Material

Futures
It may seem hard to believe, but there was a time not so long ago when we didn’t all talk about the ‘new normal’. This term, as well as the surrounding language, has been deployed not only to describe one’s personal circumstance, in my case teaching from a shed with no childcare, but to also reassure us that amidst the uncertainty of the coronavirus, and with no immediate prospect of a cure, rather than challenge this new world order, we must cosily settle into it. The ‘new normal’ helps bring order to a situation that deep down we all know is out of control.

Whilst I appreciate that a critique of the language and terminology that we use to describe this pandemic might seem overly academic and pernickety given that people are dying, I nevertheless feel it is important. For every time we hear or refer to the ‘new normal’ what we are actually doing is accepting this situation as the basis for the future. However, it is critical to remind ourselves that being locked down and lonely definitely isn’t or shouldn’t be ‘normal’. Nor, in fact, is the political, social and economic discourse that surrounds it. As I write this in a second UK lockdown, the radio is reporting on the findings of George Floyd’s brutal murder, Trump refuses to accept the US election result and the UK Conservative party is tying themselves up in knots by refusing to extend free school meals to the poorest children in England. However, far from being surprised or outraged by this, it feels oddly familiar and ‘normal’. I confess, in the grey light of my shed and on my fourth cup of coffee this morning, I often have to remind myself quite how unacceptable all of this actually is.

Therefore, perhaps more than ever we must remain angry. When the immediate threat of the coronavirus is over we must reject any notion of the ‘new normal’ and instead imagine the future we want to occupy and not one that we are simply served up.

Whether that is redesigning how we feed ourselves more compassionately and equitably, or a future in which we reject big tech in favour of natural systems, or even reflecting on consumer society through depicting the history, life and death of a chicken, I continue to teach on Material Futures for exactly the reason that our students constantly remind me that this moment in time is anything but normal.

Therefore, to all of this year’s Material Futures graduates who have struggled whittling, digging, questioning and bio-engineering in often total lockdown, a sincere thank you for making digital tutorials in my shed bearable and completely worth it. Remain angry and never accept the ‘new normal’.

KIEREN JONES, COURSE LEADER
The intersection of craft, science and technology.

OUR AIM IS TO ACTIVELY RE-THINK THE FUTURE.

Through collaboration, risk-taking and blurring the worlds of craft, science and technology we look beyond existing boundaries to anticipate our future needs, desires and challenges for the 21st century.

WE ENCOURAGE A WHOLLY MULTI-DISCIPLINARY APPROACH TO DESIGN.

Materiality is the starting point of our design process; taking the things we can touch, feel, interact with and observe, we integrate high and low technological materials and processes to respond to the environment around us.

Our students come from and continue to explore within a diverse range of disciplines, including fashion, architecture, industrial, communication, textile, critical, digital and speculative design.

RESEARCH IS INTRINSIC TO OUR DESIGN PROCESS.

We practice research-driven design. We believe that it is only by observing and analysing how we live today that we can begin to consider and explore how we might live more sustainably tomorrow. Considering the current and future context of design decisions is key to our ethos, combining social, political, scientific and economic inquiry and insights to help inform future design scenarios, speculations and artefacts.

THE PROGRAMME.

Material Futures is a two-year Masters course at Central Saint Martins, dedicated to exploring how we will live in the future. The course is divided into two units across two years.

Year one provides an intensive and reactive learning experience. Students are exposed to a broad variety of new ideas and technical processes through a combination of workshops, lectures, expert collaborations and individual project briefs. Providing a bombardment of new ideas, processes and skills, our teaching encourages students to deconstruct their previous experience and expertise and instead adopt an open, experimental and multi-disciplinary approach to design. We value working with industry partners and usually incorporate at least one live project during the year.

Year two encourages students to reflect on their experiences gained in year one and consider their own design agenda and desired role within the creative industries.

By synthesising the new processes and methodologies introduced to them in year one with their previous skills and experience, students formulate a single project proposal. All projects are directed by a single research question driven by the student’s personal definition of Material Futures in the context of a more sustainable future.

Collaboration is key and all students engage with established practitioners and experts to help validate and strengthen their final projects.

Both year groups enjoy a vibrant and diverse Design Perspectives lecture programme featuring inspiring speakers from the worlds of science, design, critical theory, craft and technology.

Find out more about joining us here:

www.arts.ac.uk/csm/courses/postgraduate/ma-material-futures/
Graduate Successes

United Matters, a collective of MAMF graduates, exhibited once again at Dutch Design Week 2019. During Dutch Design Week Jack Newbury was selected as part of 20 international design graduates representing the UN’s Sustainable Development Goals. His project ‘Department for Inclusive Education (DfIE)’ aims to achieve inclusive education for all, ensuring lifelong learning and promoting gender equality.

How to Make with Zoe Laughlin, BBC Four
A few of our recent graduates: Jen Keane, Naila Althani, Elissa Brunato and Rosie Broadhead took part in this series on BBC Four. Each episode explores the science and technology hidden within the everyday objects we take for granted. Zoe Laughlin talks to our graduates to understand some of the cutting-edge material innovation they have been working on.

KQ Labs, Francis Crick Institute
Providing critical support to early stage data-driven health science start-ups, KQ Labs offers a customised framework accelerator programme to inspire and nurture the next generation of start-ups and training in transferable skills to create future digital health leaders.

Elissa Brunato, Rosie Broadhead, Maël Hénaff and Jack Newbury were selected to present their projects to KQ Labs during a Knowledge Exchange event at CSM.

Clemence Grouin-Rigaux
Clemence’s graduation project ‘Hidden Beauty’ has featured in articles in Forbes and The Evening Standard. She has also exhibited her project at ‘Design Fresh’, an exhibition by 100% Design as part of the London Design Festival, which celebrates emerging talent in which she won the ‘Innovation Award.’ She also took part in the ‘Designing for the Sense’ exhibition at Biobaas Exhibition Centre.

Rosie Broadhead
Since graduating last year, Rosie has been working alongside Chris Calewaert as a fellow consultant at Ghent University in Belgium to further develop her graduation project in probiotic clothing. She is also Head of Sustainability and a Designer at the skiwear brand Perfect Moment. She has also exhibited in several exhibitions including: ‘Future Fabric Expo’, ‘Microbiome Inside Out’ by Unbore Collective, Naturalis Museum, Leiden, ‘Bio Design Here and Now’, London Design Week and ‘United Matters’, Dutch Design Week.

Dutch Design Week
United Matters, a collective of MAMF graduates, exhibited once again at Dutch Design Week 2019. During Dutch Design Week Jack Newbury was selected as part of 20 international design graduates representing the UN’s Sustainable Development Goals. His project ‘Department for Inclusive Education (DfIE)’ aims to achieve inclusive education for all, ensuring lifelong learning and promoting gender equality.

Jack Newbury
Jack was selected to exhibit at Pride Month curated by Creative Debuts with Adidas. This exhibition focused on challenging explorations of social-political narratives through empowerment, diversity and inclusion.

‘How to Make’ with Zoe Laughlin, BBC Four
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News

The Welcome Trip
We believe in making and connecting with the environment, which is why, on a cold October morning, we left London for the Welsh Valleys so the students could build their own shelters using willow at Middle Ninfa farm. A true test of character (and shelter craftsmanship), the mid-Atlantic hurricane Lorenzo hit during the night. With 160mph winds, the former category five hurricane travelled further east across the Atlantic than any tropical storm on record. It’s safe to say, this is one Welcome Trip we won’t forget for a while.

The Everydyan Martian at the Design Museum
A collaborative project between Material Futures and the Design Museum, on 30th Nov 2019 we held an afternoon of performance, discussion and debate on what the future of human life on Mars might be like. At a time when the 21st Century Race for Space is led by dominant economic and political forces, the event asked what alternative visions might be offered for life on the Red Planet before humans begin to settle there.

Future Materials Bank
The Future Materials Bank is a meeting place of materials for artists, that proposes non-toxic, biodegradable or otherwise sustainable alternative materials. It has been initiated by the Nature Research department at the Jan van Eyck Academie, in collaboration with MA Materials Futures. The content is crowdsourced by 45 art organisations in Asia, Latin-America and Europe, all part of the Green Art Lab Alliance. The Bank aims to provide inspiration to artists on how to cultivate a more holistic, non-toxic and sustainable artistic practice. It is our ongoing research and continuous attempt to keep on learning how to make better informed choices about the materials we use.

Viaduct Material Award
We would like to take this opportunity to thank James Mair, founder of Viaduct Furniture, for providing financial support to our final year students through the Viaduct Future Material Award. The award, now in its second year, is designed to help students on Material Futures cover the associated costs of developing projects in collaboration with specialist makers, materials and experts. From all the students who benefitted from the award, thank you very much James!

Tales of a Log at Blackhorse Workshop
Yesenia Thibault Picazo, a designer / Material Teller and former student of Material Futures, worked with our students to create short fictions around the most abundant material used by artisans at Blackhorse Workshop: WOOD. Some stories were realistic, some completely fictional, the tones were poetic, ironic, speculative, utopic, dystopian... but they all took us on a journey.
News

Material Futures
Lockdown Workshops
There is no escaping it... lockdown has been tough for staff and students on Material Futures. Confining to kitchen corners, cupboard and bedroom workshops, we collectively mourned the loss of access to the Material Futures Studio and workshops. However, thanks to Maël Hénaff and Noemie Soula, we were kept sane with their creative and collaborative online workshops. From microbiocomputing, learning to code, prosthetic casting, camera obscuras to 3D-scans, it literally never ceased to amaze us what could be achieved with a bit of technical know-how and the contents of the kitchen drawer! Thank you both!

Hello Maël Hénaff!
We are pleased to welcome Maël Hénaff, recent graduate, teaching assistant, researcher and now the resident tech wizard in the Material Futures team. In his personal project, Maël worked with the community of Jaywick, one of the most economically disadvantaged towns in the UK, to provide them with the technology, knowledge and necessary skillsets to mine Bitcoins from the ocean. Alongside his (very many) other duties, we have high hopes for a Material Futures Stock Exchange. We will keep you posted...

Firmenich +
Material Futures
Founded in Geneva in 1895, Firmenich has maintained its leading role among the biggest players in the worlds of fragrance and flavour thanks to a passion for the profession and tremendous savoir-faire. ‘Olfactive Futures’ is a collaboration between MA Material Futures, MA Narrative Environments and Firmenich where the students explored how perfume can be envisioned in the near future in order to engage people and fulfil new aspirations. The work will culminate in a multisensory exhibition which was unfortunately delayed because of COVID-19.

LVMH Climate Week
2020: A Maison/0
Project for Stores
As part of the CSM + LVMH partnership, graduates from Material Futures explored how new sustainable materials could be generated and utilised by LVMH in the construction of their new store designs. Led by Professor Carole Collet, Professor in Design for Sustainable Futures at Central Saint Martins, this ongoing creative partnership promotes creativity, inviting the most talented students at CSM to identify disruptive solutions to address sustainable development and innovation in luxury.

The WES Lunn Scholarship Programme
Thank you once again to the Wes Lunn Educational Trust for continuing their financial support and student scholarships. We recognise that with rising tuition fees and increased living costs, access to university has become increasingly difficult and these awards have become crucial to enabling students experiencing financial hardship to not just attend, but actively flourish on Material Futures. Thank you once again WES Lunn.
FROM ALL OF THE TEAM HERE AT MATERIAL FUTURES, WE WOULD LIKE TO THANK EVERYONE IN 2019/20 WHO HAS CONTRIBUTED AND COLLABORATED WITH THE COURSE TO SUPPORT THIS YEAR’S GRADUATING STUDENTS:

Agi Haines
Alec Robertson
Attua Aparicio
Bernard Hay
Beth Shepherd
Carole Collet
Cathrine Disney
Corinne Julius
Ed Begley
Edmund Hall
Elissa Brunato
Fiona Raby
Hannah Cheesbrough
Heather Griffith
Jack Newbury
James Mair
John Gerrard
Julian Siravo
Kat Braybrooke
Kit McDonnell
Laura Gordon
Manuel Beltrán
Marco Campardo
Margaret Wagstaff
Matt Malpass
Mick Petts
Noemie Soula
Oliver Nicholas
Rachel Foley
Sarah Rhodes
Shem Johnson

Stephen Hayward
Tina Gorjanc
Tricia Austin
Yesenia Thibault-Picazo

Thank you.

Our aim is to actively re-think the future, encouraging a wholly multi-disciplinary approach to design in which research is at the heart of the design process. We believe that it is only through close observation and analysis of how we live today that we can even begin to shape a better, more sustainable tomorrow.

We teach our students to question the world around them. Material Futures works with a whole host of academics, designers, scientists, activists, researchers and practitioners – all experts in their particular fields. We believe in the value of knowledge, of research, of cross-collaboration and of hands-on making.

That is why, in the context of a politically unstable climate, we have invited our students and a mix of external experts to highlight the critical issues that they believe are shaping the design discipline. We hope that these essays will give you an insight into the sort of questions and issues our students are grappling with in their own projects as well as external voices that should be listened to. We would like to take this opportunity to thank our authors:

Creating in crisis? Turning collective precarity into socio-ecological transformation
DR KAT BRAYBROOKE

Earth Citizenship
CAROLE COLLET

COVID-19 by design. A matter of words, images, and numbers
STEPHEN HAYWARD
A pungent sensation reminds me of the taste of green vitriol when I placed my tongue between these metals.

JOHANN GEORG SULZER, PROFESSOR OF MATHEMATICS.

AKANE KAWAHARA

ELECTRIC TASTE ENHANCER

An electrical cutlery set that enhances food and replaces the need for artificial sweeteners, additives or seasonings.
Eating is an essential part of human existence. Our taste buds originally served as a means of identifying potential poisons, but they have evolved to become the primary means by which we savour and enjoy food.

Scientific research has revealed that we do not only experience taste with our tongue. The pleasure we derive from food is influenced by a variety of factors such as sound, smell, texture and sight. Other influences include the atmosphere as well as our memories, associations and emotions.

This project explores how new electrified cutlery could be used to manipulate the way in which we experience and taste food. This cutlery set means that we can make food taste saltier, fatter, creamier and less bitter without relying on artificial sweeteners, additives or seasonings that are all too prevalent in our food today.

I hope that this research will not only improve society's health, but also help us innovate and engineer new dining experiences – even in isolation.
Flavour engages all of our senses.

As I bite into a ripe peach and feel the hairs on its surface stroke my hands and lips, there is always a yearning that follows – the feeling of peeling it, the sound of biting into its juicy flesh, the smoothness and pleasant aroma and its faint sweetness and astringency. All of these sensory cues, together with the laughter of my family, my grandmother’s favourite glassware, the warmth of the wooden house and the sound of wind and insects, remind me of a summer scene emerging from my memories. A simple bite of peach mobilises more than the tongue, however. Texture, aroma, temperature and appearance, as well as language and memories, all contribute to the complex and multisensory experience of flavour.

Do you ever experience food in a fresh and exciting way as the first time you ate something? Is this feeling even possible in our rich and almost over-saturated culinary environment? Are we aware of eating as a multisensory experience, not just for nourishment or for satisfying an immediate hunger?

Since the Victorian era, people have been creating innumerable strange electric devices, such as Victorian electroshock therapy, emerging from an obsession with the magical power of electricity. However, those Victorian ideas may not have been so wrong. Ultimately, this research found that electricity does indeed have the magical power to manipulate the taste of food.

Electricity has a taste: this is one of the most significant discoveries of a Swiss Mathematics professor, Johann Georg Sulzer. In 1752, Sulzer placed his tongue between two pieces of metal whose edges were in contact and exclaimed, ‘A PUNGENT SENSATION, REMINDS ME OF THE TASTE OF GREEN VITRIOL WHEN I PLACED MY TONGUE BETWEEN THESE METALS’. [Sulzer, 1752]

In fact, the electric taste is the taste we sense when we receive an electric stimulation on the surface of our tongue. Initially, this discovery was only used as a medical treatment for people with suspected taste disorders to test their taste buds. However, recent research has revealed that the cathodal electrical stimulation of the taste buds can change and transform taste.

By applying cathodal stimulation to food, the cathode temporarily attracts positive ions in the food, suppressing the taste, so that by ceasing the electrical signal the taste can “recover” and be perceived as stronger than before any application of electricity. This means that we can actually manipulate the intensity of flavour through electricity.

In cutlery design, a comfortable weight offers a sense of luxury and a comfortable fit in the hand creates a sense of satisfaction. A faint colour contrast produces sweetness, and a sharp shape enhances saltiness. A rough texture increases crunchiness and the action of licking produces a sensual pleasure. By extracting an aspect of the food experience which evokes a particular sensation resembling it into the design, the flavour of that particular aspect can be heighten ed. Thus, every aspect of cutlery design has a significant impact on our taste buds.

How then does eating with cutlery which is made to include such elements, as well as electrical stimulation, actually affect our food experience?

The current situation of imposed isolation due to the COVID-19 pandemic has undoubtedly affected not only our graduation project but all our activities. I would argue that eating has been one of the most impacted behaviours. Unable to go out, to meet people, to enjoy a restaurant, meals at home have become an immense pleasure in isolation.

Through this project, I made a series of cutlery items that act as taste enhancers, proposing a new way of enhancing our experience of food at home by electrifying it. These designs have been created based on scientific research that electricity can manipulate the tastes we experience. Moreover, each cutlery design successfully stimulates our tongue and brain in different ways. Each design, therefore, leads towards a new way to provoke our awareness of the act of “eating”, rendering a multisensory and mindful experience at home which helps us to rediscover a healthy and enjoyable relationship with food in our current isolated situation.

We are now facing a critical “change” phase. The impact of COVID-19 is not a temporary thing and we need to adapt our lifestyles accordingly. I firmly believe that the role of design is to propose a plan that will help in this transformation, and this project can be a tool to suggest a new way of experiencing food.
Waste, at the end of the day, is a design flaw. It doesn’t exist in nature.

ANISHA SHARMA

RADIO RE-MADE

A radio engineered entirely from electrical waste (E-waste) and everyday materials sourced during my time in COVID-19 lockdown.
Rapid innovation and lower costs of production have dramatically increased access to electronic products and digital technology, which in turn has led to a steep growth of Waste Electric and Electronic Equipment (WEEE) / global E-waste.

The majority of E-waste could easily be reused or repaired, but complicated laws and legislation such as the Digital Millennium Copyright Act (DMCA), End User License Agreements (EULA) and Intellectual Property laws simply prevent or discourage this from happening. The legal reinforcement and extreme criminal penalties for infringement has intimidated a generation of would-be researchers, tinkerers and inventors from seeing this waste as a sophisticated and prolific future resource.

By creating a radio made entirely from discarded E-waste components, I hope to not only raise awareness of this global catastrophe and the issues around legislation, but to also explore how we could develop new tools, systems and processes for more circular systems of production and give practical information on how to safely dispose of, reuse and re-engineer E-waste.

Design must challenge our social desire for a scratch-free, box-fresh world. — JONATHAN CHAPMAN.

EXPERTS AND COLLABORATORS:
Peter Marks, Software Developer/ Maker / Hacker, Barclays / d-lab

Waste, at the end of the day, is a design flaw. It doesn’t exist in nature.
STELLA MCCARTNEY.
WHAT WE MUST REDESIGN HOW ELECTRONICS ARE MADE AND CONSUMED → ANISHA SHARMA

‘The earth’s richest deposits of valuable materials are sitting in landfill sites or people’s homes. More needs to be made of these resources.’

A NEW CIRCULAR VISION FOR ELECTRONICS REPORT, WORLD ECONOMIC FORUM

Have you ever wondered what happens to our electronics once they can’t be used anymore? Where do they go? Is there any way to re-use them or do they simply end up in landfill? Electronic products have become an essential part of our lives. They have changed the way we work, spend our leisure time and even how we make our daily trips. However, most of these devices are still treated as disposable. These products are precious commodities with a value to be imagined as a treasure to be cherished and preserved. But where did it all start?

The origin of planned obsolescence as an economic strategy has been traced to the Great Depression. Bernard Lonergan (1932) offered a psychological analysis to the effect that having people buy products longer than had been the custom before the Depression. Planned product lifespan emerged as a strategy to encourage shorter economic development. Marketers began encouraging people to buy new products on a more regular basis. The practice was facilitated by increased consumption after World War II and the desire for a more convenient lifestyle using products that were ‘more efficient, less expensive and, in many cases, disposable’ (ibid., p.20).

Moving forward to the present, this detachment towards our products and the ever-presence of newer products has led to a tsunami of electronic waste or E-waste. Nowadays, we live in a society where every new device cuts short the lifespan of the previous one. The necessity of the society is to discard the product and buy a new one. This creates a constant need for a continuous supply of materials, as most devices are disposable. These products are precious commodities with a value to be imagined as a treasure to be cherished and preserved. But where did it all start?

The increasing complexity and elaboration of our technology are causing harm to humans and nature in every way possible, as people are not aware of the damage that they are doing. This complex issue demands a variety of responses to achieve reduction and reusability. There needs to be an urgency in changing the system of production and our approach to the use of consumption. The trouble with the current system is that it generates conflicting messages – buy more, then feel guilty. We need to create meaning inside the consumer experience that stimulates action in the context of consumption.

Gandhi once said that ‘Earth provides enough to satisfy every man’s need, but not every man’s greed’. Yet human need is inexorable, complete and finite satisfaction may be impossible. This is because new needs emerge the moment old needs are met, thus surfacing the infinite sequence of desire and destruction, so characteristic of the modern world.

In the Biotrade Handbook of Sustainable Product Design, Chapman touches upon some fundamental issues when it comes to object detachment in relation to the self. Firstly, following Erich Fromm (1979), objects in general (and not just design products) provide an archaic means of possession by enabling the consumer to incorporate the meanings that are signified to them by a given object (Chapman, 2009, p.34). In this context, possessions are symbols of what we are, what we have been, and what we want to become (ibid.). Thus, beyond functionality, products provide important signs and indicators in human relationships (ibid.).

As designers, we should not limit our role to the production of objects for financial gain and technological development but rather responsibly design and engage into matters of concern through the creative process involved. As Daniel Miller claims in Disciplinary Approaches to Consumption, it is urgent to understand that a profession would spend its entire time concerned with designing a particular form of goods without seeing it as essential to attempt to show what the consequences of the particular design would be (2001, p.1).

The most significant improvement would be if we were to become aware of the endings in our consumer life cycles. We will notice their absence and recognise their presence and quality. We will need to consider what quality is and what we are aiming for.

As a designer, I believe that the process of making objects can involve the materials available at hand and engaging with a material culture enables the vital self-defining process to occur. In this way, the object will behave as a powerful memory cue and remind us of our achievements, relationships, and become an extension of our self. Now it is the time for an optimistic vision of this destiny in this world. We need to think globally, we need to think rationally, we need to think long-term.
Humanity too often disregards the wisdom of the past in the name of ‘progress’. In response to the dysfunctional aspects we often over-swing the pendulum rather than maintain what is good.

BRIGITTE KOCK

PARAPRINT

PARAPRINT provides a web service that allows users to own the blueprints of bespoke lingerie so they can be 3D printed locally. This ensures great fitting, long-lasting and sustainable lingerie without the cost of a tailor.
The aim of the project is to encourage regenerative consumption through ‘sharing’ instead of ‘buying’ and ‘co-creating’ instead of ‘consuming’ garments.

Users can select any garment available in the database and create a ‘digital closet’ to suit their own style. The app then transforms a full-length front and side view photo of the user into a 3D model which is used to customise the digital closet to fit their size. Any of the items can then be ordered and 3D printed locally.

3D printing allows the opportunity to effortlessly change the size and structure of garments based on the user’s changing size or need for support. It also integrates all elements of a bra into a single material, eliminating the need for post-production.

PARAPRINT also connects users and encourages them to share knowledge about local materials, as well as be a catalyst for those who aim to co-create a DIY 3D printer that runs on renewable energy and is suitable for regenerative materials.
There are two main issues in the fashion industry – one is environmental and the other ethical. The environmental issues arise when non-sustainable materials, chemicals and the processes used to produce clothing are not dealt with responsibly. The ethical issues are more complex as they concern trading laws and the economies of various countries. However, the bottom line of the second issue is that the working conditions, wages and the ability of workers at the bottom of the supply chain to form labour unions are often overlooked to maximize profit for big fashion brands.

My interest lies with the attitude of consumers after they have become aware of these issues. Many individuals recognize the need to act differently, yet inaction persists from overconsumption and awareness of the ethical issues in the fashion industry (Velez, 2008). However, there is a difference in knowing and acting upon this knowledge. It turns out that, even when consumers are aware of the working conditions in developing countries, it doesn’t mean these concerns actually influence their purchasing decisions (Joergens, 2006).

So, why don’t we act upon the knowledge that our choice can make a difference? There are different drivers and barriers that influence this attitude-behaviour gap.

Four negative factors are: ‘uncertainty’, ‘price’, ‘availability’, and ‘personal image’ (Favier, 2013). These factors increase (negatively) influence the attitude-behaviour gap, which means that consumers are less likely to act ethically.

Both the ethical and environmental issues are not directly visible to the consumer when they decide to buy a garment in stores. The manufacturing process and working conditions are too far removed from the purchasing individual. Even when consumers have a hunch, the information on the label is often not specific enough, resulting in uncertainty for the buyer. Though the price of a garment will tell the buyer how much is being used.

Throughout this Masters study I have discovered that there are no ideal or perfect solutions, so rather than proving a theory feasible to use PARAPRINT is a system that can be adapted for local production. Additionally, could this result in a decrease in uncertainties and availability around production. 3D printing is a production method that reduces environmental and ethical goods in the physical world.

Selling a web service could give immediate results for more distant consequences in order for an individual to act ethically.

Firstly, is it possible to reduce the desire to consume? If society lets you digitally explore worlds of different styles and garments and it could own everything dig- itally, would that result in a decrease in ownership of materialistic goods in the physical world?

Secondly, can we move towards a naturally less damaging method of production? Many of the above-mentioned factors come about by changing the manu facturing method. 3D printing gives this opportunity to decrease the uncertainties and availability around production. 3D printing is a production method that offers the opportunity for more ethical production.

Lastly, consumer involvement is at the core of such a web service, being able to choose where your clothing gets produced, to what gets produced and what material is being used.

In conclusion, the blueprints of locally 3D printed, bespoke lingerie. The web-service that allows users to own the blueprints of locally 3D printed, bespoke lingerie.
In nature, there is no separation between design, engineering, and fabrication; the bone does it all.

NERI OXMAN.
Nobody ever figures out what life is all about, and it doesn't matter. Explore the world. Nearly everything is really interesting if you go into it deeply enough. — RICHARD P. F. FEYNMAN.

You could look at nature as being like a catalogue of products, and all of those have benefited from a 3.8-billion-year research and development period. — MICHAEL PAWLYN.

**EXPERTS AND COLLABORATORS**

Professor Eduardo Saiz, Director of the Centre for Advanced Structural Ceramics (CASC), Imperial College London

Muhammed Maktari, Material Engineer, Imperial College London

Dr Simon Morley, Ecophysiologist, British Antarctic Survey

In nature, there is no separation between design, engineering, and fabrication; the bone does it all. 

NERI OXMAN.

You probably know that limpets live on rocks, but what you perhaps didn't know is that the humble limpet's tooth is the strongest biomaterial in the natural world.

According to Prof Asa Barber, the strength of a limpet's tooth is on average 4.9 GPa. This is like trying to break a single piece of spaghetti with 3,000 half-kilogram bags of sugar. For this project, I had hoped to engineer and grow a limpet's tooth in the lab and develop a biomaterial that is both strong and biodegradable.

However, due to the impact of COVID-19 and the associated lockdown, the project has taken a momentary detour to create a home-made version, exploring the same processes using the facilities found only in my kitchen and utilising everyday materials, objects and ingredients accessible to me in lockdown.
Bio-mimicry refers to the method of synthetically replicating nature’s processes and applying them to human-made design challenges. The term has also been described as the process of not only learning about nature but learning from nature.

The concept of Bio-mimicry is not new nor unfamiliar. It has been used as both a source of inspiration for engineers and designers for many years. Indeed, far from being new, it leverages the historical technologies which nature has perfected through infinite iterations of evolutionary trial and error over thousands of millions of years. On that basis, Bio-mimicry seeks to unlock the awesome design potential that nature offers – nature being the informed designer.

Nature’s design principles are characterised by the perfect amalgamation of function and form. It follows that material technology should aspire to follow the same principles through the assembly of the best components in an optimal way.

Nature excels in the production of materials. It combines simple components into, hard, strong, pinhole resistant and silica to create structures of fantastic complexity, strength and toughness. However, the artificial replication of such technologies in relation to man-made problems is neither easy nor always sustainable. For instance, spider silk is one of the strongest materials found in nature. To produce a strong fibre, spiders make their silk using an array of spinnerets which conjoin to produce an aligned stream of polymers. These are then ‘spun’ into a silk thread with the spider’s back legs which, when dry, is stronger than Kevlar.

Kevlar, also termed aramid fibre, was (prior to graphene) the strongest synthetic fibre that we have been able to manufacture to date. The complexity of its production process illustrates the inherent difficulties in reproducing materials with attributes which nature has never been.

The traditional manufacturing processes for producing aramid fibre requires platinum to be boiled in sulphuric acid at around 750 °C. The manufacturing process for producing aramid fibre requires significant amounts of chemistry to be applied to achieve the desired results. The experiment involved delivering positive and negative ions through a chitosan hydrogel by use of an electrical current.

The potential benefits of this material extend beyond its femoral strength. The unique mechanical structures which can be observed in living tissue production also provide parallel data which could be integrated with digital technologies.

The potential benefits of this material extend beyond its femoral strength. The unique mechanical structures which can be observed in living tissue production also provide parallel data which could be integrated with digital technologies.

CONCLUSION

In exploring both the chemical composition and nano-scale structures that give the material its exceptional properties, the project has highlighted the immense power of design in nature. I hope I have also shown the potential for nature to act as an enabler towards future materials and systems which can evolve in more environmentally friendly ways.
EMILY BOXALL

HUNGRY FOR CHANGE

Reshaping our world through food: the power of community to reduce food waste and ensure no one goes hungry.
Everyone has the right to a standard of living adequate for their health and well-being, including food (Universal Declaration of Human Rights). The food system no longer bears any relation to the people it evolved to serve. Every time we make a food choice, assuming we have the luxury of choice, we are voting with our forks and putting money and power in the hands of the few.

The flawed food system allows staggering amounts of surplus (an estimated third of all food produced globally is wasted) whilst millions go hungry. What does this paradox say about the society we live in?

Record numbers of people rely on food banks in the UK. During a global pandemic, we are experiencing unprecedented levels of food insecurity as already stretched food aid crumbles under new pressures. Well intentioned charities that tackle poverty (like food banks) are sticking-plaster solutions, incapable of fundamental or long-term change.

In this crisis within a crisis, we are all rediscovering the true value of food. As innately social animals, we have evolved to unite around food to better thrive as a species. It is a vital communication tool in that you feed to protect, and you share food to show love.

This project aims to start a wider conversation about food insecurity by utilising the notion of commensality (the practice of eating together and sharing food) within urban communities. By making a collection of Community Larders, placing them in public locations, encouraging people to share what they can, and take what they need, I hope to start a new food economy based on shared resources and experiences rather than monetary transactions.

A manual enables any community to recreate their own Community Larder. By filling the streets with shared, accessible food, we can take ownership of food security in our neighbourhoods and ultimately ensure everyone has enough to eat.

Environmental activism is directly linked to food activism as it is where environmental activism becomes personal. — LE GRAND, Y. (2015). ACTIVISM THROUGH COMMENSALITY: FOOD AND POLITICS IN A TEMPORARY VEGAN ZONE.

We need to see ourselves as a community, and not just a community of common interests, but a community of common agency. — MONTEIRO, M. (2019). RUINED BY DESIGN.

EXPERTS AND COLLABORATORS
Simon and Sharon, Southwark Foodbank Managers, Pecan (part of the Trussell Trust)
Jacqui, Stella and Jon, FoodCycle
Bed and Table, Peckham Pantry
Rev. Edward Collier, Vicar and Chair of Trustees, Copleston Centre

Food is a mirror of society and statement of the zeitgeist.
Food is collaborative. Commensality, the act of sharing and listening between every stakeholder involved, is a new reality in real-life as these imaginations sneak into the dystopian reality. For once, we are able to test out ideas for science-fiction novels. We have now found ourselves in a utopian moment where food is innovative and flawed working of a system that we have learnt to accept as normality. From this tragedy, however, a new wave of social creativity has thrived. As seen in the successes of The Meals For The NHS campaign which has, to date, delivered 251,183 staff meals to 120 different hospitals, the success of The Doorstep Foodbank Project which I started in isolation.

For our food system, the COVID-19 pandemic has hit like a heart attack - a sudden jolt that has exposed the fragility of a system that we have learnt to accept as normality. From this tragedy, however, a new wave of social creativity has thrived. As seen in the success of The Meals For The NHS campaign which has, to date, delivered 251,183 staff meals to 120 different hospitals, the success of The Doorstep Foodbank Project which I started in isolation.

The word poverty is loaded with clichés and misconceptions that divide people into two dangerously reductive categories - those with, and those without. In order to secure funding, charities are often required to further reduce those without into faceless statistics. When attempting to tackle such an emotionally charged subject, huge amount of sensitivity is required. Problems arise when designers swoop into communities as saviours, promising to solve everything without consulting the vital ethical implications of human-centred design. This is one of its critical defaults. Indeed there are many beautifully designed and theoretically valid solutions that are fundamentally flawed because they fail to focus on, or listen to, those they are trying to help. The use of vulnerable individuals for emotional hooks helps feed this problematic system, foods universality provides opportunity for its exploitative portrayal of people as stereotypes.

Soup is a widely used symbol of fortification, auburn form of nourishment in soup utopies, a global descriptor of an easy cooking, a staple in histories and fairy tales. ThisSophistication of control is a social practice that is retooled for more than fuel. When I first set out to deeply analyse world hunger, soup was the communication tool in make-shift kitchens at the end of my road. I shared a free homemade meal for as long as I could. Through this community with the intrinsically complex and controversial issue of hunger. In the United Kingdom, one of the richest countries in the world, currently 1 in 5 people experience food insecurity. In the last 3 months alone, there has been an 89% increase in emergency foodbank use (Trussell Trust, 2020).

In many ways, the role of the designer in these scenarios is twofold: a facilitator of these conversations, and then an interpreter of how these dialogues can be used to trigger action. Community projects avoid from common assumptions. Here lies their power: the assumed helplessness of individuals is transformed or we are able to utilise. They are, however, fraught with unlearning; how will people respond? Designers must embrace a willingness to surrender this control they have over this process and find solutions that aim to facilitate instead of being detrimental to the longevity of community projects and become problematic - contradicting the ethos of social design by ignoring its ‘live’ nature. When creating functional objects or listen to, the people they are trying to help. The use of vulnerable individuals for emotional hooks helps feed this problematic system, foods universality provides opportunity for its exploitative portrayal of people as stereotypes.

Food is collaborative. Commensality, the act of sharing and eating food together, is not just about the sharing of food. It comprises various elements that result in the overall experience, and these elements are also essential to good collaborative design: shared time and social interaction. This shifts from products to interactions goes against the idea of consumption. We are all in search of something more authentic and sincere; a notion that the voluntary sector depends on for survival.

In theory, all design is socially motivated merging and reorganising the skills and knowledge from multiple disciplines to ultimately address human needs. From this, designers can evolve to facilitate discussion and mutual learning between every stakeholder involved. In many ways, the role of the designer in these scenarios is to find and perform as a facilitator of these conversations, and then an interpreter of how these dialogues can be used to trigger action.

Food is suddenly one of the most highly prioritised things in our society, as many find themselves with more food than ever before to dwell and think about it. In design, dystopian and utopian narratives or alternative realities are fabricated to spark creativity, alternative foodscapes fill the pages of science-fiction novels. We have now found ourselves in a dystopian reality. For once, we are able to test out ideas for a new reality in real life as these imaginations seep into the realm of possibility. We need to reconceptualise food into an accessible resource, a triumph of the commons. By consciously reimagining the food we waste. By debating, discussing and convening with one another openly about hunger and food insecurity, we can unite for help, offering help and ultimately, sharing our food and joys more equitably eating more together.
Waste isn’t waste until we waste it.

WILL.I.AM, MUSICIAN.

FLORENCE ZHOU

RE-CRAFTING PLASTIC

The hidden beauty of single-use household plastic waste.
Plastic is the world’s most widely used packaging and we send seven times our own body-weight of it to landfill each year. This has dramatic consequences for our already vulnerable planet and associated eco-systems.

Initially, I was interested in creating materials, artefacts and systems from the waste that Central Saint Martin’s generates each day.

Then COVID-19 happened.

Finding myself isolated during lockdown, I instead focused my intentions on the waste that I personally generated each day in my own flat.

Understanding and learning about the mechanical and industrial properties and techniques of working with plastics, widely considered to be the most challenging and problematic waste that we generate, I developed a series of techniques for processing this waste in my own kitchen and bedroom.

The objects that I have designed are everyday household objects – bookends, beakers, stationary, candle holders and vases. The intention was to develop a new, more circular material eco-system within the confines of my own flat.
The word ‘plastic’ originally meant ‘pliable and easily shaped’.

Plastic is the world’s most widely used packaging material since its first invention in the 1900s (SouthPack, 2017). For the first time it broke the constraints of human manufacturing, which had been limited by nature. Plastic has brought immense delight and convenience to the world due to its excellent performance and its strong, colorful, flexible, low-cost, waterproof and lightweight characteristics.

Today, it is easy to find plastic in everything we see or touch. We are so thoroughly surrounded by plastic that it is hard to notice the associated threats to the environment. But according to a report by the Department of Environment, in the UK we produce around 400,000 tons of plastic waste individually every year, which is 7 times our body weight (Recycling Facts, 2020). The production of plastic and the amounts of plastic have largely outpaced that of any other material.

Alarmingly, 79% of the plastic waste that we have ever produced or used for a short period now sits in landfills, dumps, or in the natural environment; while only 9% has been recycled and the rest has been incinerated, releasing toxic gas into the atmosphere. It is extremely harmful to everything living on Earth – soil and in the ocean (UN Environment, 2020).

Recognition that plastic pollution is of huge global concern to modern society has grown rapidly of late; we are consuming this short-life and cheap-to-produce material at staggering rates. It creates a continuous threat not only to human beings but also animals, especially marine life, which frequently suffers from choking on small pieces and entanglement in larger pieces of plastic waste (Ocean Plastics, 2020).

The project was initially about creating a circular design system on the Central Saint Martins (CSM) campus, which aimed at eliminating industrial waste and encouraging the continual use of resources. Most of the waste around the campus is found in workshops, studios, the canteen and the library, and many of the products are single-use items such as wood, paper, plastic cutlery and coffee cups. The very first design approach was to re-engineer the waste resources and reduce the life cycle of the materials, making them more efficient in satisfying the needs of people in the CSM building. The approach was also to main that the resources in the building are in a more sustainable way, as much as possible.

During the COVID-19 lockdown, however, the campus was closed for everyone’s safety and to reduce the chances of being infected. There was no access to the workshop or the studio, which naturally hindered the making process of everyone’s project. The situation meant that the project had to be developed in a private closed space, the home, and driven by individual productivity during self-isolation.

Under these circumstances, the scale of my circular design system production was shrunk from the CSM campus to my own space at home; I was also obliged to work with material that is accessible from home, i.e. disposable food packaging, the packaging of daily necessities and plastic delivery bags from the grocery store.

Generally, most household single-use plastic food packages are made of either HDPE or LDPE, which is a melting point of between 120 – 190°C (Philip Howie, 2017). With this fact in mind, I explored the potential of the different heating facilities at home such as the oven, heat gun, and a toasted sandwich maker. Instead of moulding the melted plastic into a particular shape, I approached this process in a more traditional way: hand crafting. One of the advantages is that there is no limitation to shaping; also there is no extra waste material such as wood or plastic, which would have been produced during the moulding process. The peculiar, strange surface of plastic crafts perfectly represents the concept of my project. I aim to make it look like no other material of industrial production, but to treat it as a precious material that is flexible and pliable, and to explore the beauty of imperfection.

In order to move away from the linear economy system and towards a more circular and sustainable future, this project addresses an alternative solution by redesigning a waste material. By delivering this framework of recycling waste material such as wood, paper, metal, plastic into crafted artefacts, I aim to encourage a wider audience to challenge design and making practices at home and promote the creativity of both physically and emotionally through these times. Similarities can be drawn to ‘Trash Art’ where the turbulent circumstances a person may be facing function as mechanisms to emotionally manage that situation and therefore represents a moment in time. The lockdown meant I was more responsive to the wider social context and embraced the challenge actively as a designer.

The project also reflects the larger social context of the pandemic, not only exploring the physical manufacture from available material but also the feelings of a designer living through these times. Similarities can be drawn to ‘Trench Art’ where the turbulent circumstances a person may be facing function as mechanisms to emotionally manage that situation and therefore represents a moment in time.
Creating in crisis? Turning collective precarity into socio-ecological transformation → DR KAT BRAYBROOKE


As the warnings of our world’s oceans, forests and species become ever more urgent, it is clear that business-as-usual is no longer an acceptable option if we intend to survive. It is now known that the coronavirus is but one of many hundreds of zoonotic diseases which are increasingly likely to reach humanity if our destruction of biodiversity continues. Referred to as the ‘tip of the iceberg’, global viruses of this kind reflect natural ecosystems under extreme stress (Vidal, 2020). But how can our world build new ways forward out of the ashes of the old when its most creative minds – artists, makers, crafters, tinkerers, practitioners, educators – are faced with not one or two, but instead three global emergencies at once? A devastating virus with no clear end in sight; the economic and social instabilities it brings along with it; a planet and its six million species on the brink of climate catastrophe. The word ‘ecology’ is derived from the Greek word oikos, for home. How can we create when our home is sick?

Creative practitioners have long been required to adapt to conditions beyond their control to do the work they love, navigating the often-labyrinthine structures of global neoliberal capitalism to make a living. Data on the impacts of COVID-19 on the cultural and creative industries is now offering us a stark reminder of just how precarious our futures have become. A survey of 4,000 arts practitioners and curators by the artists’ membership organisation a-n found the livelihoods of 93% of respondents deeply impacted by the virus, with 82% citing their upcoming work has been cancelled (2020, 2). 60% of craftspeople surveyed by the UK Crafts Council have reported a loss of income of over £5,000 in the next six months. 90% of freelance creatives surveyed by Art Handler do not have paid leave, and 69% are concerned about paying rent (2020). The OECD reports that 90% of museums are running off limited reserves due to ongoing closures, and the remaining 10% will never reopen. These impacts will be long lasting, ‘affect[ing] the production of cultural goods and services and their diversity ([…]) in the years to come’ (OECD, 2020, n.p.), and we are already seeing their ramifications, with institutions like Tate laying off hundreds of precarious gallery staff despite weeks of worker strikes. When our labour-power is so undervalued and our stresses so acute, how can we refocus our attentions on the even vaster concerns of a rapidly warming earth experiencing species ecocide? How can collective despair be transformed into collective hope?

Perhaps the answer lies in defining the nature of transformation itself. While definitions of transformation vary according to our cultural context, in English the term can be described simply, as ‘the act or process of changing completely’ (Merriam-Webster, 2020, n.p.). As such, transformation emerges not from periods of stasis, but instead from states of flux. Instability, after all, is a necessary condition in the natural world for the ossified to make way for new growth as seen in the ‘safe burns’ of forests by indigenous cultures, an ancient lesson in multispecies coexistence long ignored by settler colonialists. As the Xenofeminists put it while arguing for the strategic deployment of existing technologies that re-engineer society’s many inequities: ‘Nothing should be accepted as fixed, permanent, or ‘given’ – neither material conditions, nor social forms’ (Cuboniks, 2015, Ox01). It is in this very state of impermanence, which sits at the root of our natural world and impacts the forms taken by its relations, that there is possibility. Experiences of dislocation, flux and rupturing cultivate new subjectivities, and encourage alternatives. Social theorists Stuart Hall and Doreen Massey have described these as the “cracks” that have appeared in hegemonic systems of power throughout history – cracks which manifest, time and time again, to dismantle unsustainable ways-of-being (2013, 3).

These cracks are already made evident when we observe the kinds of interventions that creatives have launched to help other creatives in response to COVID-19’s instabilities, in ways that foster reflection, wellbeing and collective action. As a digital anthropologist and co-director of the design studio We&Us, I advise public institutions on how to invite their communities to the table through material participation (e.g. digital making) and commoning (e.g. cooperation, sharing and openness).
My current projects examine the links between creative multiplexes practices and socio-ecological transformation, and how museums can co-design remote cultural experiences with/for isolated and vulnerable publics. As part of the CreaTures (Creative Practices for Transformational Futures) research initiative[2] based at the University of Sussex, my colleagues Lara Houston, Ann Light and I took a look at how the 300 members of Culture Declares Emergency (CDE), a global movement of arts organisations who have collectively declared an ecological emergency, have responded to COVID-19 (Houston, Light & Braybrooke, 2020). We conducted a systematic review of public statements and other communications used by the organisations to reach their audiences, from London’s Furtherfield to the Belarus Free Union reflect these possibilities. ‘Historically, pandemics have forced humans to break with the exploitative practices. They are positioned to address these uncertain times, and ready to fight for it.’ As creatives, we are uniquely luggage, ready to imagine another world. And us. Or we can walk through lightly, with little hatred, our avarice, our data banks and dead rivers and smoky skies behind us. Or we can walk through lightly, with little luggage, ready to imagine another world. And ready to fight for it.’ As creatives, we are uniquely positioned to address these uncertain times, and build something from their ashes. As the projects of this catalogue reveal, this is what our dance of the iceberg is our destruction of nature responsible for COVID-19. (Accessed: 8 October 2020).

FOOTNOTES
ADHD is not about knowing what to do, but doing what one knows.

DR. RUSSELL BARKLEY

FLORENCIA SCHNEIDER

HYPERKINETIC

A Ferrari engine for a brain and the brakes of a bicycle.

www.designforpanic.com
florencia.schneider@gmail.com
Attention Deficit Hyperactivity Disorder (ADHD) is a neurological condition caused by low levels of norepinephrine and dopamine. These neurotransmitters radically affect the executive functions of the brain which are responsible for the regulation and control of behaviour, motivation and perception. This can be identified by a combination of restlessness, impulsivity, and inattention, among others.

Whilst there is effective treatment for this disorder, people who suffer from ADHD (like myself) are often quite forgetful and chaotic. This means that most people with ADHD either forget to take their medication completely or sometimes double the dose unintentionally.

Hyperkinetic explores the possibility of a transdermal method of drug administration. It proposes a system within a watch to ensure sufferers receive the medication they require throughout the day. Challenging the status quo of how wearable tech is designed, Hyperkinetic strives for a more holistic human-centred solution where the sufferer doesn’t feel like a patient.

It’s like having a Ferrari engine for a brain and the brakes of a bicycle. — DR. EDWARD HALLOWELL.

An adult with the condition is more likely to take drugs, commit a crime or end up in prison. ADHD is connected with higher rates of suicide, depression and other mental health needs, and untreated ADHD can also impact physical health. — DR. LOUISE THEODOSIOU.

EXPERTS AND COLLABORATORS
- Mukesh Kripalani, Psychiatrist, The ADHD Centre
- Hector Duque, Psychiatrist, Clínica Alemana de Santiago
- James Lasarovitz, Postdoctoral Scholar, The Baker Lab, Institute for Protein Design, University of Washington
- Joaquin Massu Larach, Mechanical Engineer, SBX Constructores
The day I was formally diagnosed with ADHD was peculiar. Suddenly, I was diagnosed with a condition that I thought only mischievous kids at school had. But there I was, an adult, trying to grasp what this condition is all about. From that day on, I began to connect the dots and to understand many things that were confusing to me over time. Why do I leave everything to the last minute? Why do I feel my brain can’t switch off but doesn’t leave me? Why do I keep losing things repeatedly? How was I even able to miss a plane while next to the gate, just because I was on the phone?

ADHD stands for Attention Deficit Hyperactivity Disorder. It is a neurological condition caused by low levels of noradrenaline and dopamine. These neurotransmitters radically affect the executive functions of the brain, which are responsible for the regulation and control of behavioral motivation and perception. The resulting manifestations can be identified by a combination of conditions such as restlessness, impulsivity and inattentiveness, amongst others. This disorder stems from a genetically under-wired brain which is constantly seeking dispersion to get the basic stimulation it needs.

Kinetic hyperactivity shown in children may evolve into anxiety and the misrepresenting adulthood. This characteristic can lead to being hyper-procrastinative, and forgetting to do multiple things at the same time. As Dr Hallowell says, it is like having a formula engine for a brain and the brakes of a bicycle[1]. ADHD people have a doctorborn time perception. One can call this inability to look ahead a “dizziness of the mind,” or “time blindness”[2]. Emotional impulsivity and the inability to inhibit emotions, words, thoughts and anger can lead to many social problems. More so, impulsivities might mean having fewer things to chance unprepared and forcing us to start building new ones.

As we designers need to acknowledge how necessary it is to design future scenarios of empathy and compassion, in order to prevent the secondary harm it may cause. There is a problem that surrounds getting treatment if you suffer from a mental disability. People that hadn’t been faced with mental health issues before are experiencing them right now. Conditions like PTSD, anxiety, depression and stress are raging in numbers. This reality, as awful as it might sound, has brought to the surface how emotions impact virtually every aspect of our life, and opens a dialogue to talk about and comprehend this issue.

As Material Futures students, we have been taught to speculate and rethink what future scenarios might look like. Now, we are challenged to hypothesise about how this uncertain post-pandemic world will manifest itself, crystallizing all our original theories surrounding our final year projects to the ground and forcing us to start building new ones.

As we all cope with this reality differently, I concluded that maybe having ADHD is not the threat having the particular talent of not ratting out plans, being good at delivering under pressure, having a capacity to think in unconventional ways, and asking what is going to happen next. I also concluded that I was able to overcome a very stressful time in humanized.

Technology, with now, gave us a sense of security and certainty about what is going to happen. Uncontrollable apps have been designed to decide what is best for your GPS system or that we don’t get lost, and algorithms are made to sort what movie you should watch or which book to buy. Technology gave us a new, comfortable feeling of having fewer and fewer things to chance unprepared, to be prepared for.

But the question remains: Can human beings modify this attitude by naturally changing and evolving into a more inclusive society?

It is essential to rethink how to change this mindset, especially in times like these. When we must rely on the resilience of our emotions to overcome a very stressful time in humanized.

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Chickens are the most probable and plausible cause of an epidemic similar to the Spanish Flu of 1918.

EATING ANIMALS, JONATHAN SAFRAN FOER, 2012.

GIUSEPPE ABATE

WHY DID THE CHICKEN CROSS THE ROAD?

Reflections on consumer society through the history, life and death of the chicken.
Chicken meat is extraordinarily popular and cheap nowadays. There are about 23 billion chickens in the world of which approximately 137 million are killed each day. Despite a common perception that chicken is a healthy meat, the poultry and egg industries are incredibly detrimental to both the environment and our health.

Fried chicken is one of the most popular dishes of all time, especially in the USA and UK. This is partially due to advertising, commercials and slogans. Today, the chicken is not an animal but an economical food product.

I have created a series of materials and artworks using chicken scraps: bone, blood, eggshell, skin, egg-yolk, egg-white and egg-membrane. Combining my organic chicken tempera colours, eggshell mosaic and chicken feet leather with advertisements, images, proverbs and newspaper articles about brawls in chicken shops, the aim is to reverse the often-comical chicken commercials. The work matches two different realities: a world full of violence and abuse in the chicken meat industry and one where stressed and non-lucid people are fighting and killing each other in cheap chicken shops.

This project is a reflection on consumer society with reference to Chicken Town (1) where it is possible to get The Sunday Dinner (2) for £6.00 every day, but what is the actual price?

\[1\] Chicken Town KFC commercial, Sam Pilling, UK 2019.


EXPERTS AND COLLABORATORS
Giuseppe Camiciio, Fazem Manooar, Camiciio Giuseppe & Figlii Allevamento Puli e Conigli
The actual price of cheap chicken wings.

A chicken is not an animal, but a food product. The meat of this bird is consumed in almost every kitchen in the world, and there is no religion that forbids its consumption.

However, before the 1960s, chicken was not a cheap food product. Eggs, which were produced in small quantities before the explosion of industrialisation, were more valuable than hen’s meat. Since the 1960s, chicken has become an industrial product, therefore cheaper and available daily. Colonel Sanders transformed fried chicken, the African-American slaves’ Sunday dinner, into a delicacy known all over the world.

But what is the recipe that turns the Sunday dinner into a £6.00 daily meal?

ABOUT 23 BILLION CHICKENS MUST BE RAISED ALL OVER THE PLANET AND MORE THAN 60 BILLION ARE SLAUGHTERED EVERY YEAR.

From intensive breeding to the meat industry, a chicken’s life is studded with brutality and abuse. The chicken shops in London are open almost all night. It is not uncommon, especially when they are so close to discos, night-clubs or pubs, for them to fill up with non-lucid people between 1am and 3am. Arguments and bad manners are common in these situations, and it’s easy to witness brawls. There is no apparent connection between brawls in chicken shops and the mistreatment and abuse of chickens in chicken industries. But there is a very strong connection indeed between these two realities.

Chicken meat is a very low-quality product and as a consequence is extraordinarily cheap. The low price attracts people, who on Friday have often sought to forget about a stressful and frustrating week, probably resulting from job worries or social conditions. In addition, this cheap product tempts many angry, confused kids, mostly from suburban areas of the city.

Articles of this type have often appeared in the UK in recent years:

‘CHICKEN SHOP DRUG GANGS RECRUITING CHILDREN WITH PROMISE OF FREE FOOD, PARLIAMENTARY INVESTIGATION FINDS.’
[The Guardian online, 14th August 2019]

I have processed a series of pigments, produced with different chicken scraps: bones, blood, eggshells, egg-yolk and egg-white. I started to create colours from the bones for two reasons: in London it is very easy to find a lot of chicken bones, and the Central Saint Martins canteen after lunchtime offers a wide range of chicken bone choice. I charred and powdered them until I reached a very fine black powder that I called Black Burned Bones. To find chicken blood was less simple, but a friendly butcher can be of great help. The name I gave to the pigment made from chicken blood is Sienna Rooster Blood, deriving from the extreme similarity that this pigment has with the Terra di Siena colour.

With the powdered pink eggshell, I created Eggshell Complexion, which I use mostly for complexions. Using the same method, I turned white eggshells into Livorno White; this name derives from a breed of hen that lays eggs with a white
Chairs are the ‘nucleus of all furniture’ as they can not only be found deeply entrenched within the Anthropocene but also in the natural world; the branch for a monkey, the rock for a meerkat.

JOSH COTTON

A CHAIR FOR (NEARLY) EVERY DAY OF LOCKDOWN

A collection of chairs made during the COVID-19 pandemic which explore various ideas within craft and design by subverting and hacking traditional furniture production.
To some, chairs are merely functional objects but, as designers, we know that they symbolise the ever-evolving landscape of our craft. The chair is a vehicle through which we can understand a culture, a time in history and the mind of a designer. As the chair has become such a ubiquitous object, it can often be overlooked. This project explores different concepts or ideas within craft and design that can be easily understood through a chair by investigating the use of locally sourced waste materials and working with limited tools whilst self-isolating during the COVID-19 pandemic.

The chairs in this series were produced in my garden at a time of uncertainty with a limited amount of materials and tools at my disposal. This project is a physical journal of my time in lockdown, driven by a methodology of making and keeping busy. Produced in an ad-hoc workshop that Robinson Crusoe would be proud of, this project speaks of compromise of resources but not of quality. Furniture is a completely new territory for me as a designer and maker, so I approached it from a more experimental rather than traditional way, subverting common techniques and hacking classic chair designs.

In the collection there is a chair that responds to the government’s social distancing regulations and is a nod toward Enzo Mari’s Autoprogettazione project and a chair that explores a new life and value for fallen palm tree leaves through experimenting with the waste material to find and utilise its unique qualities. By isolating and extracting pigments from organic materials, I also produced a set of stains and finishes made from completely natural biomaterials that allow my chairs to encapsulate the atmosphere of my garden workshop.

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A CHAIR FOR (NEARLY) EVERY DAY OF LOCKDOWN

JOSH COTTON

When lockdown began, I set out to create a series of chairs that explore the different areas of craft and design that inspire me. I was drawn to chairs in particular as they are a ubiquitous and highly fetishised object, taking on different forms and evolving over time, as detailed in my research. Each instalment in the series explores a concept or idea that can be easily understood through a chair, be it the use of locally sourced waste material or a response to the government’s social distancing measures. Thus, I hope that each chair will tell a story and hold a meaning that goes beyond its physical form.

The chairs in this series were produced in my garden at home, in a time of uncertainty, with no time to prepare. I had spent the previous year building a collection of tools and gadgets that assisted me in this potentially mammoth task of trying to produce a chair every day (or every two days) during my time in isolation. I turned my garden into an ad-hoc outdoor workshop that even Robinson Crusoe would be proud of.

The creation of my Heath Robinson–come-Robinson Crusoe workshop sprang from a little bit of The Scrapyard Challenge ‘garden workshop’ is the result of being thrown into lockdown with limited materials to work with. Initially, everything becomes ad-hoc, pulled together as needed. When you are forced to carry out your ‘normal’ work in an unknown environment stripped of all your tools, you try to adapt to a new set of uncertain circumstances. Ad hoc improvisation becomes a survival technique, often through a process of adapting to unusual circumstances. This is the creative mindset used by our design-makers and makers in isolation.

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The series I have created during isolation, at the start of my chair making career, has been an avenue for me to reflect on the significance of the chair in our industry and in understanding the true value of the final object when it has been made by oneself, particularly in a restricted home-workshop.

Perhaps this project is worth more than just chairs, perhaps it is driven by the methodology of making and keeping busy during a time of lockdown when we are stopped from carrying out our usual hobbies with the myriad resources that we are used to. Perhaps I am doing this project to keep myself busy while I isolate with my parents. I am someone who understands the value of learning through doing, making, hacking and hacking a first-hand relationship and experience with the objects and material that I am working with. I am not the person who will happily spend the next few months in a staid, controlled self-occupation sitting in my room, researching and conceptualising my project. I need to be physically busy and I don’t think that I am alone. I believe that many of my design-maker contemporaries are the same as me – struggling with not being able to make things, not being able to be in their respective studios or workshops and, most importantly, not being able to interact with their peers. So perhaps this project will become a guide for makers, designers, creatives, frankly anyone who loves making stuff and learning how to turn an idea into a physical reality.

I am working with objects and materials that we know that they symbolise the ever-evolving landscape of our craft. The chairs in this series are a reflection of that process and the evolution of our craft. This is a chair for (nearly) every day of lockdown.
As the textile industry transforms itself to be more sustainable and circular, I propose the use of microdrones as digitised actuators for weaving and knitting fabric on-demand.
The global textile industry is in a state of staggered disruption; digital tools are changing some parts of the process rapidly while other stages remain locked in by machines and methods that resist evolution.

As our society adapts to the imperative to reconsider the extractive and exploitative supply chains that exist in many industries, there are many benefits of a digitised textile production lifecycle yet to be realised. But, in order to fully transform, every stage of the process must be examined.

This project proposes a radical re-imagining of the traditional textile manufacturing process.

By utilising drones – aerial robots – rather than gravity-bound looms and knitting machines, I believe that the advantages of all our new computational design tools can be realised precisely in physical space. Drones are uniquely capable of creating the complex interworked spatial paths that make up textile structures and can be endlessly reprogrammed and reconfigured to meet different specifications. At a micro-scale, drones could follow bio-mimetic swarm patterns. The possibilities of hardware, software and networking together for on-demand actuation are exciting.

In developing this project during lockdown I’ve adapted my approach. Without access to space beyond my own flat, I decided to reframe the potential of drones as modular machines for domestic life – as a sort of 3D digital assistant. Instead of showing how drones could be programmed to raise and lower the harness holding warp yarns on a loom, for example, I now have a minidrone raising and lowering a teabag in my mug and then flying back to deliver a sugar cube.

In this new context, while highlighting the range of digital ‘actuations’ possible with a drone at home, I also hope to challenge the narrow, often suspicious view with which many people regard drone technology.

**EXPERT AND COLLABORATORS**

Stefano Bodan, FPV Drone Racer

**REFERENCES**

Today, the global fashion and apparel system, facing complex, interconnected challenges, is already in a stagnated state of disrepair. Digitisation, shrinking margins, increased scrutiny, calendar pressures, labor issues, overstock – all pose risks to future growth. The supply chain has grown much more complex and opaque in recent decades, with textile production being one of the least visible links.

This is not just a problem for the textile sector to address. But with my previous experiences in sourcing and development, my focus for this project is on textiles. I see how the rigid, black-boxed nature of traditional machinery is an obstacle to efficiency and innovation, and I propose a radical re-imagining of these machines.

I imagine a digital future of manufacturing – and textile production specifically – through the introduction of drones, or Unmanned Aerial Vehicles (UAV), as production mechanisms, or actuators. Unlike among machines, drones are capable of movement in every direction, can follow complex computerised routes, and can be programmed in coordination with an unlimited number of identical co-machines. In this project I consider how drones can be used to first reveal and then proactively change. I've used drones in my own home while under lockdown. Constrained by the lockdown, I wasn’t able to actually make textiles with my drones. So I used my home as a laboratory to explore the daily gestures of a digitised factory of the future. What is certain is that without the implementation of new technology throughout the system – hardware, software and networking – the transformation that we know is necessary will not be possible.

Building on the basic attributes that make drones an ideal actuator for textile production – digital path programming, customisable hardware, deployment anywhere, and of course, flying – I’ve explored simple tasks at home that add convenience, creativity and fun to these strange days. I hope to show a range of practical as well as fanciful uses of the drone’s programmability and unique range of motion, inspiring a reconsideration of this versatile class of machines. Drones are really just flying robots, and they are ideally suited to inherently material through positive and negative space – which is how you make a textile.

What is certain is that without the implementation of new technology throughout the system – hardware, software and networking – the transformation that we know is necessary will not be possible.

In many ways the current trouble is that we do have a lot of digitisation in the product lifecycle, but not at every stage. As William Gibson’s edgewise grace, the future is already here; it’s just unevenly distributed. So advancements in e-commerce and social networking have accelerated fashion’s hypen curve, which has pushed the design and planning stages to adopt new digital methods in order to keep up. Logistics and customer service have become more agile as well. The lagging link? Manufacturing. Literally anchored by huge, expensive, specialised machines, the business of actually making products has never been straightforward. But that can start to change. We need a new approach involving modular machinery for digitised on-demand production. That’s where drones come in.

While this juxtaposition may sound incongruous – textiles and drones, what? – I think that the reaction is a reflection of how narrowly each subject is perceived.

In this work I hope to explore and expand such narrow perceptions. The rich history of textiles spans thousands of years and is closely intertwined with human progress, but most people now take fabrics and their intricate supply chains for granted in daily life. Drones, on the other hand, while much more recently introduced, have become a mirror for our broader technological fears and hopes.

Adam Bostock notes in his 2016 book Drone, ‘Drone culture is growing in our society, not just through appropriation with what we should or shouldn’t do with drones, but because every day we act more like drones in the way that we use technology. This fearful fascination has taken on a life of its own while real-life applications are still limited to a few niches – significantly as weapons, but also as cameras and toys.

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Pollution is nothing but resources we’re not harvesting. We allow them to disperse because we’ve been ignorant of their value.

BARRY FARRELL IN LIFE MAGAZINE (26 FEBRUARY 1971)

MADELYN SANTA

CHANGE FOR RIVERS

A personal journey exploring how cleaning rivers can be more complicated than we might imagine.
Pollution is nothing but resources we’re not harvesting. We allow them to disperse because we’ve been ignorant of their value.

BARRY FARRELL IN LIFE MAGAZINE (26 FEBRUARY 1971).

There are currently 1,500 km of rivers in the UK that have unhealthy levels of metal content due to acid drainage from abandoned mines. Currently there are only three sites in the UK that have implemented remedial measures, meaning there are thousands of rivers still suffering from this problem. This metal pollution can have a serious impact on the local fish and insect populations, as well as local flora and fauna, which cannot thrive in an environment in which soils have become metal heavy due to river runoff.

This project represents my journey to explore whether industrial waste, a source of pollution, can be repurposed to create something of value. I have come to understand that cleaning up a waste system responsibly can be incredibly complex and energy intensive. In fact, the process required to clean a polluted river system may be so energy intensive and polluting that it is not viable from economic and sustainability perspectives. In the end, I created a DIY system to explore how one might extract the metals that are polluting UK rivers and have made a material representation of this industrial waste by creating a coin.

The front of my coin resembles the lagoons. The lagoons are currently used for remediation to store the toxic mine water. On the back of the coin is the setting where I recreated a polluted river during lockdown – my bathtub. The zig zags around the coin are to resemble the electric current that I used to separate the metals from the water. The coin materialises the land and symbolises what happens when economic activity is not balanced with environmental stewardship; it is a call to action for remediation.

Coal, metal ores and other minerals have been mined in Britain since the Bronze Age. The potential for mining to cause serious pollution of rivers and adjacent agricultural land was recognised as long ago as 1874.

ERICHSEN JONES, J.R. (1964). FISH AND RIVER POLLUTION.

EXPERTS AND COLLABORATORS

Jan Cilliers, Department of Earth Science and Engineering, Imperial College London

Hugh Potter, Water and Abandoned Metal Mines Programme Manager, Environment Agency
RELEARNING RIVER REMEDIATION
MADELYN SANTA

Currently there are only six sites in the UK that have implemented remedial measures, which means that there are still thousands of rivers still suffering from the problem. One common remedial measure is to create man-made lagoons that ‘catch’ the metals, thereby creating a buffer system between the mine’s discharge and the water source. Another common measure is the use of water treatment plants strategically located near an abandoned mine, which chemically treat mine runoff before it is discharged into nearby rivers. I have proposed this project to highlight the misconceptions of the landscape along these rivers is healthy and that cleaning up such rivers can be more complicated than might imagine. I describe how I was able to break down metal pollution in the waters of a river and demonstrate the challenges and methods of removing the polluting metals using means available in my flat. Lastly, I describe how I materialised and created a representation of the pollution through a coin that I designed and constructed.

I settled in Porthtowan River, located in Cornwall. Porthtowan is a small coastal village that had prominent mining industry in the late Nineteenth / early Twentieth century. While the town’s mines primarily produced copper, there were also lead, zinc and tin mines in this area. I chose the Porthtowan River because it is the river with the greatest level of copper pollution in its water stream in the UK. And since I would be working on this project it was easily accessible in London (and inexpensive) and instructed 200 litres of water in order to cast and plate a coin the size of a 50p.

This research informed my consideration of what would be needed to create an ‘art house’ system from which I could feel my thesis about extracting metal from a river polluted with runoff from metal mines. It became clear that I needed to recreate the polluted river in a bathtub. The solution looked at the feasibility of doing a practical experiment for a practical project.
Soil is the skin of the earth, composed of living and non-living and once living and “never having lived but having been eaten and changed by the thing that ate it.” Soil’s history is terrain extraterrestrial, submerged.
Soil is where most things come from and where most things return. It is also a material that reveals the history of our planet. Humans have created an exploitative relationship with soil as we often work against it, rather than with it. We undervalue the importance of soil in providing the optimal conditions for our survival.

As an attempt to foster my relationship with soil and my immediate environment, I decided to embark on an archaeological mission in my garden. Through excavation, I identified and collected different types of soils, artefacts and ecofacts that I categorised based on the geological strata at which they were found. With the excavated material I have created a collection of decorative vases and used the found artefacts to ornament the surfaces.

These pieces are a material representation of my archaeological journey and souvenirs of the site. The aim is to communicate how human activities impact the soil throughout history and subsequently discuss how the importance of soil has been neglected over time.

Due to COVID-19, my project became hyper-localised. Everything has taken place in the confinement of my London flat: collecting the materials during my excavation, processing them into the vases, even building a Neolithic kiln to fire the pieces. All the soil I extracted will return to the site it was sourced from and the kiln will be disassembled. Only a few remains will be left until perhaps someone from the future will uncover them again. I hope this project will help the soil and its species live, expand and regenerate.
My fascination with soil comes from my own history of working with earth in my garden, reflecting on the human relationship with soil and the broader environment. By slowly uncovering its layers, I aimed to learn from it, grasp how it is affected by the system of natural processes, and ultimately, to bring attention to its value. How can something so primal for life, so widely ignored? Can soil be left. Perhaps, someone in the future will uncover it again, hopefully not to rebuild, but maybe to help the soil and its healthiness is our healthiness. To engage in a hyper-localized production, from collecting the materials from it. By doing so, I attempted to look at my immediate surroundings and sought to learn from it and respect it in other words, learning about the ‘other’, here about soil, which is not in fact ‘other’, since soil enables both our existence and subsistence and where it is something somewhat valuable that explains the past, other living species die and become fossils, when this happens, the boundaries between the concepts dissolve. I believe this is a lesson that helped me in my relationship with the environment, and to see how everything and us, are part of nature, evolving, transforming together. Therefore, it is crucial to find sustainable ways of producing and being that can coexist with other species, allowing them to continue to be part of us and to consciously be part of them. The confinement into my house during COVID-19, meant for instance not bought materials, represent my experience with this place.

When I dug, I arranged the artefacts and ecofacts according to their material typology and the level at which they were found as the typology was changing. Each typology represents a soil horizon. In the case of my garden, the first horizon (A) is the topsoil, that largely contains organic matter and where I found the most quantity and variety of artefacts, like metals, ceramics, plastics, and bones. The second horizon (B) is the subsoil, that has a mix of mineral and organic matter, and a lot of artefacts from building debris, where I found artefacts similar to those in the horizon A. The third horizon (C) is the parent material, composed of the so-called ‘London clay’, which is part of the London Basin, formed during the Pliocene period, about 60 million years ago. The sedimentary basin covers the whole city of London. In this parent material, remnants uncovered artefacts, only ecofacts such as flint-stones and timetones.

Fossiliferous, the processed earth of these typologies of soil crumbled and I shaped to create a collection of decorative vases. The soil was used to create the shape of these vases, and the artefacts and ecofacts were used for ornamentation. I chose an ornamental shape because I’m interested in how ceramics, through history have monumentalized and visualized the aesthetics and interests of society. These collections become souvenirs of the site, and the shape, together with the materials, represent my experience with this place.

With these vases, I only to emphasize the inherent materiality of soil. By representing what has been found, each collection of ceramics, aims to witness of the impact and the sediments of human activities through history. And use them as an armchair to discuss how soil has been neglected over time. During this journey into the soil, I came to the conclusion that the interpretation of the materials I found in the hole are subjective. Although I have been supported with some comments from archaeologists and geologists, I’m interested in leaving the interpretation of the vases open, because I don’t only believe that the materiality speaks for itself, but also how important it is to create positive fictions regarding what this sediment represents and means.

At the same time, looking at the narrative of soil, put into question what is natural, and what is artificial, what is authentic or not and treated that these concepts evolve. The matter transforms and ends in geology, the was not to be seen as being something that explains the past, other living species die and become fossils, from this happens the boundaries between the concepts dissolve. I believe this is a lesson that helped me in my relationship with the environment, and to see how everything and us, are part of nature, evolving, transforming together. Therefore, it is crucial to find sustainable ways of producing and being that can coexist with other species, allowing them to continue to be part of us and to consciously be part of them.

The confinement into my house during COVID-19, meant that the process became central to the project, since I had to engage in a hyper-localized production, from collecting the materials from it, to processing them into crafts, to then build a kiln next to the cavity to fire the ceramic pieces. When finished, all of the soil extracted will come back to the hole, the mounds stabilised, and just some remains will be left. Perhaps, someone in the future will uncover it again, hopefully not to rebuild, but maybe to help the soil and its living species live, to expand and regenerate.
In 2006, the human species officially became urban with 50% of the world population recorded as living in cities for the first time in our history\(^2\). Until then humans had predominantly lived in a rural environment with an immediate and immersive connection to the natural world. Today 38 megacities host more than 10 million people each, Tokyo being the largest\(^3\), and the United Nations predicts that by 2050, nearly 70% of the world population will live in cities\(^4\). All together, the world’s cities ‘occupy just 3% of the Earth’s land, but account for 60–80% of energy consumption and 75% of carbon emissions’\(^5\). The conglomeration of human life in high density centres has a radical impact on our environment both locally and globally. Living in cities can also lead to a visual, sensual and cognitive disconnect with the natural world. Our dependence on ecosystem services to survive as a species becomes easily overlooked when surrounded by a built environment. Yet, plant life generates the oxygen we breathe, insects pollinate our food crops, and living ecosystems as a whole provide the basis to sustain our lives. The direct benefits of the natural world are not so visible from our modernist urban dwellings. Without a deep appreciation of the tenets of biodiversity, how do we integrate the values of the natural world in our lives? As an increasingly urban species, how do we include the protection of nature and wilderness in our daily acts? As designers, how do we reconcile our largely urban-centric design activities with being citizens of Earth? A recent study shows that there has been a steady decline of references to nature in our cultural products since the 1950s\(^6\). So how do we reverse the trend and design an Earth-centric culture for a human urban species? With growing scientific evidence that mental health and well-being benefit from a greater empathy and connection with nature\(^7\), many new and recent initiatives are now actively encouraging the development of greener cities around the world for a better integration of biodiversity in our daily lives. As such, London was named the world first national park city in 2019 because of ‘a city-wide community that is acting together to make life better for people, wildlife and nature... with a widespread commitment to act so people, culture and nature work together to provide a better foundation for life’\(^8\). So are we now on the path to reconcile the values of the natural world with our urban lives? I am not convinced. Whilst the COVID-19 lockdown heightened a need to reconnect with green spaces for many, it also evidenced a deeply set behaviour of carelessness and disregard for nature. In London, the level of litter in parks reached unprecedented levels, with a third more rubbish dumped in the Royal Parks compared to the previous year\(^9\). Other parks such as London Fields had to put in place enforcement officers and a new ‘Don’t Pollute’ campaign to dissuade users to treat the park as an open toilet. This is indicative of a human-centred mind-set (as opposed to a multi-species approach): on the one hand we recognise the powerful benefits of connecting with nature in a biophilic sense\(^10\), but on the other hand, we continue to perceive the natural world as either a resource for raw materials and food, or as an open garbage space. I am a regular walker in London and litter has become a key feature in my daily walks. There is no escape from the remnants of our single-use packaging urban lifestyle, and to the usual plastic bags, bottles and cans, we can now add face-masks littering the ground everywhere. What is the point of aspiring to greening our cities if we collectively trash our parks and rivers at a time we need them most?
If anything, the COVID-19 pandemic has highlighted the dramatic consequences of our mis-appropriation of the natural world. Yet, as we are suffering the consequences worldwide, we collectively continue to literally abuse our natural environment, endangering further our local biodiversity. What does this say about us?

So when I was invited to contribute to this year’s MA Material Futures catalogue and to write a short essay in response to COVID-19, I decided to use this opportunity to call for all our design community to adopt principles of Earth Citizenship. We are all citizens. Whilst citizenship is a human–designed system to uphold the legal and physical boundaries and values of a given country, it entails duties and responsibilities. We need to extend this notion to a planetary level: we are all citizens of Earth and as such must uphold the foundations of life. As urban dwellers, this can start with easy practical actions, from walking, cycling, planting for pollinators and carbon trapping to joining litter picking events and caring for our local communities. If we dream of a better post-COVID world, we can shape it by our daily actions as citizens as well as our creative and innovative contributions as designers. So let’s shift our collective mind-set and behaviours towards a more holistic life-conducive and regenerative urban culture.

And let’s start today, COVID-19 or not.
We live in societies that consider human fragility through a number of performative norms and one fixing tool, medicine.


MOLLY BONNELL

THE RITUAL OF PRESCRIPTION

Can the aesthetics of care act as a tool to reconsider medical routines in isolation?
Healthcare is a human right. Access to the systems that provide this care is essential. However, it often takes a crisis to exacerbate underlying cracks within the system, particularly the UK’s National Health Service (NHS).

On 21 March 2020, the NHS mailed letters to 1.5 million people in the UK deemed 'clinically extremely vulnerable', advising them to practice shielding measures in order to protect themselves from COVID-19. This group was identified based on specific medical conditions that place someone at greater risk of severe illness from COVID-19. On this list of conditions was Cystic Fibrosis, a disease I have lived with my entire life.

For the first time, many are confronted by the reality of their own medical vulnerability. Doctors exist at a distance through a screen, and individuals are now solely responsible for their health, obsessing over the minutiae of their daily care. The mundane routines of healthcare at home have been elevated to the priority event of daily life.

People are thinking about their own health more than ever and the NHS is regarded with almost religious reverence. However, there is simultaneously a lack of understanding of healthcare as we constantly, without a second thought, transform our bodies through medicine.

Relying on domestic materials, such as sugar, I have produced a series of speculative objects that amplify my personal healthcare rituals during this period of isolation with the aim to counter the current over-medicalisation of healthcare and encourage a hypersensitivity to the ways we interact with and care for our bodies.

By crafting new and unfamiliar medical routines, such as taking prescription medicine, this project questions the individual and societal value placed on health and the systems that support it. Ultimately, it is also a reflection on the nature of medicine itself and its relationship to human ritual.

The complexity and technical prowess contained in the pill exists at the molecular level. In fact, pills defy recognition of their complexity; they look like sweets. — MARTIN, E. [2006]. THE PHARMACEUTICAL PERSON.

How do people who take the drugs make sense of this thing that literally takes up residence inside them? — MARTIN, E. [2006]. THE PHARMACEUTICAL PERSON.

We live in societies that consider human fragility through a number of performative norms and one fixing tool, medicine.

BAKOURI, N. [2018]. FRAGILITAS: HANDLE WITH CARE EXHIBITION CATALOGUE.
Do we really want Amazon privatising within the NHS? These big tech interventions pose the danger of further alienising medicine relying on a perceived freedom of choice, and personalisation directly clashes with the ideology of public health. We need doctors, and that isn’t going to change. Design can’t single-handedly solve the systemic problems of public health, but it can complicate the way things are. This is the responsibility of good design.

It is not enough that design simply exists and can be used to experiment or entertain. We also want it to be useful, to have a sort of social usefulness, specifically, to question, critique, and challenge the way technologies enter our lives and the limitations they place on our people through the narrow definition of what it means to be human (Dunne and Raby, 2010).

Knowing this, it is far more interesting to design in a way to consider the nuanced psychological implications of healthcare. What is the relationship between the physical body and the treatments we take to maintain it? Are the same person with or without the medications keeping me alive?

The body is systematically restored and reshaped. We routinely replace parts on the basis of surgery; like fillings in a tooth... these replacements and adjustments are not experienced as changes, they are fully integrated into the idea of the natural body. The very idea of adding new body parts and removing others has become routine (Dunne and Raby, 2010).

Health is a crucial part of our identity. When faced with changes to our health, we are also faced with changes regarding our perception of ourselves. Katie Stubblefield joins a group of only 39 other people in the world to have a facial transplant. The operation lasted longer than with any home I’ve lived in, or friendship I’ve had. Life in isolation has pushed me to rethink my relationship with medicine. My health regime has punctuated my every day, leaving me hyper-sensitive to the myriad chemicals that flow through my body in the form of prescription drugs. Lockdown drudges on, particularly for those with underlying conditions. By attempting to speculate how our interactions with medicine can acknowledge its unique strangeness, there is an opportunity to consider in which way not more authentically, empathetically and critically redesign our relationship with medicine.

The Modified Body → Molly Bonnell

How can we reconsider our relationship to medicine in the middle of a global pandemic?

I am living a much more extreme version of lockdown than most. As an introvert, due to Covid-19, my home has become my hospital. I am alone, experimenting on myself. Historically, self-experimentation was the primary method for medical discovery. Long before clinical trials, ascetics and doctors thrashed their bodies in their own hands to activate the patient. This led to a shared disaster, but it was also the foundation upon which we gained innovations such as modern anaesthesia in 1846 (BBC Four, 2014).

As the next iteration of body modification, these medications demonstrate how to hack a set of false teeth for about 5 USD out of their packaging. The demonstration shows how to do this in the comfort of your own home. The modification involves the use of a saw and a hammer to create a custom fit for the teeth. The final result is a set of false teeth that are comfortable and look natural.

Similar to DIY healthcare, but on the opposite extreme, is the idea of people participating in ‘corporate personalised medicine’. Seeking healthcare outside the scope of government medical systems, the most significant distinction between these trends is money. These Silicon Valley technologies seduce people into taking an interest in the inner workings of their own bodies, but in reality these technologies are used to mine personal data to ultimately influence the purchase of more products.

‘An app a day keeps the doctor away’ (Apple, 2020).

These big tech interventions pose the danger of further privatisation within the NHS. Do we really want Amazon handling our health data, or running our hospital?

Designers have a tendency to speculate blindy about worlds where individuals base medicine into their own hands, customising healthcare systems to equate systems change with products. While recognising that the underlying truths that fuel this desire cannot be solved by design alone, these superficial responses are not the solution. This dilemma we face is far more complex. We need doctors, and that isn’t going to change.

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Knowing this, it is far more interesting to design in a way to consider the nuanced psychological implications of healthcare. What is the relationship between the physical body and the treatments we take to maintain it? Are the same person with or without the medications keeping me alive?

The body is systematically restored and reshaped. We routinely replace parts on the basis of surgery; like fillings in a tooth... these replacements and adjustments are not experienced as changes, they are fully integrated into the idea of the natural body. The very idea of adding new body parts and removing others has become routine (Dunne and Raby, 2010).

Health is a crucial part of our identity. When faced with changes to our health, we are also faced with changes regarding our perception of ourselves. Katie Stubblefield joins a group of only 39 other people in the world to have a facial transplant. The operation lasted longer than with any home I’ve lived in, or friendship I’ve had. Life in isolation has pushed me to rethink my relationship with medicine. My health regime has punctuated my every day, leaving me hyper-sensitive to the myriad chemicals that flow through my body in the form of prescription drugs. Lockdown drudges on, particularly for those with underlying conditions. By attempting to speculate how our interactions with medicine can acknowledge its unique strangeness, there is an opportunity to consider in which way not more authentically, empathetically and critically redesign our relationship with medicine.
The word "fiction" means far more than the construction of an imaginary world; it involves re-framing our relationship to reality through the creation of a post-factual documentary film.
We are currently living in a time where astonishing technological advances have brought enormous benefits and convenience to humanity. However, the emergence of new forms of Artificial Intelligence (AI) technologies is forcing humanity to redefine some of their historical beliefs.

Deepfakes are synthetic media (or AI-generated media) that are characterised by producing lifelike representations of reality. These revolutionary advances are redefining the traditional standards of truth or reality and makes one question if our widely accepted media formats are reliable sources of current events. We live in a time where the distinction between fact and fiction becomes increasingly blurred. Every means of communication in which our society is built upon is at risk of being subverted. Furthermore, misinformation and fake news are ever-evolving challenges for democratic institutions as current public discourse already indicates universal discomfort and confusion.

This project explores how design fiction can encourage critical discussions about current emerging technologies and their position in our current civilization. The project introduces “Unknown Unknowns”, a post-factual documentary-style film that explains the current cultural conditions of the post-truth era. It offers an alternative overview of how a succession of events over the last decades have led our world to its current version.

Using a wide range of media sources including historical footage, advertisements or developing synthetic media, the documentary invites the viewer to question their own perception of the world. It is a call to collectively start thinking about how to re-frame facts in such a way that they make sense and hold meaning for everyday people.

The word “fiction” means far more than the constructing an imaginary world; it involves the re-framing of the “real”. — JAQUES RANCIÈRE.

Politics has always been about fantasy. Politics, at its core, is about imagining what sort of a future world we want. — STEPHEN DUNCOMBE.

In a time of universal deceit, telling the truth is a revolutionary act. — STATEMENT WRONGLY ATTRIBUTED TO GEORGE ORWELL.

EXPERTS AND COLLABORATORS

Guim Perarnau, Machine Learning Engineer, Bloomberg SL

Carl Miller, Research Director, Centre for the Analysis of Social Media (CASM), DEMOS
The past few decades have been marked by two generalised transformations: ‘valued capitals’. The first is connected with the emergence of new technology that has transformed ways of life. These new technologies, communication technologies, like the internet and mobile phones, represent a global reach and amount to nothing short of a technological revolution - the profound empowerment of individuals, greater access to information and formidable tools for networking, among others. The second transformation has been concerned with the production of content, where and by whom. The last decades have witnessed the rise of a more flexible model of capitalistic accumulation: globalised production, decentralisation, mass customisation, outsourc- ing, etc. Both transformations, however, are characterised by sharing exactly the same key epistemic ambiguities: the ‘post-truth’ [2], the recent history of Silicon Valley, Amazon, the rise of India, etc. This common affinity between a new capitalism and a new technology denotes a pretty obvious significance: emerging technologies play a central role in the legitimation of a techno-political order[1].

Footnotes:


The twenty-first century will in fact be the Age of Nature. We’ll learn, probably the hard way, that nature matters: we’re not separate from it, we’re dependent on it, and when there’s trouble in nature, there’s trouble in society.

MCDONOUGH, W. AND BRAUNGART, M. (2002). CRADLE TO CRADLE.

RIINA ÖUN
CRAFTING ORGANIC WASTE FOR FASHION

Exploring how waste Symbiotic Culture of Bacteria and Yeast (SCOBY) generated from the kombucha drink industry can be re-processed into a more sustainable leather-like material.
In the light of the climate emergency, the designers, as well as consumers, need to start taking the responsibility for their waste and the end life of the products they create and use. — MCDONOUGH, W. AND BRAUNGART, M. (2002). CRADLE TO CRADLE.

For ethical reasons, people often opt for non-animal derived products made of so-called “vegan leather”, unaware that it is just greenwashed PVC and PU-based plastic which is very problematic and harmful to the environment.

In the context of the climate emergency, the fashion industry must switch to more sustainable practices, utilise waste streams and concentrate on more organic, natural and renewable resources. It is simply not acceptable for the industry to continue generating toxic materials and waste that takes thousands of years to degrade and that we know continues to devastate the wider environment and eco-systems.

As an alternative to currently available PVC and PU-based “vegan leather”, I have developed a new material which utilises the waste bacterial cellulose generated by local kombucha drink producers. It is called SCOBY-compo.

Through rigorous and meticulous experimentation and the use of natural oils, waxes and organic compounds, the material I have developed is water-resistant, flexible and strong. I have also enhanced the smell by using essential oils. The result is a fully commercial, market ready product that I can create in large quantities as a viable alternative for the fashion industry.

To evidence the viability of my material, I have crafted a collection of bags and purses that each demonstrate a different technique of production from traditional stitching to modular assembly and liquid moulding.

Working closely with local communities, my aim is to create a fully circular, closed loop system where the organic waste material can be harvested, processed, sold and eventually home composted at the end of its life cycle and, rather than contaminating the environment, nurture it.

The twenty-first century will in fact be the Age of Nature. We’ll learn, probably the hard way, that nature matters: we’re not separate from it, we’re dependent on it, and when there’s trouble in nature, there’s trouble in society.

MCDONOUGH, W. AND BRAUNGART, M. (2002). CRADLE TO CRADLE.
With the rise of rapunzel and eco-awareness worldwide, new materials and processes started to emerge. Introducing environmentally-friendly sounding labels such as “soil”, “organic” and “bio”, however making clear that not everything is as “green” as it sounds. According to the Merriam-Webster dictionary (2020) greenwashing is the act of misleading clients and potential customers into believing that a product or service is environmentally friendly. For example, currently mass-produced “vegan leather” is mostly PVC or PU-based plastic, rather than biodegradable. Greenpeace (2003) argues that most common plastics consist of poisonous substances and pose serious threats to human health and the environment. PFC being one of the worst. Often, well-meaning consumers wanting to contribute towards a product don’t realise that the “vegan leather” options currently available on the market are anything, since they harm the environment and the animals which live there. Claiming the opposite is a marketing tactic generated by them to influence the environment during the production of the materials, toxic chemicals are substituted and raped from them. There is also a waste crisis at the end of the product’s life and the further issue of plastics breaking apart into micro-plastics which are then ingested by animals. While so many plastic products have a very short first-use cycle and are disposable, plastic as a material takes up to 1000 years to decompose in nature.

The problem may lie in the needless durability of these temporary products. Industries have learned to convert natural resources into uniform mass-produced materials which enable them to effortlessly produce large amounts of products that are not prone to natural decay. This has resulted in a wide array of materials no longer recognizable to the microorganisms and enzymes that would normally decompose these items back to organic elements (Chapman, 2006). Production has stepped out of nature’s circular cycle, creating a linear system of ever-lasting materials.

In light of the climate emergency, designers, as well as consumers, need to start taking responsibility for their material choices and consider the impact at the end of this product’s life cycle (McDonough & Braungart, 2000). It is not enough to push the responsibility onto the large-scale factories, economies and governments, everyone must carry their own weight. The changes will start small and over time the pressure from single consumers will encourage the large-scale industries to change.

Designers especially should choose materials with extreme care, as they are responsible for the products available to consumers. The environment is to be regarded as just another end-user—one with specific demands and limitations. Sustainable design should, therefore, align to the needs of all human: corporate, consumer and environment (Chapman, 2006).

A solution available to model from nature’s circular production cycle, where all the waste goes safely back to the source as nutrients for other organisms and continues the cycle as something new. The 20th century saw the boom of mass-industrialisation and globalisation; it was the era of shipping away from nature. In fact, the 21st century will, hopefully, be the age in which humanity realises that we are not separate from nature; we can’t live without it and should return to collaborating respectfully with what we are part of. Current systems just don’t work.

As the Union of Concerned Researchers in Fashion recently stated, the COVID-19 pandemic gave designers an opportunity to take a closer look at our materials. Did we come up with new, intelligent and environmentally-friendly ones? Rather than pushing the responsibility onto the large-scale factories, production and disposal, could we nourish it with our waste? Could we ensure that all the resources on our planet thrive in sustainable living conditions, not just a selected percentage of one species?

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A by-product does not constitute waste if it is destined for direct re-use in a further process in its existing form.


ROBERTA LEBED

NOT A BANANA REPUBLIC

Incorporating Ecuador’s national waste stream into the supply chain for sustainable textile production.
On 20th April 2020 the price of crude oil plummeted to less than zero.

This unprecedented fall in Ecuador’s primary export meant that the country was at risk of almost total economic collapse. The unreliable value of raw resources evidences that an immediate diversification from crude oil to a new bio-based economy is not just desirable, but critical for the country’s future survival.

Bananas, Ecuador’s second largest export, have become increasingly important in maintaining economic stability. 230 million tons of waste is generated from banana cultivation and this project explores how to incorporate banana fibre, a natural and prolific by-product, into the supply chain of the textile industry. The fibres are processed to create a viable and more sustainable alternative to conventional cotton.

The textiles created from the waste fibre are 100% biodegradable and, since they are a by-product, don’t require arable land to be produced. Furthermore, substantially less harmful chemicals are used throughout the process helping with the overall health of our oceans as harmful microfibres are not released during washing.

To illustrate the potential of this new fibre, I have made a traditional shirt inspired by those worn by banana farmers. It is made entirely from the fibrous waste and naturally dyed using the waste flowers.

While the industry is still far from a truly sustainable material mix, it is worth investing in innovation in this area. The environmental and economic pay-off could be substantial, especially considering the increasing scarcity of natural resources, paired with a growing global population.

— GLOBAL FASHION AGENDA (2020).

Behind this nice phrase [circular economy] lies the industry’s fantasy that circularity can fix a material-intensive system. — CHIARA CAMPIONE, SENIOR CORPORATE STRATEGIST, GREENPEACE ITALY.

Now is the time to think deeply about the constructs surrounding value in our fashion system. — EVA KRUSE, CEO, GLOBAL FASHION AGENDA.

EXPERTS AND COLLABORATORS
Sully Gonzalez, CEO, No More Jeans
Dr Shem Johnson, Specialist Technician, The Bow Lab at Central Saint Martins
Alison Clark, Spinner, The London Guild of Spinners, Weavers and Dyers
Luis Aviles, CEO, Inpadesa
Samuel Pilo Pais, Lanafit

A by-product does not constitute waste if it is destined for direct re-use in a further process in its existing form.

ECOLOGICAL SUSTAINABILITY AS AN IMPERATIVE FOR ECONOMIC GROWTH → ROBERTA LEBED

Incorporating Ecuador’s national waste stream from banana agriculture into the supply chain for sustainable textile production

*System thinking has gained increased attention in recent years as a required approach for overcoming complex, systemic issues* (Ellen-Maclachlan Foundation, 2019). The COVID-19 pandemic has revealed cracks in the system and deeply embedded issues in the world. It has made us reconsider our value attribution methodologies and question global solutions. With people confined to their homes, the demand for services and products has plunged, resulting in a destabilised economy. This has proved that our current business models are not real and that something needs to be done differently.

Our society has become excessively dependent on fossil fuels. Oil in particular can be found in almost everything we do and own, from powering our transport means to the clothes we wear. With consumption of around 35.0 billion barrels per year, it has been estimated all reserves have got less than 50 years left (Ritchie, 2017).

The tropical climate has served Ecuador with an abundance of biodiversity enriching it with natural capital. Generating 11.9 billion USD in 2010, refined and crude petroleum oil accounted for 49.9% of the total exported production, 22.4 billion USD (The Grow Lab at Harvard University, 2019). On the April 2002 price of oil plunged to base zero for the first time in history. This unprecedented fall has made it clear that the value of new resources is not fixed. Countries like Ecuador, which rely on the exportation of these resources, will suffer immensely if their markets don’t diversify.

On the other hand, Ecuador’s second most exported product is bananas. Representing 14% of total exports (2012), it generates more than 220 million tons of waste per year. I refer to the by-products of this crop as wastes because this is the traditional notation. However, any product or residual product does not constitute waste if it is destined for direct re-use in a further process in its existing form and if the waste is used as a substitute or ingredient in an environmentally sound method for its reclaiming (Jacobs, 1997).

The versatility of agricultural waste streams is often perceived as a move towards sustainability. In an era where there is a surplus of matter and substances, there is the potential for finding new applications for underused resources, this seems like the whole thing to do from an environmental perspective.

For this project, I have localized a national waste stream that will be redirected back into the supply chain as organic material. There is a huge untapped potential in the re-use of materials coming from the agricultural sector. Less than 2% of these are put into productive use and the majority of the current covalorization activities downgrade them to products like ethanol, bio-composites and paper. This project has identified an opportunity to upscale the biological waste stream from banana agriculture as a raw material for the textile industry thus challenging mainstream notions of waste and value. If the potential of by-product commercialization is properly promoted it could create new streams of production, generating jobs in all stages of production, from rural areas to middle income workers, thus helping the country’s economic growth whilst maintaining local integrity.

The main drive of Not a Banana Republic is to help tackle the unsustainability of the global fashion industry by providing an eco-friendly alternative to cellulose fabrics like cotton.

Conventional cotton takes up approximately 2.1% of the land globally and as much as 16% of pesticides and other harmful chemicals are used in its growth. These substances stay in the fabrics long after they are sold to the clients, having damaging effects on health and the ecosystem, even during their use. Laundry releases microfibres containing these toxic chemicals that can easily carry into marine ecosystems and into our food chain. Organic cotton presents a solution to this issue, but more cultivated land is needed to meet the demand. I find the idea of utilising fertile land to grow crops in the name of fashion and style very problematic. With an exponentially increasing population, primary needs like housing and food will become scarce. Material devaluation is most evident in the current textile industry where throwaway culture is deeply rooted. Before the pandemic, the fashion industry was producing between 80 and 100 billion garments annually worldwide, most of which will end up in landfill by the end of their shortened lifespan. Although, this seems like a minor issue, could material really be a solution?

Biodegradability has become a desirable quality for objects and things when we talk about eco-conscious sustainability. But, in a material intensive system, circularity doesn’t seem to be the magical fix to the problem. As mentioned before, this project seeks to utilise already available resources which have not been exploited beneficially, as a means of dealing with our over-extractive business models.

This practice is described as a bioeconomy. It involves ‘those parts of the economy that use renewable biological resources from land and sea’ (European Commission, n.d.) to produce materials. This basis of our current economic system is in the way and the rate in which we extract, process, distribute and discard Earth’s resources. It is severely threatening the planet’s ability to support life. We need to understand the economy is embedded in the environment and must recognise its dependency and value. More than often the true cost of an item is not represented in its price. It is no longer enough to take less but our current ‘guesstimation’ five waste future generations to continue benefiting from the natural capital our planet provides.

Due to COVID-19 and confinement measures, the intended goal of Not a Banana Republic was considerably affected. Collaboration was intrinsically satisfied by the conceptual phase of the project and unfortunately this aspect had to be postponed. Travel restrictions have also limited my ability to get hold of materials and supplies I need for experimentation. For this reason, I have opted to address this project as a proposal and for future developments and implementation.

Not A Banana Republic promises to be a glimpse of hope at this turbulent and uncertain time.
What’s wonderful about the natural world is that it uses a very small array of molecular elements and creates the most incredible range of properties from them.

SARAH GRAHAM

THE LIVING FACTORY

An exploration of a nacre inspired bacterial composite for use in the sportswear industry.
High performance composite materials combine two or more materials in a way that allows them to retain their original properties while constructing a material superior to either constituent on its own. They are widely used across many industries, including sportswear. Their applications demand a lightweight, resilient material that is currently achieved by using highly toxic and difficult to break down materials such as epoxy resins and thermoplastics.

How can we create innovative composite materials possessing comparable properties to synthetics through low energy processing with the use of non-petroleum and more natural based components?

This project explores a mother of pearl, or nacre, inspired bacterial composite for use in the sportswear industry. Employing additive microbial manufacturing, I have combined the metabolic processes of two bacteria: S. Pasteruii – a calcite precipitating bacteria and B. licheniformis – a bacteria that excretes a biopolymer into one structurally advanced material. Building on the research led by Dr. Anne Meyer at the University of Rochester in New York, the inorganic mineral and biopolymer grow in alternating layers to build a ‘brick and mortar’ nanostructure that mimics natural nacre. This tesselated structure gives the material a high resilience to fracture and increases its toughness by three thousand to that of just the mineral alone.

In nature, materials have varying properties to meet specified needs. I have explored how using biomimetics to structure the bacteria composite in the growth phase would lend functional gradient properties to this material.

Working from the confinement of my London flat during COVID-19 lockdown, I have looked at what it means to design with life systems in an environment not meant for it and how bio-designers can be more resourceful. I have had to break away from the intimidating science rigour of academic institutions and take inspiration from the DIY-bio community.

“Nacre is known as nature’s toughest material.” — UNIVERSITY OF MICHIGAN.

“Everything we make returns to the earth either as food or as poison.” — CÉLINE SEMAAN.

“If humans could mimic nacre, it could lead to a new generation of ultra-strong synthetic materials.” — ROBERT HOVDEN, ASSISTANT PROFESSOR OF MATERIALS SCIENCE AND ENGINEERING.

EXPERTS AND COLLABORATORS

Dr Shem Johnson, Specialist Technician, The Grow Lab at Central Saint Martins
Dr Megan Barnett, Geomicrobiologist, British Geological Survey
Dr Izabela Radecka, Professor in Biotechnology, University of Wolverhampton
Dr Anne Meyer, Principle Researcher, The Meyer Lab, University of Rochester

What’s wonderful about the natural world is that it uses a very small array of molecular elements and creates the most incredible range of properties from them.

NERI OXMAN.
We are living in a pivotal time of the bio-digital era. The convergence of computational design, additive manufacturing, material engineering and synthetic biology is enabling us to create new generations of materials (Oxman, 2015). A shift in the cultural mindset towards more sustainable development has become apparent over recent years. More businesses are moving boldly toward innovations in sustainable material practices and investing heavily in new, high-performance materials.

One way our material future is being explored is through the utilisation of the unique functions of microorganisms. Microorganisms are an invisible but integral part of our history, our present and our future. All beings on Earth can be traced back on the tree of life to one single-celled organism referred to as LUCA, our Last Common Ancestor (Rutherford, 2013). Bacteria are a group of single celled organisms lacking a nucleus. They are found everywhere on this planet from the peaks of mountains to the deepest acidic trench of the ocean. They ferment your food, soda your air, they are on you and inside you. The multispecies relationship between humans and bacteria is so interlinked that there are approximately ten times as many bacterial cells in human cells in the human body (Microbiology Society, 2020).

We have evolved over billions of years to have highly specialised functions (Rutherford, 2015). By designing with living systems we can apply the technologies that nature has perfected and adapt them to the needs of today. The metabolic activities of bacteria are being employed in material creation such as bacterial cellulose and mineral composites, in processing (for example protein and starch treatments like breaking down plastics). The simplicity of bacteria’s genetic structures makes them easily modified with the technologies of synthetic biology. In this way, we are able to control what these organisms are creating, and when they are active (Mediated Matter, 2018). When it comes to materials, especially high-performance materials, system has often been that natural, more sustainable solutions frequently mean a loss of performance and function. But designers are creating new categories which blur these lines combining living with the non-living and synthesising the two does not exist naturally. Neither natural nor synthetic, these materials challenge traditional categorisations and perhaps make these terminologies obsolete.

An emerging field of design is looking to the world of microorganisms for inspiration – a new way of creating with living systems. Bacterial/biotechnological applications are evolving across many industries, including fashion and apparel, to alleviate our dependence on petroleum-based materials and processing. Cells are like miniature factories. They have evolved over billions of years to have highly specialised functions (Rutherford, 2015). By designing with living systems we can apply the technologies that nature has perfected and adapt them to the needs of today. The metabolic activities of bacteria are being employed in material creation such as bacterial cellulose and mineral composites, in processing (for example protein and starch treatments like breaking down plastics). The simplicity of bacteria’s genetic structures makes them easily modified with the technologies of synthetic biology. In this way, we are able to control what these organisms are creating, and when they are active (Mediated Matter, 2018). When it comes to materials, especially high-performance materials, system has often been that natural, more sustainable solutions frequently mean a loss of performance and function. But designers are creating new categories which blur these lines combining living with the non-living and synthesising the two does not exist naturally. Neither natural nor synthetic, these materials challenge traditional categorisations and perhaps make these terminologies obsolete.

While the possibilities are exciting, it is important to consider the ethical implications of these technologies. Science is fundamentally based in curiosity and wonder but entering the scientific sphere can feel uninviting and inaccessible. Industry in STEM is long been an issue and the visibility of certain genders, ethnicities and identities is minimal throughout history (Medin and Lee, 2019). Biological technologies like the synthetic biology and genetic engineering can have vast ethical implications for humanity. As a population, how can we participate in the decision of regulating if we don’t understand the potential outcomes and true capabilities of these technologies? When only one type of group is visible in the decision-making, how can the needs of the diverse population be accounted for?

There is a lot of misinformation regarding microorganisms outside the scientific community, especially operating in the climate of worldwide issues like COVID-19. However, as we learn, we are beginning to challenge the narrow perception of these organisms as just potential agents of disease. With increased engagement between designers and scientists, the gap between the laboratory and the public can be bridged and the excitement around science shared in this vein, the world of DIY-bio is thriving. Costs of laboratory tools were once a barrier to entry into exploring science, but with the current boom of make space, equipment lending and open source hardware, it is now easier than ever to participate in STEM (Wikipedia, 2020).

My interest in working with and learning from bacteria in design has grown during my time on Material Futures. For my final year I had planned to spend a great deal of time in the laboratory working on developing bacterial composite material that mimics tissue, or material of pew. But when the global pandemic drove us into individual, isolated worlds, I looked to the maker and DIY-bio community for guidance in how to continue my work from home. I was no longer able to move from the CSM Grow Lab to the 3D workshops, to the library, or to the library lunch. I started to explore what it meant to be designing with life systems in an environment not meant for that purpose. The amount of materials I had access to was limited and so I became very resourceful. I was able to move from the CSM Grow Lab to the 3D workshops, in processing (for example pigment dyes), and perhaps make these terminologies obsolete.

An emerging field of design is looking to the world of microorganisms for inspiration – a new way of creating with living systems. Bacterial/biotechnological applications are evolving across many industries, including fashion and apparel, to alleviate our dependence on petroleum-based materials and processing. Cells are like miniature factories. They have evolved over billions of years to have highly specialised functions (Rutherford, 2015). By designing with living systems we can apply the technologies that nature has perfected and adapt them to the needs of today. The metabolic activities of bacteria are being employed in material creation such as bacterial cellulose and mineral composites, in processing (for example protein and starch treatments like breaking down plastics). The simplicity of bacteria’s genetic structures makes them easily modified with the technologies of synthetic biology. In this way, we are able to control what these organisms are creating, and when they are active (Mediated Matter, 2018). When it comes to materials, especially high-performance materials, system has often been that natural, more sustainable solutions frequently mean a loss of performance and function. But designers are creating new categories which blur these lines combining living with the non-living and synthesising the two does not exist naturally. Neither natural nor synthetic, these materials challenge traditional categorisations and perhaps make these terminologies obsolete.

Increasing the scientific literacy of the general populace is also important because we have what we don’t understand. There is a lot of misinformation regarding microorganisms outside the scientific community, especially operating in the climate of worldwide issues like COVID-19. However, as we learn, we are beginning to challenge the narrow perception of these organisms as just potential agents of disease. With increased engagement between designers and scientists, the gap between the laboratory and the public can be bridged and the excitement around science shared in this vein, the world of DIY-bio is thriving. Costs of laboratory tools were once a barrier to entry into exploring science, but with the current boom of make space, equipment lending and open source hardware, it is now easier than ever to participate in STEM (Wikipedia, 2020).

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As we enter the COVID-19 winter, the earlier phase of 'lockdown', seems certain to acquire a rose-tinted hue. There will be memories of a strengthened community spirit, a new-found regard for the 'key worker', and even, a new appreciation of nature, when the government's system of furlough made it possible for many overstressed commuters to work from home, to take daily exercise, and to listen to the birds.

The 'COVID Spring' is ripe for romanticisation, in a similar way to the East German cult of Ostalgie. Certain icons, phrases and behaviours will become emblematic of a time that was undeniably bleak, but somehow more purposeful, and authentic.

Whether this impression was masterminded by some sinister Ministry of Truth is debatable, but even UK Vogue magazine, channelled the spirit of the 1940's, and the Home Front, when it dedicated its July 2020 issue to 'The New Front Line'. For the time being, the tube driver, the midwife, and the shop assistant were our celebrities. And putting to one side all thoughts of virtue signally, the nod to socialist realism seemed appropriate and affecting.

Similarly, the leading provider of the capital's public infrastructure - Transport for London - had immediate recourse to an iconography that was suffused with the public service ideal. The perennial tube map, the iconic Edward Johnson-derived typeface, gave mask wearing and social distancing, an instant and seemingly consensual authority. And finally, there were the catchy, rule-of-three slogans, like 'Hands, Face, Space'. Ear worms that lent the ominous and often confusing messaging of the scientific 'sages', the simplicity of a playground chant.

Indeed, any future award for the 'branding' of COVID-19 is likely to dwell on this aspect. How design 'did its bit' by harnessing the trust that still resided in a few public institutions, most notably the NHS, and having hit upon its story of 'national struggle', was able to 'tame' the pandemic, with messages that were both democratic and intuitive.

But that would be a blissfully simple account of the past six months, as becomes evident when the metaphorical 'war' refuses to be over by Christmas, and the attempt to restart the economy, together with the increase in local testing, throws light on the anomalies. For in this latter phase, COVID has acquired a geographical aspect, and with it, a recognition that life under lockdown was never that harmonious.

To begin with, there was the persistent undercurrent of non-compliance, as became newsworthy, whenever government insiders were shown to be flouting the rules. Then, there was the recognition that certain groups, like those who could not work from home, or who lived in overcrowded accommodation, were disproportionately vulnerable. Similarly, in relation to the messaging, the combination of compulsion and recommendation triggered accusations of muddle. 'You must wear a face mask, but exceptions apply'. And finally, there was the hubbub of alternative 'truths'. For since the advent of social media, any voice of authority must contend with the blog posts, the conspiracy theories, and the cries of fake news. And the upshot? If the pandemic can no longer be seen as a 'national struggle', is it possible to reboot the narrative?

In phase two of the pandemic one might predict a more agile and scientific 'mapping' of the virus, where the rhetoric- and the bluster- gave way to an unmediated 'post human' truth. In this scenario there would be three main players: Firstly, the virus, no longer cast as an invading army, but as a force of nature, like a hurricane, or a wildfire. Then, the digital intelligence, which might be a cross between Big Brother and Siri. And finally, the citizen of today, the smart phone user, who would relinquish certain freedoms, in relation to social contacts, and health status, etc., in return for a data feed that enabled a live assessment of risk. In effect, the pandemic reimagined as a weather map, or an interactive traffic report.

That is the ideal; the reality has been the halting attempt of the UK government to develop a numerical fix on the pandemic, ranging from the frankly forbidding drum beat of daily hospital admissions, and the mounting death toll; to the 'R' number, the person-to person infection rate, (which at least offers the chance of avoiding the COVID 'hot spots'), and with a similar emphasis on 'user-empowerment', the recently introduced NHS COVID-19 app.
It has been a difficult journey with constant criticisms around the relative importance of the different data sets and the method of collection. But that is to assume that the quantitative and the qualitative versions of COVID are mutually exclusive. It might well be that one of the chief functions of the app will be to provide an illusion of protection, to act as a digital amulet, rather than a measuring device.

Looking ahead, it will be interesting to see whether COVID-19 has unleashed a wave of superstitious thinking. There will be the incident of President Trump and the use of disinfectant as a prophylactic, the question as to whether face masks, do, or do not induce a false sense of security, and that most persistent of shibboleths, the belief that the cavalry - a vaccine - will eventually ride to the rescue, and defeat COVID-19, once and for all.

But for the present, ‘normality’ is undergoing a stress test, in a sort of evil-minded experiment, where a few sectors have been extraordinarily successful, most notably the boost given to digital services, while many others find themselves, defending their viability. For COVID-19 has forced us to question what we really value: the NHS and schools, as opposed to cinemas and international travel; the memory of hospitality and touch, in the face of social distancing and working from home.

And it is, at this low point that Boris Johnson, in his role of Conservative party leader, devoted the 2020 conference address to an upbeat version of the COVID story; from what we are fighting against, to what we are fighting for. And with the rearrangement of the metaphorical furniture, I offer my concluding remarks: is a story truly more convincing than a spreadsheet?

In the October speech the references to wartime, and the collectivism which led to the Welfare State, did bring a certain moral foundation to what might otherwise have seemed an ill-sorted package. The vision of life after COVID combined typical Conservative tropes (home ownership, and the rule of law), with a neoliberal emphasis on self-improvement and reskilling, all set within a green agenda. The New Jerusalem, levelling up, and apprenticeships-on-demand, underwritten by wind farms, and energised by another catchphrase, shared with the US election candidate, Joe Biden, Build Back Better.

One imagines that the usual function of a party conference speech is to rally the faithful, but with social distancing, the performance was online and minus the applause. Perhaps this explains why the artifice was so clear. In the absence of statistics, and the possibility of fact-checking, it was reminiscent of a salesman who does not quite believe in his merchandise, or a comedian telling someone else’s jokes.
The amplification of our lives by technology grants us a power over the natural world which we can no longer afford to use.

MONBIOT, G. (2014). FERAL.

TRANSMITTING NATURE – THE EARTH’S FIRST WORDS

Building biological mechanisms that work in tandem as a bio-computer, creating binary code and then translating that binary code into the Earth’s first words.
We live in a world dominated by digital technology. It pervades almost every aspect of our daily lives but so few of us understand how it all works. With this ignorance comes a disassociation with the materiality of these technologies. The internet may exist without an obvious physicality of its own but the devices that facilitate it use a wide array of metals and minerals. The way in which we mine these materials is devastating to both people and our environment.

The roots of the problem are embedded within global capitalism. The resources are mined all over the globe, sold to countries like China, processed into components, assembled into devices before being distributed world-wide. How can I, using my agency as a designer, intervene in such an entrenched system? My approach was to create a counterfactual history that makes use of our contemporary knowledge to explore the possibility of re-engineering the hardware behind our digital technology, thus maintaining greater sympathy for, and working in collaboration with, nature. To achieve this, I built a bio-computer.

The outbreak of the Coronavirus and subsequent lockdown have altered the function of my bio-computer. Instead of just building it as an example of an alternative approach to digital production, it has become a reflection of the time. The two biological mechanisms, the microbial fuel cells (powered by the mud dwelling bacteria Geobacter sulfurreducens) and the electrical signals in plants, work in tandem to create binary code. That code is then transmitted through the radio antenna. The receiver records this stochastic binary to create a manuscript which is then searched for using the 8-digit binary codes that represent letters. These letters then become words. The Earth’s first words. At a time when we are isolated from each other and the world, this contemporary communion with nature has more relevance than ever.
The growing field of biocomputing

Words

In today’s world this divide between nature and the artificial is wider than ever. Our technology has become so complex that only a select few people understand how any of it works. Our phones and computers are encrusted in digital mysticism, their inner workings hidden in neat black boxes. It has become a new form of commodity fetishism. We covet these artifacts but we have no connection to their origins, no idea of how they were created or the true cost of the materials they’re made from. Our ignorance of all of these things allows the system behind their production to go unchallenged. If we don’t understand the technology, how are we meant to understand the problems associated with it? If we don’t understand the technology, how can we act to influence change? The systems behind production have become so entrenched that even the recent global pandemic, which was once considered a fungus. The Physarum polycephalum, a creature that dwells on forest floors and is used for designing electronic circuits. This breakthrough is based on existing programming language, Verilog, which is used for designing electronic circuits. This tool, called Cell, was developed with a contemporary understanding of science, could we then mitigate the environmental and social impact?

Can I build a biocomputer?

Another example of a contemporary biocomputer is one built by Professor Eduardo Miranda. His biocomputer was designed to co-compose music with slime mold (Physarum polycephalum), a creature that dwells on forest floors and was once considered a fungus. The Physarum polycephalum is used as a breadboard transistor. The slime mold flows electrical signals into a set voltage. Essentially, you put an electric signal and the slime mold outputs a modified version. Miranda uses the slime mold as an interface between himself and the slime mold. As Miranda plays a sound on the piano, a computer translates this into an electrical signal and sends it to the slime mold biocomputer. The computer then outputs a modified electrical signal and sends it to some electronic devices that play the strings on the piano. These magnets cause the strings to vibrate and thus produce a concert, courtesy of slime. The unique properties of the slime mean that it is a living computer.

Humanity began its divergence from nature when it discovered the power of fire. We use the imagery of fire as an example of a fundamental difference between nature and the artificial. A living being is a system that is based on a set of biochemical instructions. Fire is a system that is based on a set of chemical instructions. The difference between nature and the artificial is that nature is based on a set of instructions that are not written down. The artificial is based on a set of instructions that are written down.

The second mechanism harnesses the electrical signals in vascular plants. By placing two electrodes onto the leaves of the plant and using the resulting action potential (voltage) of the plant. These action potentials are very similar to those in the human nervous system. The voltage from the plants are in the millivolts as well need to be slightly boosted before being able to interact with the other components in the biocomputer.

My output is a radio signal. Hidden within it is randomly generated biocomputer code that is recorded by the receiver. The resulting manuscript can then be sequenced to reveal the 8-digit codes associated with the letters of the alphabet. As more letters appear, they begin to form words, the Earth’s first words. This output reflects it being built during a lockdown. In a time when we are isolated from each other and the world, this contemporary communion with nature has more relevance than ever.

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We come from the nature and we have to understand what it is, because we are connected to it and we are part of it. And if we destroy nature, we destroy ourselves.

SEONMIN KANG

CONTEMPORARY SEASHELL TADELAKT

An exploration into how waste oyster shells can be processed into contemporary furniture designs that can neutralise and regenerate acidic soils at their end of life.

@lolominy
www.seonminkang.com
lolominy@naver.com
66% of global consumers say they’re willing to pay more for sustainable brands. However, being 100% sustainable is often still a huge challenge for consumers.

7 million tons of oyster shells are dumped in landfills or the ocean every year. The rock-state shell waste does not corrode and over time develops very toxic gases such as NH3 and H2S. The 30% of oyster shells which are recycled bring their own problems such as the financial burden of high processing costs.

I have collaborated with Wright Brothers Ltd., a London seafood restaurant, and used water as an adhesive to demonstrate how discarded oyster shells can create new contemporary furniture designs.

To obtain waterproof and durable surfaces, I have adapted the traditional Moroccan technique Tadelakt to create a pebble-like surface that constitutes a sustainable substitute to unrecyclable cement, ceramic or plaster.

If this furniture is ever discarded, it will need to be broken so the inner unpolished surface is exposed to moisture so it can degrade. This process will replenish and nurture our soils, particularly neutralising acidic soils.

We come from the nature and we have to understand what it is, because we are connected to it and we are part of it. And if we destroy nature, we destroy ourselves.

EDWARD BURTYNSKY.
In a time of increased awareness of the need for a circular economy, the understanding of both the environmental and economic impact of materials has been growing. According to a recent report, 18% of global consumers say they are willing to pay more for sustainable brands. In the meantime, the increasing demand for environmentally friendly production with low emissions can be leveraged into a profitable business strategy. This is evident in the various methods of “greenwashing,” which uses public sentiment about the environment to create an apparently environmentally friendly brand for marketing purposes.

“Being 100% sustainable is often still a challenge,” however. In the furniture design industry, construction materials such as timber, steel, concrete, stone and synthetics are widely used because of their durability and longevity. With the exception of wood, however, it is not easy to adapt these natural alternatives in ways that would satisfy the qualities of durability and waste of working. While many designers increasingly use sustainable materials, including recycled materials, natural alternatives and biomaterials still require rethinking with synthetic binder and setting agents, such as epoxy, vinyl, plasticisers and adhesives. In addition, biomaterials, which can easily be used, are not suitable for products intended for day-to-day use.

“The mollusk industry is advocated as a highly sustainable food source and may play an important role in the future” [2].

Knowledge of natural processes shows that oyster shells can be transformed into calcium carbonate (CaCO₃), calcium oxide (CaO), calcium acetate (Ca(C₂H₃O₂)₂), and calcium hydroxide (Ca(OH)₂). In terms of design methodology, one experiment has proved the value of this material as a) light weight, b) durable, c) waterproof, d) preservable and versatile, e) corrosion and rot proof, and f) shock absorbent.

To enable the shell to obtain higher durability and waterproof surfaces with only natural methods, I adopted a traditional technique called Tadelakt, which Moroccan artisans have practised and taught to young apprentices as an ecological job. I experimented with three different shell conditions – normal oyster shell pieces (rock state), polished shell Tadelakt (calcium acetate), and unpolished shell Tadelakt which has proven waterproofing properties in seawater pH levels. In the tests, the shell, which was not treated with the Tadelakt method, was biodegradable in water, while the Tadelakt-treated material was completely waterproof during the 1-month test period.

The world’s first reported public health case related to oyster residues was made known by the South Korean oyster farming process in the early 1990s. The government, alarmed with the state of public health, financed a project to define new strategies for recycling oyster shells. As part of this program, factories for calcium and fertilizer production were created to increase the number of recycled oyster shells. Moreover, the European Union has vigorously enforced the development of new technologies that exploit shell waste as a resource and contribute to the concept of sustainable development. However, only 30% of waste oyster shells are reused by companies globally in this regard. Recent trends in shell waste applications have lowered our awareness, encouraging creative ideas for reducing the waste.

The 30% oyster shell recycling system also has problems. The strongest proportion of refuse is used for artificial fertilizer and lime and the methods its own difficulties. Finally, it is not easy to develop a new system because of the enormous number of shell pieces generated every year. Secondly, consumers often return the fertilizers recycled from oyster shells because, after recycling, the fertilizer still contains salt which spoil easily, are not suitable for products intended for day-to-day use.

Compared with general oyster shell reuse fertilizers, which contain residual salt due to low temperatures, the Tadelakt shell is without salt as long as it is fired at more than 1,100 degrees. These experiments have proved that this material is durable, long-lasting, yet light-weight, and can be utilised in a wide variety of applications, such as accessories and furniture. Moreover, once it is artificially broken or sanded, exposing an unpolished inner surface to strong moisture, the shell material naturally begins to degrade. Finally, when it returns to nature, it acts as a useful fertilizer to revitalize a wide variety of applications.

Most of shell valorisation strategies are established in areas that generate large amounts of shell waste, i.e. where maritime activities form partnerships to be established between shell producers and other industries. [2, 3, 4, 6]

This project aims to create a new way for oyster shells as well as a circular system of waste recycling by collaborating with the local restaurant, Shelly Brothers Ltd, a seafood restaurant with two locations across London, which donates their waste oyster shells.

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The mollusk industry is advocated as a highly sustainable food source and may play an important role in the future food security globally. With the increasing demands worldwide, it is timely to appraise all aspects of this industry when considering its expanding role as a food source.

Contamination of the ecosystem by waste shells is a major problem. Statistical data shows that mollusk shells contribute more than 7 million tons of waste shell discarded every year, most of which is dumped in landfills or the ocean. For instance, the UK, landfill disposal costs up to £150 per ton, but in an analogous way to deal with flint glass waste.

The rock-state shell waste does not corrode, and over time, during microbial decomposition, develops toxic gases such as NH₃ and H₂S.

The largest proportion is reused for substantial fertilizer and sales. However, only 30% of waste oyster shells are reused by companies globally. In this regard, recent trends in shell waste applications have lowered our awareness, encouraging creative ideas for reducing the waste.

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SOPHIE HUCKFIELD

BREAK THE FRAME

A moving image piece which incorporates contemporary and traditional craft processes such as puppetry, CNC technology and a musical score as a tool to deconstruct the narratives around ‘progress’ in relation to precarious labour practices and technological development.
In September 2019 my dad was made redundant. From a company he had worked at for 43 years. It was a matter of circumstance.

A product of ‘progress’.

An ‘inevitability’.

This is not a new story. It is one replayed again and again throughout history. Those who do not step away in the relentless pursuit of progress are considered regressive and against the inevitable order. We treat our objects, our tools and our machines like we treat people. Once they have lost their usefulness they are either housed in a museum or taken to landfill. Once their productivity enhancing capacity is made redundant, their worth and their ‘value’ is gone.

Can storytelling and craft be utilised as tools to deconstruct and challenge the story of progress?

Technology perpetuates particular conditions that are reflective of society’s values. With each wave of technological progress, the same stories, reactions and resistances re-emerge, but in forms unique to their time. Stories are feedback looping, revolving hands on a fixed time piece. If we have a firmer grip on understanding history in order to re-examine its tangent narratives, it can be harnessed as a tool to learn from and thus allow values which exist outside of ‘productive’ capitalist modes to ripple into the present moment.

Beyond the veil of innovation is an old story, this story must be challenged and the tools to hand co-opted to question the narrative we are told to follow. Examining the past, present and future of UK labour practices, technological development and efficiency - with the backdrop of industrialisation as my ‘stage’ – this moving image piece incorporates contemporary and traditional craft processes: poetry, a musical score, puppetry, open source technology, stop motion and moving image, to deconstruct the narratives around ‘progress’.

What happens when ‘older’ media are harnessed to tell the story of innovation? Can they open up conversations and space to question what is new? What is ‘progress’? And who is benefitting?

If anything, technologies are only ever intended to maintain or improve the status quo, and certainly not to revolutionise the cultures into which they are introduced. – PLANT, S. (1997). ZEROS AND ONES: DIGITAL WOMEN AND THE NEW TECHNOCULTURE.

We find ourselves having to repeat and relearn the same old lessons over and over that our mothers did because we did not pass on what we have learnt or because we are unable to listen. – LORDE, A. (2017). YOUR SILENCE WILL NOT PROTECT YOU.

EXPERTS AND COLLABORATORS

Aubrey Jackson-Blake, Sound Designer

History can be an especially powerful tool for rethinking technology. History reveals that technological futurism is largely unchanging overtime. Present visions of the future display a startling, unselfconscious lack of originality.

“History can be an especially powerful tool for rethinking technology. History reveals that technological futurism is largely unchanged over time. Present visions of the future display a startling, unconscious lack of originality.”

EDGERTON, 2006.

Technological ‘progress’ is intimately entwined with labour practices. We experience our lives ‘working’; our actions, culture and identity is built around work. The conditions in which we undertake work bear different levels of power and who benefits within the economy. The service acuity with the industrial production forms of work, both the male and public sector is becoming the norm. Technology is working and Digital Rights is intertwined with the de-industrialisation (Wicksted and Graham, 2020). The reality of the working population is one of monotonous repetitive hours, usually multiple part-time contracts or doing endless unpaid work simultaneously (Row, 2003). Working conditions continue to reinforce structural inequalities, with the same groups being discriminated against.

Stories of precarious work and labour rights are few and far between. Stories, and metaphors are how we make sense of the world, we are constantly bombarded with stories. They are powerful tools, acting as structural frameworks, as such original and manipulative realities. Storytelling can be ‘deterritorial’ as a set of Technologies that organizes the new productive verbosity (Saring, 2015). Assembly lines have been replaced with narrative spaces. Storytelling has been instrumentalized in capitalistic corporations (such as Disney and Apple) as a way of policing behaviours and teaching people to accept the need for unlimited growth or ‘growth’. This is enacted through the myriad sets of beliefs or collective myths around societal histories and values in order to ‘shape’ the preordained story, which seeks to maintain power for the elite and to turn dominant narratives which do not align to the hegemonic order.

For me, it is not about ‘building’ a narrative but questioning the one we are given, shifting our beliefs which are structured around complexity and manipulate realities. Storytelling can be ‘deterritorial’ as a set of Technologies that organizes the new productive verbosity (Saring, 2015). Assembly lines have been replaced with narrative spaces. Storytelling has been instrumentalized in capitalistic corporations (such as Disney and Apple) as a way of policing behaviours and teaching people to accept the need for unlimited growth or ‘growth’. This is enacted through the myriad sets of beliefs or collective myths around societal histories and values in order to ‘shape’ the preordained story, which seeks to maintain power for the elite and to turn dominant narratives which do not align to the hegemonic order.

For me, it is not about ‘building’ a narrative but questioning the one we are given, shifting our beliefs which are structured around complexity and manipulate realities. Storytelling can be ‘deterritorial’ as a set of Technologies that organizes the new productive verbosity (Saring, 2015). Assembly lines have been replaced with narrative spaces. Storytelling has been instrumentalized in capitalistic corporations (such as Disney and Apple) as a way of policing behaviours and teaching people to accept the need for unlimited growth or ‘growth’. This is enacted through the myriad sets of beliefs or collective myths around societal histories and values in order to ‘shape’ the preordained story, which seeks to maintain power for the elite and to turn dominant narratives which do not align to the hegemonic order.

When we access a story, we access the idea of who we are and what we are. A tool for rethinking technology. The repetitive story of ‘Progress’, examining the past, present and future narratives around labour practices, technological progress and efficiency - with the backdrop of industrialization - is the contemporary symbol for the working class today would be the ‘all paid, part-time, female shelf-stacker’ (Rosen, 2017). With the automation and mechanization of work and the subsequent ‘lack of herability’ popular media, it’s men who have found themselves the most distrusted and subalternised of these shifts, and it’s the same token, women are the benefactor. These tendencies are far from new. Since the Industrial Revolution, and with every subsequent phase of technological change, it’s been the case that the more sophisticated the machines, the more female the workforce becomes (Plant, 1997). Not historically have we been able to frame their struggle, whilst women, without the subaltern structures could not function, have often had their story denied and the value of their work demeaned and unwaged - this disproportionately affects black women (Lewis, 2017).

The stories we are told about the working class struggle are framed within a particular narrative of pruning, which seeks to divide and conquer the working class' experiences by working class women, ethnic minorities, LGBTQ+; the disabled and those living in geographical regions of the UK not culturally represented in the wider media. The stories that do make it through the cultural gatekeepers are often framed within the white man working class experience. Within the UK, the working class is taken to mean the white working class; the more female the workforce becomes, the more working class women; ethnic minorities, LGBTQ+; the disabled and those living in geographical regions of the UK not culturally represented in the wider media. The stories that do make it through the cultural gatekeepers are often framed within the white man working class experience. Within the UK, the working class is taken to mean the white working class; the more female the workforce becomes, the more working class women; ethnic minorities, LGBTQ+; the disabled and those living in geographical regions of the UK not culturally represented in the wider media. The stories that do make it through the cultural gatekeepers are often framed within the white man working class experience. Within the UK, the working class is taken to mean the white working class; the more female the workforce becomes, the more working class women; ethnic minorities, LGBTQ+; the disabled and those living in geographical regions of the UK not culturally represented in the wider media. The stories that do make it through the cultural gatekeepers are often framed within the white man working class experience. Within the UK, the working class is taken to mean the white working class; the more female the workforce becomes, the more working class women; ethnic minorities, LGBTQ+; the disabled and those living in geographical regions of the UK not culturally represented in the wider media. The stories that do make it through the cultural gatekeepers are often framed within the white man working class experience. Within the UK, the working class is taken to mean the white working class; the more female the workforce becomes, the more working class women; ethnic minorities, LGBTQ+; the disabled and those living in geographical regions of the UK not culturally represented in the wider media. The stories that do make it through the cultural gatekeepers are often framed within the white man working class experience. Within the UK, the working class is taken to mean the white working class; the more female the workforce becomes, the more working class women; ethnic minorities, LGBTQ+; the disabled and those living in geographical regions of the UK not culturally represented in the wider media. The stories that do make it through the cultural gatekeepers are often framed within the white man working class experience. Within the UK, the working class is taken to mean the white working class; the more female the workforce becomes, the more working class women; ethnic minorities, LGBTQ+; the disabled and those living in geographical regions of the UK not culturally represented in the wider media. The stories that do make it through the cultural gatekeepers are often framed within the white man working class experience. Within the UK, the working class is taken to mean the white working class; the more female the workforce becomes, the more working class women; ethnic minorities, LGBTQ+; the disabled and those living in geographical regions of the UK not culturally represented in the wider media. The stories that do make it through the cultural gatekeepers are often framed within the white man working class experience. Within the UK, the working class is taken to mean the white working class; the more female the workforce becomes, the more working class women; ethnic minorities, LGBTQ+; the disabled and those living in geographical regions of the UK not culturally represented in the wider media.

And racists is frequently painted as a problem contained within the white working class, negating the fact that a large portion of the working class come from ethnic minority populations, whilst emphasizing the plight of white communities above black and Asian communities and dividing the working class along lines of race. This increases the possibility for solidarity (Bark, 2010).

We treat our objects, our tools and machines like we treat people. Once they lose their usefulness, they become disposable. Once their productivity enhancing capacity has been made redundant, their ‘worth’, their ‘value’, is gone. For me, the cultural tools I’ve chosen to deconstruct, the archetypes of progress is a puppet. Puppets embody the redundancy, their gesture and language and their collective dehumanising of puppetry enables them to critique societal and political events such as Little Britain and Benefits Street which seek to demonise the lower working classes and present them in a way that is unselfconscious lack of originality’. These tendencies are far from new. Since the Industrial Revolution, and with every subsequent phase of technological change, it’s been the case that the more sophisticated the machines, the more female the workforce becomes (Plant, 1997). Not historically have we been able to frame their struggle, whilst women, without the subaltern structures could not function, have often had their story denied and the value of their work demeaned and unwaged - this disproportionately affects black women (Lewis, 2017).
Food taboos can strengthen the confidence of a group by functioning as a demonstration of the uniqueness of the group in the face of others.


SORAWUT KITTIBANTHORN

A LIGHTER DELICACY

Turning waste chicken feathers from the poultry industry into an alternative and lean source of edible protein.
This project proposes an alternative way to manage the 2.3 million tonnes of EU feather waste from slaughterhouses by converting its nutrient component into a new edible product.

Chemically, chicken feathers are composed of approximately 91% protein (keratin) which contains up to eight types of essential amino acids that we require as part of a healthy diet. It has been proven that keratin protein from feathers is safe for general consumption within our daily diet.

By extracting these essential proteins from the feathers, I have developed a new ‘melt-in-the-mouth’ food product that is completely safe, light in calories and provides us with the essential amino acids we require in daily life.

I believe that if we are to continue rearing and slaughtering millions of birds daily, then at the very least we have a responsibility to ensure that we safely and sustainably make use of every part of them.

Barrena and Sánchez proved that recognition of an innovative food was key to enhancing the possibility of acceptance. — BARRENA, R. AND SÁNCHEZ, M. (2013). NEOPHOBIA, PERSONAL CONSUMER VALUES AND NOVEL FOOD ACCEPTANCE.

Some consumers are searching for unique leisure experiences, even when they might be less pleasurable than other options, in order to build their “experiential CV”. — ANAT, K. AND RAN, K. (2008). PRODUCTIVITY MENDOT AND THE CONSUMPTION OF COLLECTABLE EXPERIENCES.

Experience and social influence could manipulate the level of neophobia. — HENDY, H.M. AND RAUDIOBUSH, B. (2000). EFFECTIVENESS OF TEACHER MODELLING TO ENCOURAGE FOOD ACCEPTANCE IN PRESCHOOL CHILDREN.

EXPERTS AND COLLABORATORS
Keshavan Niranjan, Professor of Food and Nutritional Sciences, University of Reading
Dr Shem Johnson, Specialist Technician, Food Lab at Central Saint Martins
Creative Enzymes, New York
Vichakarn Farm, Thailand

CREDITS
Pichaya Sampawesabo, Photographer & Filmographer

Food taboos can strengthen the confidence of a group by functioning as a demonstration of the uniqueness of the group in the face of others. — MEYER-ROCHOW, Y.B. (2009). FOOD TABOOS: THEIR ORIGINS AND PURPOSES.
Over 2.3 million tonnes of feather waste are produced annually from poultry production in the EU. Traditionally, this feather waste is disposed of either through landfill or incineration. However, feathers discarded without any treatment can cause odour, encourage flies and rodents, and also pollute local rivers and soils. Massive waste streams have affected the planet and there is a pattern in the food industry which needs to be refined and improved so that supply chains are more sustainable.

This project proposes an alternative way to manage feather waste from slaughterhouses by converting its nutrient composition into a new edible product. Chemically, chicken feathers are composed of approximately 91% protein (keratin) which contains up to eight types of the essential amino acids we require as part of a healthy diet.

Proposing a novel way of utilising waste feathers was a challenge. I believed that utilising keratin as a food source would reduce waste rapidly and bring advantages to the food industry. Moreover, it has been proved that keratin protein from feathers is safe for general consumption in our daily diet.

I found that enzymatic treatment produces edible keratin with fewer environmental impacts compared to other treatments. Chicken feathers could therefore be turned into a new delicacy replicating the quality and aesthetics of high-quality food. The slow dining experience needed in order to taste its full flavour and let it properly melt in the mouth helps eaters feel full faster, avoiding over-eating which inadvertently saves on food resources.

The structure also played its role in allowing saliva to flood the air out when the tongue first touches the food. This method speeds up the dissolvability rate in the mouth, reducing the times of mastication. The result is that the human digestive system will no longer be working as hard as before in order to access amino acids. Only saliva which has a normal PH level can break down the structure into small pieces.

Even though there is evidence that waste feathers from chickens are not a cheap protein source, this is a new, efficient utilisation of a waste stream which provides several benefits. The challenge is it is still not widely accepted due to the stigma associated with feathers as a food source.

The material development focused mostly on replicating a tender texture. The collagen content in high quality meat protein affects flexibility and firmness. I constructed a sponge structure in the food to encapsulate the air inside. The air was supported by mini scaffolding structures which reinforce the density of the food thus giving it a lightness, firmness and flexibility.
My definition of health is living your truth and emanating a feeling of wellness / wellbeing deep in your soul.

AISHA AMARFIO, SHAMANIC THERAPIST.

ZAKI MUSA

THE DIGITAL SPIRIT

As we increasingly rely on and embed technology into our everyday rituals, how much does its power actually shape us?
Our belief in technology has begun to take on a religious status, with the algorithms and codes that shape our interactions becoming increasingly complex and far beyond our understanding. We have begun using technology as a tool to integrate our physical and mental selves, but how do we use it as a transformative and spiritual framework to cater to our human desires of omniscience, protection and telepathy?

As interfaces, algorithms and programmes become ‘smarter’ at learning and anticipating our needs, we increasingly regard them as seemingly sentient entities. As we search for greater purpose and meaning in an increasingly anxious landscape, technology has become a reflective tool for answers on how to be more human.

The digital dreamcatcher demonstrates a potential space for technology to inhabit and transform our quest for optimised spiritual development. It intends to use an intrinsic and mystical lens to fortify our inseparable bond and daily rituals with technology not only to empower us, but to heal us.

We can no longer physically ‘switch off’ from our firm dependence on technology. Instead, we ‘log off’ to create digital boundaries, and accept technology’s role in its ability to access, process and restore our internal selves.

We have a voracious appetite to know as much as possible and to know about things that go beyond facts and information. — ROSE, D. (2015). ENCHANTED OBJECTS: DESIGN, HUMAN DESIRE, AND THE INTERNET OF THINGS.
Technology is no longer just shaped to comprehend and cater to our needs, transcending beyond our goals of automation and mechanisation. To predict what our technological futures could possibly hold, or perhaps speculate about the function of future technologies that could aid our humanity, we need to go back to Maslow’s Hierarchy of Needs (1943). Maslow’s original framework for structuring human desires provides an insight into the underlying motives concerning how technological inventions have been used to help us in our quest for self-optimisation. This framework is structured in an ascending pyramid of essential needs which include the physiological, safety, social, esteem and self-actualisation.

However, Maslow’s earlier framework included a new pinnacle of self-transcendence, where a person looks for ‘further a cause beyond the self and to experience a connection beyond the boundaries of the self through peak experience’ (Kotko-Rivera, 2006). At the peak we are needed for a connection greater than oneself, through mystical or transpersonal experiences – experiences with nature, aesthetic experiences and faith-based experiences, amongst others. Beyond physical health and corporeal wellbeing, we strive for religious and spiritual experiences which answer our existential questions surrounding a greater purpose.

This search for self-transcendence has become more prominent alongside the growth of technology’s role in our daily rituals. We are no longer just focused on tangible aspects of ourselves and have been bringing our awareness back to long-neglected areas of mind and spirit. As we search for greater purpose and meaning in an increasingly amorphous landscape, technology has become a reflective tool in answering for answers on how to be more human. Keeping Maslow’s initial framework in mind, David Rose (2014) proposes that technology takes on a more humanistic approach to satisfy human desires, branching into 6 categories of ‘immorality, empathy, unhooking, inherently teleportation, and expression’ (Rose, 2014). For technology to facilitate our spiritual journey towards betterment, it needs to empathise with our need for experiences that go beyond the self.

As interfaces, algorithms and programs become ‘smarter’ at learning and anticipating our needs, we increasingly regard them as seemingly sentient entities. Behavioural studies and research in interaction design have demonstrated that we will ‘protect’ a computer’s feelings, feel flattered by a brown-nosing piece of software, and even do favours for digital entities, having a subconscious tendency to anthropomorphise devices which show any sign of having personality. This intimate bond and sense of attachment with our devices blur our ability to discern between the positive and negative impacts that they have on our lives. Technology is deemed worth the belief in it as an instrument, as opposed to an agent in shaping our beliefs and anxieties, looking to find a true integration between spiritual and technological realms.
Course Leader
Kieren Jones

Year 1 Leader
Marta Giralt

Tutor of Disruptive Technologies
Maël Hénaff

Contextual Studies Tutor
Dr Stephen Hayward

Lead Administrator
Hannah Cheesbrough

Academic Coordinator
Chloe Griffith

Visiting Tutors
Attua Aparicio Torinos
Tina Gorjanc

Research Leader
Prof Carole Collet

External Examiner
Fiona Raby

CATALOGUE

Art Direction
Laura Gordon

Graphic Design
Grace Lister

Printed by Pureprint