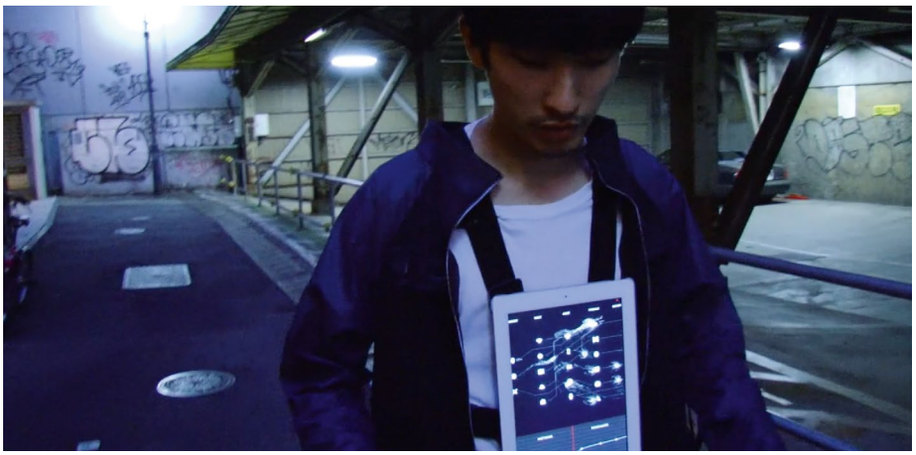
Can design help us better understand the future?

Yosuke Ushigome

The self-styled ‘creative technologist’ and director at design studio Takram on the power of speculative design to make ideas tangible, humanise big data, and encourage healthier behaviours

Writer Jens H Jensen

This page and opposite, stills from *Professional Sharing*, Ushigome's exploration of the concept of the sharing economy, in which he walks around Tokyo's Shibuya wearing a jacket covered in solar panels, and takes on various small online jobs



I remember first seeing Yosuke Ushigome, now director at Takram's London office, in 2014 at an exhibition at Tokyo's 21_21 Design Sight. In a video titled *Professional Sharing*, Ushigome wears a homemade jacket with solar panels and pockets for various digital devices. He walks around Shibuya, as per requests from real-time clients, and gets paid for taking specific pictures at specific locations. Sometime during the video, he takes an online break while lending his devices' processing powers to someone mining a digital currency. Later he queues up at a popular restaurant on someone else's behalf, and likewise gets paid for his time. It was the sharing economy taken to the extreme, and a peek into the not-too-distant future, as he saw it at the time.

Ushigome calls himself a creative technologist. He studied system design engineering and later mechano-informatics in Tokyo before doing a master's in design interactions at the Royal College of Art (RCA) in London. 'I wanted to be better at communicating technological and engineering ideas from a more humanistic perspective,' he explains. He studied under Critical Design pioneers Anthony Dunne and Fiona Raby, and has been working in design and technology ever since. 'I believe in the power of design to make ideas tangible – not to make you buy more, but to make you think.' After graduating from the RCA, he freelanced and worked briefly at design studio Superflux in London before Takram approached him (and fellow RCA alumni Miles Pennington and Lukas Franciszkiewicz) in 2014 to help start its London office.

Today, Ushigome continues to spend much of his time visualising and speculating on what the future might look like. 'Takram started out as a company trying to bridge design and engineering, but today we do more work helping our clients define their vision,' Ushigome explains over Zoom.

With about 40 people in Tokyo, four in London and two in New York, Takram is the first Japanese design innovation studio to go fully global. Its services include branding, product and service design, and what it calls 'future vision design proposals'. It's not always easy to put one's finger on exactly what the company does. Scrolling through its website doesn't necessarily make it all that much clearer: there is a project featuring a cute-looking agricultural robot; a couple of branding projects for a small fruit farm in Hokkaido and Japan's largest online flea-market platform Mercari; and also, what on the homepage is described as a 'speculative design proposal for an automatic toileting system', adequately named Heavy Load.

Design is what ties all of these seemingly very different projects together. 'We really believe in the power of design, and design as part of research,' explains Ushigome, who works on most of Takram's more speculative and futuristic projects. *Professional Sharing* is a good example of how the company uses design to try and suggest what the future might look like. By realising and showcasing their visions, the designers encourage stakeholders and the public at large to think about what can lie ahead.

Another example of using design to try and engage people to think more about the future is the RISAR prototype app, presented at the 2020 Design Indaba conference in Cape Town. On the app, people are asked simple questions that have a direct effect on the rising sea levels, like how they commute to work. Depending on their choices and their physical location, the app predicts and demonstrates how they might experience the rise of sea levels.

Using a phone camera and augmented reality technology, users can see the virtual sea rise right in their living room or in the park if they make environmentally irresponsible decisions. 'Of course, this is all a bit oversimplified, but I think it's a great way of humanising big data,' Ushigome says. It's a simple but powerful way of explaining something as complex as climate change; the amount of publicly available data on such phenomena can be ››

overwhelming and difficult to relate to everyday life, but seeing your kitchen slowly fill up with water because you consistently take the car rather than ride a bicycle to work drives the issue home.

Such self-initiated projects often generate quite a bit of interest, which in turn helps Takram expand its service portfolio. Sometimes these projects are fully self-funded, other times Takram might approach another company with an idea, in the hope of collaboration and funding opportunities. Companies and government agencies also contact Takram for specific projects, such as the prototype Regional Economy Society Analysing System (RESAS) developed for the Japanese government in 2015. RESAS is a web-based system that gives clear and visually pleasing representations of nationwide data on topics such as population, economics, tourism and consumption, sourced from Japan's central Teikoku Databank. It is used today by policymakers throughout the country to make sense of phenomena such as the movement of people or goods within and across different prefectures, or the change in economic growth in one area compared to another. It is another example of what Ushigome likes to refer to as the humanisation of data. 'Data is only useful and relevant if understood, and design can be an excellent tool in making it so,' he says.

Over the last 18 months, Takram has been working together with Hitachi's Research & Development Group to create a website, sustainability-transitions.com, to share ideas for building a more sustainable world in small increments, or 'transitions'. It features key findings from interviews with 12 leaders in sustainability, from Jonelle Simunich, a senior foresight strategist at Arup, to Yuji Yoshimura, a professor at the Research Center for Advanced Science and Technology at the University of Tokyo. 'Thinking in transitions can give us a much fuller picture of how we build a sustainable future,' it reads. 'And it gives us practical, concrete steps we can take to help get us there.'

The website proposes ten transitions, including Centralised to Distributed, Degenerative to Regenerative, and Fossil to Renewable, and explains why they are necessary to build a sustainable future. It outlines opposing sets of qualities that define the current world (which sees energy as a resource, gradually running out while polluting the environment) and a preferable world (energy as a flow, renewably supplied and non-destructive). Importantly, it also offers very concrete proposals as to what each individual can do to help these transitional changes.

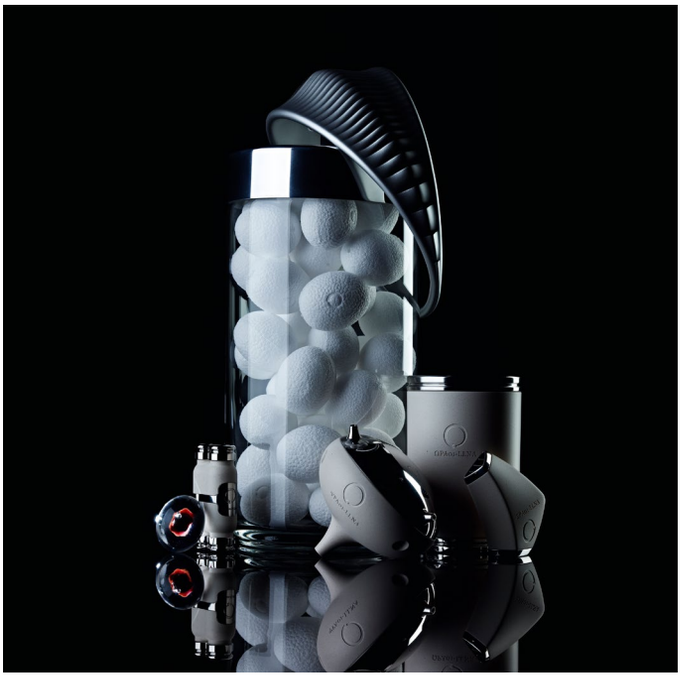
'I think that with Covid, being able to highlight and facilitate these kinds of discussions about the future is perhaps more important than ever,' Ushigome says. He goes on to explain that, if anything, Takram has received more enquiries because of the pandemic. Perhaps clients are more willing to entertain speculative design proposals in uncertain times such as these? Takram and Ushigome might not have all the answers, but their innovative and forward-looking approach is sure to make you stop and think. ✱

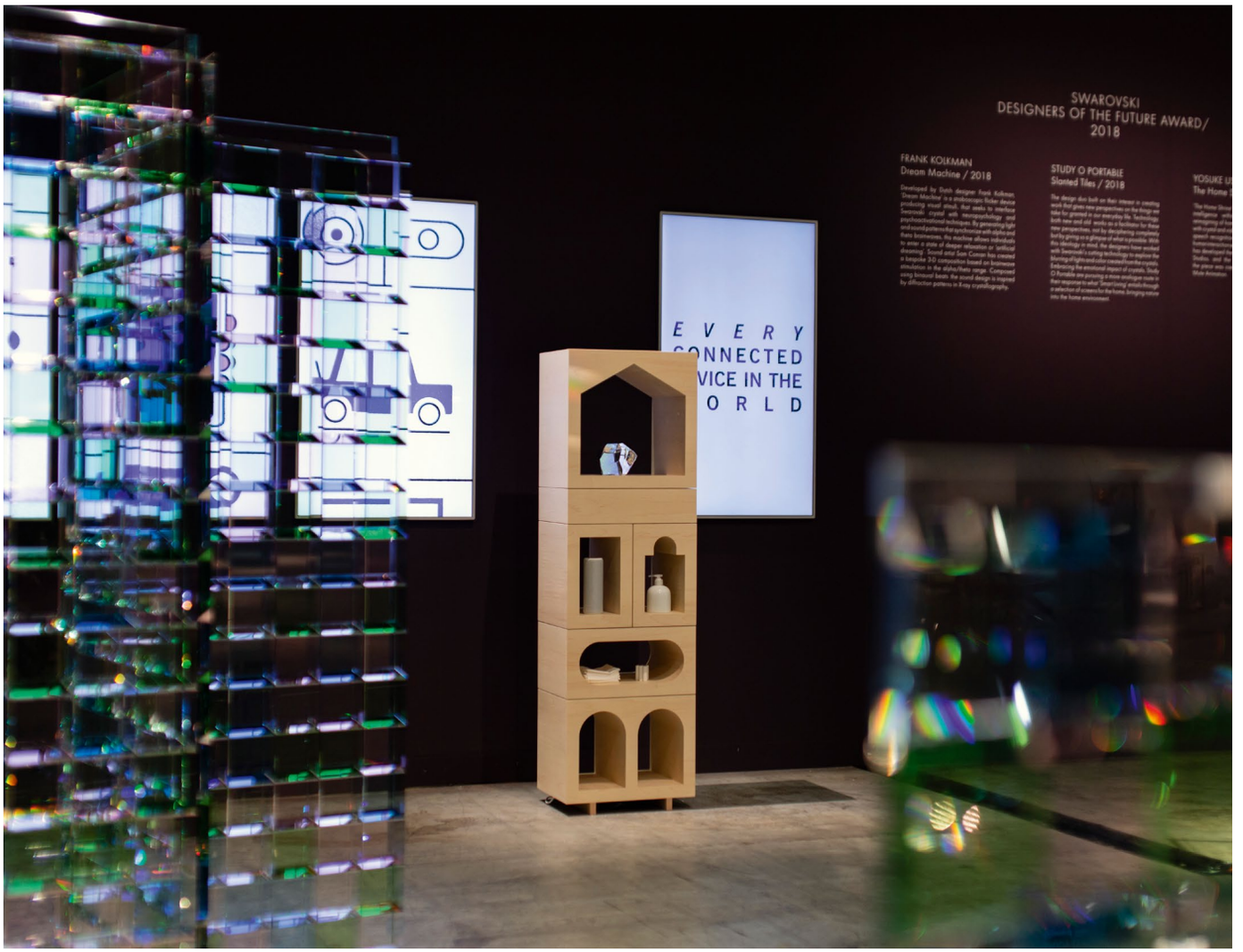
takram.com; yosukeushigo.me

'I believe in the power of design to make ideas tangible – not to make you buy more, but to make you think'

This page, Takram's speculative designs include, left, the Shenu Hydrolemic System, a series of artificial organs designed to conserve water inside the human body, created for an exhibition at Documenta (13), and, right, Heavy Load, an automatic toileting device designed for an exhibition at the Museo Della Merda, Italy

Opposite, top, Home Shrine, a project for Swarovski, explores our relationship with virtual assistants. Bottom left, the RISAR app aims to humanise data by using augmented reality to personalise the effects of climate change. Bottom right, another of Takram's speculative designs, this Personal Mobility Pod for Moovel Lab would allow you to ship yourself using existing infrastructure





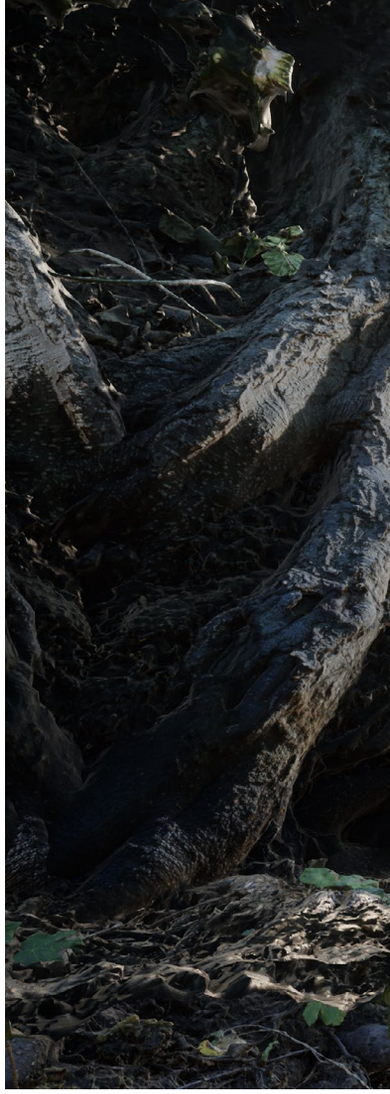
Photography: Takram; Naohiro Tsukada; Mark Cocksedge, courtesy of Swarovski

How can VR bring us closer to nature?

Jakob Kudsk Steensen

The Danish artist leverages virtual reality technologies to reorient our relationship with the natural world. We take a deep dive into *Berl-Berl*, his ode to wetland ecosystems, now on view at Berlin's Halle am Berghain

Writer TF Chan



Left and above, views of the virtual wetland in Jakob Kudsk Steensen's *Berl-Berl* (2021)

On the day of our video call, Jakob Kudsk Steensen is in the midst of an expedition in the Spreewald Biosphere Reserve, a wetland area in the German state of Brandenburg. It is teeming with life and removed from civilisation (he's had to drive to a nearby small town to get reception). He and his team are at the reserve for a few weeks to study the landscape, paddling around in canoes and wielding underwater cameras, microphones and hydrophones 'to document all this life that lives between the soil and the forest'. The work is methodological and meticulous – perhaps de rigueur for an environmental biologist, but highly unusual for an artist. Of course, many artists go to great lengths to acquire insight into their subject. But few have made extensive fieldwork such an integral part of their practice, and fewer still have done so in the service of digital art.

'I like to dive as deep as I can in my craft,' explains Kudsk Steensen. 'To create digital textures the way I do for a rock, I need to take 200 photos just of that rock, look at them, analyse them, and modify them.'

This immersive approach to art-making began with *A Cartography of Fantasia* (2015), a video installation for which Kudsk Steensen spent two months driving around Murcia to document the afterlife of Spain's deserted resorts, the legacy of reckless financial speculation. 'When you move through an environment, you start perceiving movement, time and scale in new ways. And because you're experiencing it in new ways, you also start imagining new kinds of emotions or landscapes or places in your head,' he says.

He describes his process as a reaction to the boom of 'post-internet art', the collage-driven works created at breakneck speed for an era of short attention spans and infinite scroll. 'Around 2015, digital art was becoming this very fast, very commercial field. I just couldn't connect to that. So I decided very intentionally to make my work as human, as emotional and as sensory as I could.'

This awakening led him to spend a year creating a virtual island for *Primal Tourism* (2016), modelled on Bora Bora, a popular tourist destination in French Polynesia. His version features abandoned, futuristic architecture amid a primordial landscape. He spared no effort in researching the project, collating satellite maps, tourist photographs, scientific illustrations and drawings from the logbook of Jacob Roggeveen, an 18th-century explorer. Kudsk Steensen rendered the leafy island in dazzling detail, and programmed camera movements so viewers could explore it from the perspective of humans, animals and drones. Beyond its escapist appeal, *Primal Tourism* tapped into wider conversations around climate change, and the fraught relationship between colonialism and tourism. It set the bar high for virtual reality art and continues to be shown today. Just this March, Serpentine Galleries organised a live multiplayer event on the island, hosted by Kudsk Steensen and three of his collaborators.

While the themes of *Primal Tourism* reflect more contemporary concerns, its building blocks – a love of nature and a fluency in gaming technology – can be traced back to Kudsk Steensen's upbringing. As a child, he attended a Steiner kindergarten, which emphasised outdoor learning and play; his family had a fondness for natural landscapes and taught him about plant and mushroom species. When he was nine, they moved to Nørre Nissum, a rural town in western Jutland with a population of around 1,000. 'At the same time, video games really exploded,' recalls the artist. 'My friends and I suddenly had access to these extremely expansive, open virtual landscapes within three-dimensional video games where you could really navigate space. And it just absolutely captured our imaginations and became a huge part of our lives.'

He can still describe in vivid detail his favourite virtual landscape from that time, a multiplayer map called Facing Worlds from the 1999 first-person shooter game *Unreal Tournament*. The map shows two islands on opposing ends of an asteroid, each with a pyramid-shaped tower reminiscent of ››

a Meso-American temple, while the Earth looms in and out of view in the background like a majestic blue marble. 'Now it looks like square blocks, but at the time it was considered hyper-real, and had this strange effect of connecting you to something new and virtual,' he enthuses. Facing Worlds captivated the young Kudsk Steensen and inspired him to learn the tools that would allow him to modify these in-game worlds. So much so that he set his sights on becoming an animator, only to change course when, at his first animation test, he was asked to draw the same character 17 times. 'But that raw sensation that I had as a kid encountering these things, and the energy it brought, has stayed with me. I still draw on that today.'

In art school (first Aarhus University, then Central Saint Martins and the University of Copenhagen), Kudsk Steensen would build virtual worlds, then create paintings of the landscapes within these worlds 'to make it art'. It was a way to fulfil his passions while conceding to the popular misconception that painting had greater aesthetic merit. He moved away from painting as soon as he graduated and started to build his career around virtual worlds. 'It's funny how you have to exit the doctrine of a system you're brought up in to innovate within it,' he reflects.

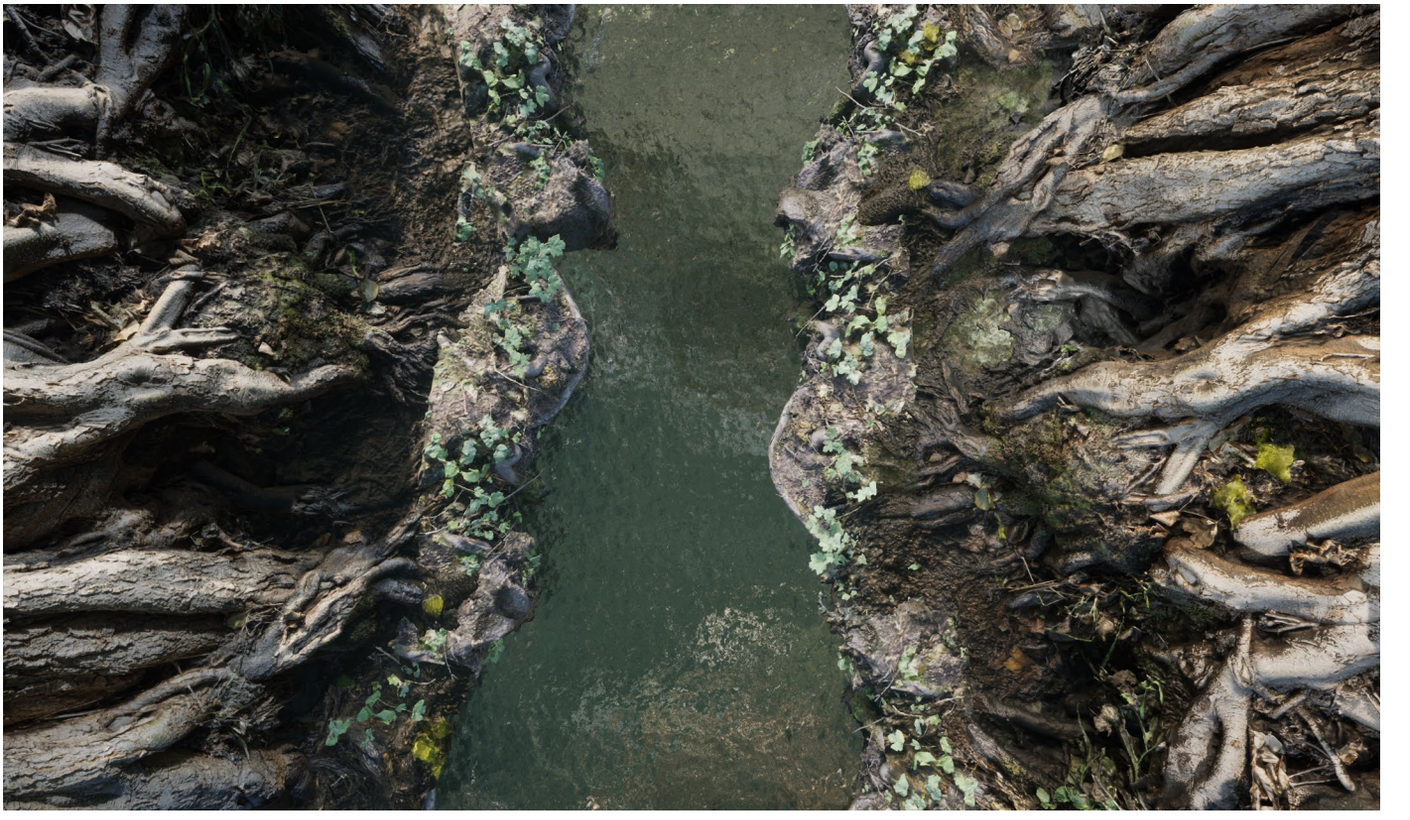
Moving to New York six years ago, the artist found kindred spirits in the growing immersive media sector. One was artist and writer Rindon Johnson, who became the voice of Kudsk Steensen's *Aquaphobia* (2017), in which viewers follow a water microbe through a Brooklyn park, while listening to a break-up story between man and the landscape. Another was composer Michael Riesman, music director of the Philip Glass Ensemble, who created algorithmic music for the video and VR piece *Re-animated* (2018), inspired by a recording of the mating call of a Hawaiian Kaua'i 'ō'ō bird that had been the last of its species. The most important partnership of all has been with sound artist Matt McCorkle, whom Kudsk Steensen met through New Inc, the New Museum's creative incubator programme. Like Kudsk Steensen, McCorkle has a love of nature and fieldwork, often gathering sounds 'in extreme isolation to capture our natural world at its purest essence'. The project in Brandenburg's wetlands is their fourth together.

'Jakob came over to my studio one night, and I played some whale sounds I recorded for a then-upcoming show at the American Museum of Natural History, "Unseen Oceans". We realised at that point our work gelled together like magic,' McCorkle remembers. 'We have a similar fondness for the minute details in nature, often exploring the tiny worlds that pass us by in our everyday lives. For example, a small mossy patch on a decaying log is an entire world in and of itself, if you look and listen close enough. Patience is key to the work we create together. We let nature guide our work and expose to us how she wants to be presented in a particular ecosystem.'

Shortly after meeting, Kudsk Steensen and McCorkle began to work on *The Deep Listener* (2019), an artwork commissioned by Serpentine Galleries in collaboration with Google Arts & Culture and architect David Adjaye. It involves an app that takes its users on a journey around Kensington Gardens and Hyde Park, using augmented reality to present the sights and sounds of five elements of London's ecosystem – London plane trees, bats, parakeets, azure blue damselflies and reedbeds – and to illuminate the ecological interplay between humans and non-humans. The title refers to the slow and embodied process of attentive listening that is necessary for learning and reflection.

Kay Watson, Serpentine's interim head of arts technologies, recalls: 'Jakob's was one of over 350 ambitious works submitted for the first Serpentine Augmented Architecture commission. His notion of "slow media", that technology could be used to foster attention and engagement with the natural world rather than detract from it, resonated with us all.'

Kudsk Steensen's next stomping ground was markedly different from London's green spaces. Accepting a residency at the Luma Foundation in Arles, he decided to research the wetlands of the Camargue. 'You have these basic life forces of salt, algae and water. Depending on how dry or wet it is, everything will feel and look completely different,' he says. He documented this process over a year for a multiplayer VR piece titled *Liminal Lands* (2021), created with McCorkle



Berl-Berl alternates between majestic views of Kudsk Steensen's virtual wetland, opposite, and close-ups of 3D-scanned natural elements, right

'I want to direct the eyes at the world beyond our human domain, to bring a sense of mystery, imagination and fascination'

and now on view as part of the group show 'Prélude' at La Mécanique Générale.

His residency in Arles coincided with the onset of the Covid-19 pandemic. 'I really started thinking about embracing hyperlocal sensitivity, and what it meant to suddenly travel the international art circuit a lot less, and really be present in the landscape,' he says. 'It shifted something inside of me, deeply and profoundly. Through this much more extreme engagement with nature, I found out that you have to spend enough time in a place to start seeing it, to realise that it looks and feels different than anything you can imagine.' There was more work to be done on wetlands still. And so when the Berlin-based art foundation Light Art Space approached him for a new commission, he decided to stick to the topic, and go further.

Light Art Space offered him a major solo exhibition at the Halle am Berghain, one of the German capital's most celebrated cultural destinations. It's an extraordinary opportunity that is well aligned with Kudsk Steensen's ability to reach a wide range of audiences (besides art lovers and gamers, he has a loyal following among the fans of K-pop sensation BTS, who invited him to present a virtual forest ecosystem, *Catharsis* (2020), as part of global public art project 'Connect, BTS').

'I work with people from different fields. We don't care about the conventional frameworks, as long as we have a meaningful engagement with people,' he comments.

The exhibition also comes with a heavy burden of expectation. 'It's not the type of show where you just roll in as an art world figure with your artwork. You have to embrace what the building has been as a nightclub, and what it might become, without alienating its history and existing community, without appearing to gentrify yet another space in a city that used to have all this energy.'

To live up to its venue, the exhibition, titled *Berl-Berl*, would have to be epic, collaborative, democratic and one-of-a-kind. Kudsk Steensen's solution was to create a virtual swamp that would take over all of Berghain, encouraging viewers to contemplate the forgotten complexity and beauty of wetlands. Joining forces with fellow artist Dane Sutherland, Kudsk Steensen began to research historical perspectives on wetlands and swamps. They learned that many major cities in the world are connected to wetlands. Brandenburg, the state that surrounds Berlin, is one big wetland that emerged from a glacial valley 10,000 years ago, and Berlin's name in fact derives from the old Slavic word 'Berl', which means swamp.

'Wetlands have also been considered sites of imagination, of fertility, of spirituality. In many religions, wetlands connect our world to the world of other animals, and to the heavens,' Kudsk Steensen says. Across Europe and North America, this changed in the 1800s, when wetlands came to be seen as undesirable. People began to remove and pave over them. Today, freshwater wetlands account for only one per cent of our planet's ecosystems. As the artist laments, 'they have become lost from the public imagination', despite their exceptional biodiversity, ability to filter toxins, and the protection they offer against rising sea levels.

His next port of call was Berlin's Museum of Natural History. Its director, Professor Johannes Vogel, has been on a mission to revolutionise the way data in natural history museums is used. 'Natural history museums have to inspire and encourage people to see themselves as part of nature,' says Vogel. 'It is extremely exciting and inspiring to learn from artists how human emotions can be evoked and how we can engender dialogue. It is fantastic to see how Jakob has a different approach to a museum object than we as natural scientists have – how we can engage through textures, sounds or virtual access.' ››

Rendered in meticulous detail, Kudsk Steensen's virtual wetland emphasises textures, tactility and a slow sensibility, qualities that have so far been rare in VR art

The museum has a vast sound archive, including recordings of frog songs from the wetlands of Brandenburg since the 1960s. Going through these recordings, Kudsk Steensen was struck by how much they have changed. So it wasn't just that enlightenment ideals banished wetlands from our midst, those that remained were increasingly damaged by human activity, too. He also met with the museum's scientists. The soil in wetlands, they told him, can include organisms that died 2,000 years ago but have yet to dissolve. 'So the energy is still in the soil. It's kind of alive,' says Kudsk Steensen. 'Then when you look at past religions and folklore, they also talk about the soil as being alive. I had the idea that when you work in a wetland, you're working with parallel realities, multiple worlds coexisting between different species, between different time periods, between science and something spiritual.'

With this in mind, he set out to explore the Spreewald Biosphere Reserve, bringing along McCorkle, producer Andrea Familiari, and field biologists from the museum, whom he values not only for scientific knowledge but also for their emotional connection to their subject. 'I like to bring experts from different fields with me into the landscape. I give a sense of direction, in the theme of the work and the story, but they're very much themselves, responding to the landscape and being part of the artwork's creation.'

There are precise steps to complete in the wetlands, such as using macro photogrammetry to 3D-scan flora and soil in ultra-detail. But Kudsk Steensen has allowed for spontaneity, too. 'Once we've spent weeks sailing in canoes, looking around, we can experience and see things we didn't imagine. We procure new sensations, spaces, visuals and sounds, bounce that back on our original material, and then go to the studio to put all this together in a single, holistic experience.'

Back in Berlin, where Kudsk Steensen has been doing a residency at Callie's, a non-profit experimental institution, he assembles his raw material into a virtual wetland that is at once hyper-realistic and surreal. Gentle waters lap against cragged boulders and gnarly trees cloaked in emerald green moss, pristine reeds stand tall in turbid pools, luminescent fungi emerge from fertile soil. It looks at once like a sophisticated video game and a Romantic landscape painting that has come to life (later, when asked to name his artistic heroes, Kudsk Steensen mentions both the iconic Japanese game developer Hideo Kojima and the 19th-century German painter Caspar David Friedrich).

McCorkle drew from the Museum of Natural History's archival material and his own recordings to create orchestra-like compositions, which feature three species prominently: the common frog, the European fire-bellied toad and the cuckoo. Further birds, bats and an aquatic insect called the water boatman play supporting roles. 'The main soundscape consists of many different compositions, each with their own emotional toll, lightness and influence,' says McCorkle.

Humans are notably absent from this virtual landscape, and indeed from Kudsk Steensen's earlier works. 'We have so much art already that focuses on the human. I want to direct the eyes at the world beyond our human domain, to bring a sense of mystery, imagination and fascination,' says the artist. Still, in a departure from previous practice, Kudsk Steensen has invited the Venezuelan musician Arca, whose 'morphing sensibilities'

Images courtesy of the artist

he has long admired, to contribute to the project. Riffing on a mood board that McCorkle has drawn up to explain *Berl-Berl*'s sonic journey, Arca improvises raw vocals that are then layered into the soundscape, along with spoken examples of various names by which Berlin has been called over the centuries, further rooting the virtual experience in its physical location.

The seven metaphorical verses of *Berl-Berl* – the human world, fungi world, root world, trees, frozen world, skies and water – come together in real time rather than following a predetermined sequence. Nine LED screens broadcasting live video have been installed in the cavernous Halle am Berghain, once the machine hall of a district heating plant. 'The landscape exists on a server, which tells us what time of the day it is, what things look and feel like. And it sends that signal to all the individual computers, who render their own local version of that environment with those shared variables, which shows on the screens. So you get this constellation of screens throughout the space, offering little windows into the landscape, and something shared among them,' says Kudsk Steensen.

Creative technologist Lugh O'Neill developed the sound technology to transform McCorkle's compositions into a generative soundscape, parsing the information from the server into the sound experience. 'This information dictates when and which parts of my composition play, how long they play, how much they connect to Jakob's visuals and the overall emotional timbre they emit,' says McCorkle. 'The world is alive in a sense that you'll never experience the same visuals and sounds in the same way, shape and form.'

Ambitious in scale and astonishing in detail, the resulting artwork is a marvel of VR technology. Kudsk Steensen is already thinking about *Berl-Berl*'s life beyond Berghain: to extend the reach of the installation, he has created a web portal so viewers can tune in from anywhere in the world. He also points out that because the artwork is virtual, it can infinitely morph and change, adapting to future contexts in which it will be shown.

'*Berl-Berl* contributes to the development of new aesthetics and formats, presenting a radical new visual language,' says Bettina Kames, the director of Light Art Space. 'The heart of the world Jakob is bringing to life lives on a gaming engine, taking this technology to a new extreme. Very few people have worked with this complex mix of technical elements and scale in the art world. But importantly, *Berl-Berl* is not about highlighting technology, but using it to offer a certain kind of experience to discuss wider issues. It will allow new perspectives on our environment and create a space for connecting to an endangered ecosystem.'

For Kudsk Steensen, the ultimate goal is to expand the possibilities of virtual reality technology and digital art. 'I don't think of myself explicitly as an activist artist, though I work with themes like extinction and the preservation of wetlands. For me, the real sense of activism here is using technology for something very emotional, intuitive, almost ritual or spiritual; showing that technology is something you can use to imagine, express and feel, and be with the environment. This is not a narrative we often hear, and I think that's the strength of it. That's what I'm here for: I want more poetry in technology.' ✱

Berl-Berl, until 26 September at Halle am Berghain, Am Weizener Bahnhof, Berlin, berlberl.world; lightartspace.org; jakobsteensen.com

How can design help the visually impaired?

Simon Dogger

The Dutch designer has created projects that open up the museum world for blind and visually-impaired visitors. He speaks to art historian and disability activist Amanda Cachia about access technologies, inspirational personal experiences and the virtues of physical spaces

Portrait Diewke van den Heuvel *Writer* Amanda Cachia

When Simon Dogger became blind in 2010, the museum world became inaccessible to him. While many museums offer monthly audio and tactile tours for its visually-impaired and blind visitors, Dogger found these lacking in providing choice and independence, given the tours were offered according to a specific and limited schedule, and were led by museum educators. Dogger, who was the first-ever blind designer to graduate from the Design Academy Eindhoven in 2017, asked himself, how would I like to have self-empowered access to art? This led to Dogger's *Feelscape* concept, which interprets 2D content (such as paintings) as tactile 3D objects. The designer began collaborating with Eindhoven's Van Abbemuseum to develop his inclusive ideas, starting with *Feelscape*.

The Van Abbemuseum has a global reputation for its groundbreaking work in the field of inclusion, diversity and accessibility, and it invited Dogger to make its visual content accessible for the visually impaired. The work of art, its storyline, even its artist, is translated through material, shape and position. Some of the works that Dogger developed into a *Feelscape* version, in ››

Designer Simon Dogger navigates his way around artworks in the Van Abbemuseum in Eindhoven using his Tik-Tik app

A pair of camera glasses, worn by a blind user, sends images of their conversation partner to an app with facial expression recognition, which translates them into a series of tactile signals on the blind user's arm. 'You can actually feel someone smile,' says Dogger

collaboration with visual designer Stijn Boemaars, include Piet Mondrian's *Composition en Blanc et Noir II* (1930), Carel Willink's *The Painter and his Wife* (1934) and Andrzej Wróblewski's *Dążenie do doskonałości* (1952). The Van Abbemuseum then acquired the *Feelscapes* for its permanent collection as critical companions to the original works.

Dogger also developed Tik-Tik, a safe, reliable and accessible indoor navigation app for the visually impaired that works on iOS. He says that this design was inspired by his own personal loss of independence in navigating public locations, such as museums. The app guides the blind user to a destination through vibrations. Dogger worked with the Van Abbemuseum to test drive the app's navigation through its building. Tik-Tik provides navigation cues and GPS tracking to a selected destination within a mapped spatial environment, turning the smartphone into a more sophisticated and informed version of the white cane.

Dogger is in the early stages of partnering with an entrepreneur in order to make Tik-Tik more widely accessible. He hopes the app can be used not only within museums, but in train stations, town halls, streets, shopping malls and other public spaces. There are around 285 million visually-impaired people in the world, each of whom could benefit from inclusive inventive design. Dogger is adamant that he is rigorous and thorough with his research on all his designs. The transformation of an idea from concept to prototype to end product is guided by conversations with specialists, interviews with stakeholders, research into the available and current literature, user research, pilots and validation research. He also admits that he has learnt valuable lessons through trial and error.

Dogger rates Apple for offering superior access technologies, with iPhones proving consistently popular with the visually-impaired population. Tik-Tik relies on augmented reality to operate successfully, which creates a dependency on Apple's software. He says, 'Logically I need to follow new technology innovations and investigate if I can develop external software as a plug-in feature to improve the quality of my products.' Ultimately, he believes that technology or software development should not only be dependent on iOS or Android systems. For instance, Tik-Tik can make use of external or self-developed technology in order to raise the quality of navigation.

'My work tries not to limit itself to the existing technology and software,' says Dogger, who is also well-rounded in his approach to access, which encompasses four key characteristics: mental, physical, social and financial. When all four of these goals are attained within his design projects, he believes he has a quality product.

Another of Dogger's projects, more intimate in scale, is the *Emotion Whisperer*, which translates facial language and cues into vibrations. Though Dogger believes that emotions are quite auditive – for example, he says that he can hear very well when someone is angry or sad through the intonation and volume of their voice – nuanced emotions, like a raised eyebrow or a cautious smile, are silent. Sighted people take for granted the nodding of heads and the eye contact we make as we have a conversation, but Dogger says these cues are just as important as the voice. His creation involves a pair of camera glasses, worn by a blind user, which sends images of their conversation partner to an app with facial expression recognition. The expressions are then analysed and translated into a series of tactile signals on the blind user's arm. As Dogger's website states, 'you can actually

feel someone smile'. For Dogger, the *Emotion Whisperer* is just the first stage of many other possibilities and ideas, and he expresses a desire to explore smell recognition, translate sign language through tactile information, and use vibrations on the skin to navigate public space, akin to Tik-Tik.

I ask Dogger for his thoughts on how the world, and particularly museums, have been thrust into the virtual sphere by the coronavirus pandemic in the past year and a half, and what this means for disabled audiences. Dogger's response is that there is still much room for improvement in these virtual environments – for instance, digital meeting rooms require better audio connections and more logical interfaces for blind and visually-impaired users. He hopes that museums and other organisations continue to work towards improving these alternatives once the pandemic restrictions have been lifted. I share with Dogger a recent article in *The New York Times*, which outlined that, according to a staff member at the Guggenheim Museum, one of the silver linings of the pandemic was that it has found new, larger global audiences, and thus its reach has expanded exponentially. This is especially applicable to disabled users who may not otherwise have been able to experience the museum in person. Many museums now plan to continue online programming once their physical doors are open to the public again. While Dogger sees the benefits in this, he also points out that a museum's physical site will always be an important space for experiencing the full 'sense' of it, be it through the smell as one walks through the front doors, traversing the corridors and taking in other bodies through proprioception, sitting and reflecting on a bench in a quiet corner, listening to a curator talk, or enjoying a musician play a new instrument.

Dogger is reluctant to categorise himself as a design activist and a spokesperson for disabled people. However, he realises he is a role model by virtue of being blind and finding a way to graduate within a discipline that relies on the primacy of vision in our ocularcentric world. Dogger is motivated to break the monosensory approach that we have within society and, as a designer, he is able to remind others in the field of their, and its, limitations. His inventive designs raise awareness to encourage us all to become more inclusive, diverse and accessible. ✱

simondogger.nl

Above, the *Emotion Whisperer* concept consists of a pair of camera glasses, an app with emotion recognition software, and a tool that translates facial language and cues into vibrations

Opposite, the Tik-Tik app allows visually-impaired users to independently access and navigate public buildings

Photography: Phil Barker at Future Studios for Wallpaper*

What does fashion still need to fix?

Maxine Bédat and Christian Smith

Maxine Bédat, director of New Standard Institute, a non-profit promoting greater social and environmental sustainability within the fashion industry, discusses the options with Christian Smith, partnership and policy lead at Fair Wear Foundation, an Amsterdam-based non-profit that works with brands to improve the rights, pay and conditions of garment workers

Writer Nick Compton

Are there areas in which progress has been made over the last five years? And where have we stalled or been derailed?
MB Fashion brands talk about sustainability like it's a trend, like animal prints, but I think it's hard to see how that talk has turned into any substantive change. To some, it's just marketing and helping to push more product, which is completely antithetical to the whole project.
CS There has been an increase in noise, but you just have to scratch the surface to see the incoherence, the lack of meaningful data points. There is the adage, 'if you measure it, you can manage it'. But what we have is a lot of measurement for the sake of measurement, for reporting's sake.
MB The industry collects a lot of data on activity, but not a lot on outcome. We're not measuring things in the right way. We're measuring that a meeting has been held, not if wages have gone up.
CS My focus is on the social side, and when I see the lack of progress, it really emphasises the inability and sometimes unwillingness of companies to address the things that really matter: pay people properly, allow for freedom of association, and support women's empowerment because somewhere between 60-80 per cent of workers in fashion manufacturing are women. And all those things have to work in combination. Having said that, effective ways of measuring do exist. Firstly, there are brands willing to be fully transparent, and that number is increasing. On top of that, at Fair Wear, we look at brand purchasing practices as a way of holding them accountable for what happens in their supply chain. We do actually have positive stories of change in supply chains where brands and factories have more of a partner relationship.

Is the media itself a problem because it's more obsessed with the shiny new thing than more complex issues?
CS If the media was really interested, then they would find ways to get this information in front of people, in a meaningful, digestible way, that would allow them to understand what was happening and what you could do in the supply chain. Still, I find it encouraging that there are an increasing number of media outlets that have started to report on complex issues.

How much can the individual consumer effect change? And how much is it their responsibility to effect change?
CS I think consumers should be aware when they have the choice to change, but it's the job of businesses to change. They need to understand the landscape in which they operate and what they need to do, and then be on top of that. And if they're not changing, then it's the job of governments to create policies and legislation that make them change. And it's the job of investors to change their own criteria for investment to force companies to change as well.
MB The companies will always say that consumers aren't demanding change. But what messages have they been receiving, and how much is spent on marketing and advertising to get people to purchase all this stuff in a completely thoughtless way?
CS Consumers won't change the industry, but they can help by voting with their wallets, supporting brands that are doing better, valuing their clothes and thus the maker.

Who are the enforcers of change, and where are the big levers of power? Is it governments or institutional investors?
CS The work that the EU is doing on mandatory due diligence legislation is really important, but we also have to be very wary of this idea that you legislate, and everything is solved. Whatever is created has to come with guidance and an understanding – we are pulling this lever, because we expect this particular action.

One of the curious side effects of the pandemic has been that people are talking about supply chains and the problems with globalisation. Are there other positives that have come out of that?
MB In the 1960s, about 95 per cent of what Americans wore was made in America. Today, it's less than two per cent. And that's not to say, bring all production back to America.

Portrait (Maxine Bédat): Bogdana Ferguson

But it is part of the reason that we are where we are. When production was done domestically and we saw that the rivers were changing to the colour of whatever the next season's colours were, that led to the creation of institutions like the Environmental Protection Agency. It was also female garment workers in New York who fought for early labour protections. But when we created this global system, we just ignored all of those gains. What we need now is a global system that doesn't encourage a race to the bottom, to the worst working conditions and the lowest environmental protections. Things become out-of-sight, out-of-mind when they're not in your backyard. But I do think it helps that more people now know that there is such a thing as a supply chain, that things don't just magically appear in a store or on Amazon.
CS We can also see that it is mostly Black and brown people who are making goods, making garments, and falling foul of this global system. This is a legacy of colonialism that we have to be upfront about.

Is circular manufacturing a solution or just a kind of get-off clause, something to just keep us buying more stuff?
MB I don't ever want to suggest that the intentions of the people working in the companies are bad, but I think circularity is a big example of green-wishing. The technology is just not there. That's not to say that we should abandon the efforts or stop investing in it, but we can't push this narrative of circularity before it's a reality. There's a real moral hazard that it will actually encourage people to buy more. It just doesn't get to the heart of the issue, which is that we've created business models within our generation that are all about disposability. The elephant in the room is business models that are just incompatible with the bounds of our resources.

And circularity leads us to think that sustainability is a design problem or an engineering problem, and that there's a technical fix. And the role of the designer seems to have been stretched, so that now they have to think first about materials and then post-consumer life, areas that weren't really their concern before. Is there a false comfort in that idea of the design fix?
MB Yes, there's this kind of new obsession with material choice. But regardless of the material choice, what is really happening at the mills? What are the incentives that the companies are creating for greater energy efficiency at those mills? The whole conversation has just shifted to material choice and that doesn't reflect the actual global impact at all. It's all based on very limited data sets, and I think it's dangerous. And essentially companies are still operating on endless growth as the key metric. We think that the demand for new stuff is something innate, but it's not – it's been engineered to drive economic growth.

Is there some advantage to the dominance of a few brands in the mass market? So if they move, it can have a massive impact?
CS If that were true, we would be seeing massive change already. And that's not to say that there aren't some really interesting programmes taking place within all those big companies. But if you are committed, just pay people properly. You have the cash to do it. And your teams can figure out how to sell that back to the customers. But everything still leads to selling more products. And from the environmental standpoint, it doesn't matter how much these big companies do – if we're not addressing overproduction and overconsumption, it doesn't go anywhere. The idea isn't just for the major brands to push the needle, it's for the entire industry to be regulated. And in such a way that they understand the planetary boundaries we live in, the interconnectivity of environmental and social sustainability, the ramifications of poor wages, and are willing to address those things holistically. That's the point at which you might start to see change. ✱
Unraveled: The Life and Death of a Garment, by Maxine Bédat ($27, Penguin Random House) takes in Texas cotton farms, Chinese factories, Amazon warehouses in the US and landfills in Africa, newstandardinstitute.org; fairwear.org

How do we diversify the design industry?

Diversity in Design

Led by Herman Miller, 20 American design organisations are joining forces to level the playing field for under-represented communities. Their first step: enabling more Black youth to pursue careers in design. We take a first look at this ambitious initiative that promises to change our industry for the better

Artwork D'Ara Nazaryan *Writer* Pei-Ru Keh

Of all the wake-up calls of 2020, the racial awakening that surged in the United States following the murder of George Floyd was unequivocally overdue. Rippling across the world, a wave of social media support prompted individual reckonings, a shared sense of urgency, and a general commitment to do better. But the question of how to achieve long-lasting change remained, for the most part, unanswered.

Racial imbalance, particularly the under-representation of the Black community in the American workforce, is staggering. According to statistics from the US Census Bureau, 12 per cent of the US labour force identify as Black, and less than five per cent of designers employed on a full-time basis identify as Black. This includes anyone who listed their profession as commercial and industrial designer, graphic designer, interior designer, landscape architect, urban planner, web designer, architect, or simply, designer.

To say that the racial inequality in the design industries needs to be corrected is an understatement. In June, the Herman Miller Group unveiled the Diversity in Design (DID) collaborative, an initiative pulling in 19 other American design organisations, united in the goal of increasing diversity in the design fields. Sharing the belief that design plays a critical role in creating strong, impactful businesses, DID and its members are committed to forging systemic change, while recognising that this requires long-term strategic action and financial support.

'When the movement for social justice was reignited a year ago, Herman Miller took a hard look at what we could do better and differently,' recalls the company's president and CEO Andi Owen. 'It was clear in feedback from our employees that we weren't always moving the needle in meaningful ways, and that our behind-the-scenes approach to diversity, equity and inclusion was limiting our impact. We brought together a group of leaders, who put together a series of actions to take to become more diverse, equitable and inclusive within our company, across our industry, and in our communities. Part of those actions was establishing a design collaborative. We knew that the talent funnel for Black designers was broken, and we knew we couldn't fix this alone. We committed to partnering with other businesses that put a high value on design, to launch a collaborative aimed at creating design career pathways for under-represented students.'

While DID will eventually address all forms of inequity in the creative industries, its first priority is addressing the under-representation of Black designers. It will create joint initiatives with member corporations, while also fostering design awareness and education at the middle school, high school and college levels. This will be done by working with historically Black colleges and universities (HBCUs), community colleges, higher learning programmes and non-profit organisations that serve Black youth, so that they can participate in DID's initiatives, from internships and apprenticeships, to part-time and full-time employment.

To structure the programme, Andi Owen enlisted Caroline Baumann, former director of the Cooper Hewitt Smithsonian Design Museum, to co-lead DID's creation alongside Mary Stevens, senior vice president of special projects for Herman Miller. Together, they approached key leaders from different fields of design to assemble the inaugural group of member organisations. They also recruited a trio of founding advisors to ensure the collaborative would make a significant impact: D'Wayne Edwards, founder of Pensole Academy, an independent design school dedicated to footwear design; Lesley-Ann Noel, associate director of Design Thinking for Social Impact at Tulane University, and Forest Young, chief creative officer of the brand consultancy Wolff Olins.

'Part of the germination for DID was seeing press releases from all the big design companies saying, this is what we're doing, we're committing this many millions to diversify the industry. And that's good work, I'm not pooh-poohing it,' Baumann admits. 'However, what is design about? Successful design is about joining hands, it's about experimentation and collaboration. Once we started pitching this idea to design firms, many of which had already participated in the design education programmes at Cooper Hewitt, everyone was saying yes. It became super clear that the collaborative was the only way to go in making diversity a reality.' She continues, 'Black people account for 4.9 per cent of the design industry. All because there's no pathway. There are sophomores and juniors in high school who have no idea what the concept of designing is, and they certainly don't know that there are careers in design. Design is not in the classroom as widely as it needs to be.'

By targeting the educational pipeline, DID tackles the issue of under-representation at its roots. 'As a professor of design, who has not taught any Black students in the last two years, and only three students of colour in total, I'm very excited about this initiative. Access is an issue that we can all work together to overcome,' says Noel, who has helped to build Tulane University's design thinking programme since 2019 (and will join North Carolina State University's College of Design this autumn).

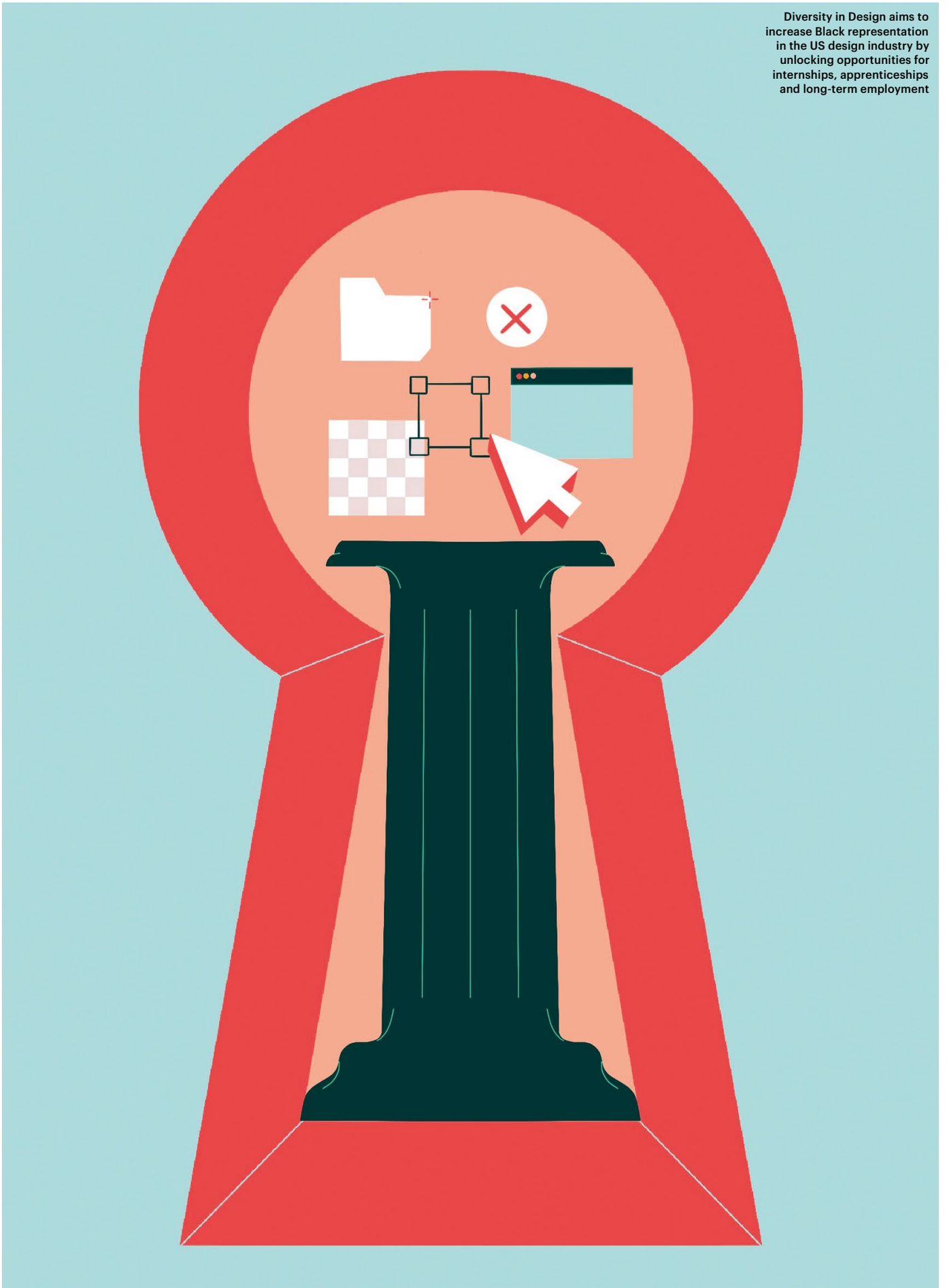
Fellow DID advisory council member Edwards, a self-taught designer, agrees. 'When I first got into the footwear industry in 1989, I was only the second Black person to be at that company. I was one of two people at LA Gear – me and the janitor. That wears on you,' he shares. 'And over time, you get to the biggest brand there is, and you still see the lack of diversity. You're at the biggest company and it's still fewer than 20, out of well over 300 designers.'

Formerly footwear design director of Nike's Air Jordan brand, Edwards walked away at the pinnacle of his career to establish Pensole, an academy that nurtures the next wave of young footwear designers. Funded through partnerships with some of the biggest footwear brands, Pensole teaches the entire footwear, materials and functional apparel design process. Pensole's courses are taught by the industry's best, and are free to accepted students, regardless of financial standing or socio-economic background. It has placed more than 475 graduates in professional positions at companies such as Nike, Adidas, Allbirds and Timberland since it graduated its first class in 2010.

'Once I got out of the industry, I was able to see the rest of the companies, and really see how bad it was. That validated me leaving in the first place,' Edwards recalls. At his insistence, Pensole does not advertise or ››

'As a professor of design, who has not taught any Black students in the last two years, and only three students of colour in total, I'm very excited about this initiative. Access is an issue that we can all work together to overcome'

— Lesley-Ann Noel, associate director of Design Thinking for Social Impact at Tulane University



Diversity in Design aims to increase Black representation in the US design industry by unlocking opportunities for internships, apprenticeships and long-term employment

'We need to reframe diversity as something to be enthusiastic about. Diversity is our greatest advantage in our international economy'

— Forest Young, chief creative officer, Wolff Olins

approach brands for collaboration. 'If you're approaching us, that means you really want to work with us. And our approach with students is the same. We don't try to sell students on what we're doing. If you really want to do this, you're going to find us.'

Last year turned out to be pivotal for Edwards and Pensole. 'Finally, it wasn't just the footwear industry that realised there was a problem. All of design realised there was a problem.' It was a marked contrast from the recent past, when 'industries have the option of looking the other way or not addressing something,' he says. 'But I can't turn off being Black. I don't have that option.

'What attracted me to the DID collaborative was that they got it. Herman Miller got it. They figured out that in their small world, there's a huge lack of diversity. They also realised that there's strength in numbers and knew this could be addressed in a much bigger way by bringing people together with the same common goal and the same vision,' he adds. 'This is what I've been hoping for. For 32 years, I've been waiting for our industry to wake up and really come together and figure out a plan to show these kids that there are other things. That there are other relationships they can have with these brands, besides buying products. Because that's the only relationship right now. What we're trying to do with DID is to remove the brand part of the equation and do cooperative things together.'

The beauty of DID's advisory council is that each member brings a different set of lived experiences that buck the norm. Noel, who comes from Trinidad and Tobago, grew up after the country's Black Power Revolution and had limited experience of racial injustice until she arrived and began teaching in the US. Edwards, who grew up in the inner city of Inglewood, California, didn't let his lack of access to formal schooling, design training and opportunity prevent him from becoming a top footwear designer in the corporate world.

Forest Young, DID's third advisory council member, took a more conventional path, attending an Ivy League school (Yale), becoming a lauded graphic designer, and rising to the C-suite at an international design agency. Raised by activist parents and surrounded by Black artists since youth, he endured and overcame a more nuanced range of challenges. 'It's kind of like the Avengers; we've all had different laboratory accidents,' jokes Young. 'D'Wayne is fascinating for me because he is focused on looking at the gaps in university education and professional preparedness. And it's really interesting reflecting with Lesley-Ann, because where she comes from, she isn't a minority or under-represented. She's almost like this alien who's come in to observe race relations.

'I can think from both sides of the room,' he continues. 'When I entered the industry, I realised I was strange, but not because no one looked like me. That was actually not that unusual, it had been the same throughout my education. I felt like a minority in the sense that I was able to think in terms of the strategy, craft and psychology that you need to shape a project. I realised that was going to be an incredible advantage. And then when you realise that people also underestimate you, that is just the best gift in the world.'

With Young rooted in the corporate world, Noel in higher education, and Edwards straddling both, the trio's understanding of representation is truly multifaceted. 'There are studies that discuss the type of stresses of being an under-represented minority in art school, while receiving critical feedback from people who aren't understanding your lived experiences, what you're doing typographically, or why you're using form language that's coming from a different place. It doesn't all have to be Eurocentric,' reiterates Young, who also teaches at Yale and Rhode Island School of Design. 'Part of branding is representation. How can brands actually be successful if you have a largely homogeneous group of people at work? I see a fully realised design industry profession as encompassing different views, ages, races and genders. We need to reframe diversity as something to be enthusiastic about. Diversity is our greatest advantage in our international economy, and we talk about it as something reparative or something that is reconciling a past wrong. And while that is, of course, true, how do we reframe it as a pivotal moment that unlocks the potential of our economy and society?'

DID is on track to address all that head on. Companies including Adobe, Dropbox, Gap, Knoll, Pentagram, Fuseproject and Levi's have signed up as founding members. Not only should members abide by a shared code of governance, they should also create opportunities through recruitment and retention, promote awareness, and participate in educational programmes.

Levi's, which already has a legacy of advocating for equality and supporting local communities, was drawn to the idea of solidarity in numbers. Elizabeth Morrison, the company's chief diversity, inclusion and belonging officer, says: 'DID is incredibly exciting, primarily because the effort is collaborative and encompasses a broad diversity of companies and organisations. We have so much more power together! Creative fields are rarely the focus of diversity initiatives and, in fact, are among the first to be dropped by underfunded schools. Being at the forefront of an effort to reclaim the importance and viability of these areas for under-represented communities is both exciting and meaningful.' She adds that fostering diversity will not only allow Levi's to 'welcome new perspectives', but to also 'authentically reflect our fans and the communities where we live and work'.

In 2022, the first DID Design Fair will take place in Detroit, specifically targeting teenagers interested in design and careers in design. DID will also support a new partnership between Pensole and the College of Creative Studies (CCS) that will create focused business and design education for Black students. By setting students up with the foundation, experience and skills needed for successful design careers, the partnership will create a pipeline for companies with an emphasis on diversity recruiting.

'For me, justice is levelling the playing field. We're not looking for handouts or any special treatment. Just allow us to start at the same starting line,' says Edwards. 'I was blessed to have someone who believed in me. Otherwise, at 19 years old, the higher probability was for me to be dead or in jail. I had an outlet. The majority of these kids don't, and they don't even see that there are companies behind the products. Their perception of the footwear industry is the mall. They have no concept that there are people who get paid to design. I've been at job fairs and I've never seen my job up there. Yes, the world needs firefighters, doctors, lawyers and accountants, but I made more money than all of those people, so why wouldn't you have me up there? It's really just a lack of awareness. There's a lot of talent that needs to be cultivated, and DID bridges the gap.' ✱

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NARI WARD'S
Ackee and saltfish patties

From his *Amazing Grace* installation to bright shoelaces spelling out 'We the People', Nari Ward powerfully grapples with what it means to be American. As befits a nation of immigrants, the artist has often alluded to his Jamaican roots, not least in his favourite recipe, a combination of ackee and saltfish and Jamaican patties. 'This meal brings me back to my early memory of going to our local bakery on the island,' he explains. Our image pays homage to Ward's 2013 *Canned Smiles*, a critique of the cliché of the happy Jamaican. *nariwardstudio.com; lehmannmaupin.com. For Ward's recipe, see Wallpaper.com*

Runner lace kit, £10 for three pairs, by Allbirds, allbirds.com

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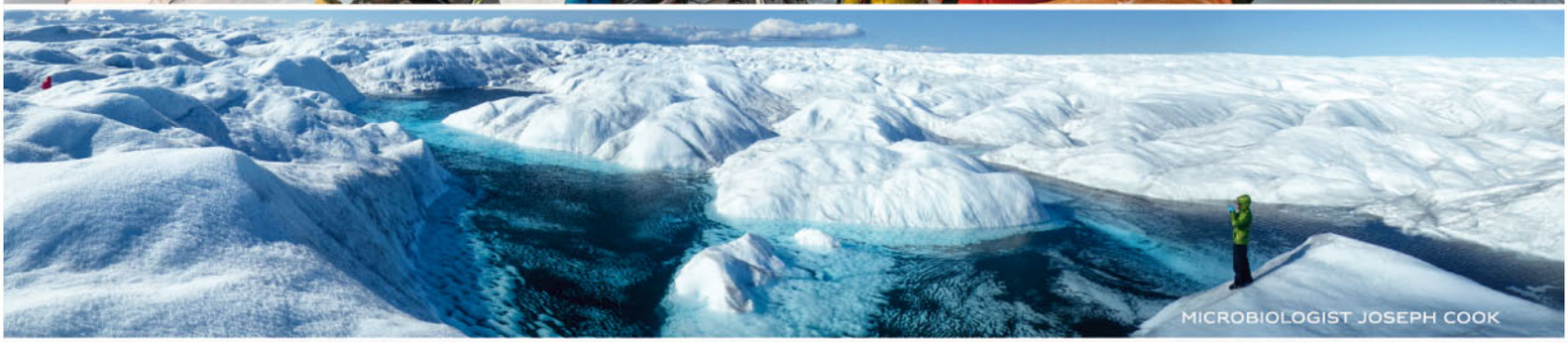

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